



# **SPECIAL PROVISIONS & TECHNICAL SPECIFICATIONS**

**FOR THE CONSTRUCTION OF**

## **INDEPENDENCE PARK GYM RENOVATION**

**Project No. 54691**

*Prepared By:*

*City of Fullerton  
Public Works – Engineering Department*

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Fullerton, CA 92832*

# SPECIAL PROVISIONS

The following Special Provisions supplement or modify the Standard Specifications:

## SECTION 1 – GENERAL CONSTRUCTION

### 1-1 BID SCHEDULE.

**1-1.1 General.** For all work required and shown on the construction plans and specifications for which no specific bid item or price is listed in the bid schedule, it shall be understood that such work, equipment, labor, tools, and materials shall be provided as part of the listed bid items and no additional compensation will be paid therefor. Items of work not specifically listed shall be included in the listed bid items.

If the City determines that any of the unit bid prices are significantly unbalanced to the potential detriment of the City, the bid may be considered non-responsive.

**1-1.2 Schedule Of Values.** At the time of bid opening, the three apparent low bidders shall submit their project Schedule of Values to the City within three (3) working days. The Schedule of Values costs shall include all labor, materials, tools, equipment, incidentals, etc. required by the Project complete, in place. All required Work for the Project shall be included in the Schedule of Values, and no additional compensation will be allowed therefor. The Schedule of Values shall be broken down under the various bid items as shown on the project bid schedule.

### 1-2 LONG-LEAD ITEMS.

**1-2.1 General.** Upon contract award (City Council award), the Contractor shall provide submittals and order any long-lead materials. Failure to expeditiously order these materials may result in liquidated damages of \$500 per working day delay to the start of the project.

### 1-3 SUBSTITUTIONS.

**1-3.1 General.** Requests for substitutions shall be submitted to the City for review. Contractor is responsible for confirming availability of products during bidding process.

**1-3.2 Substitution for Cause.** Changes proposed by the Contractor that are required due to changed Project conditions such as regulatory changes or unavailability of warranty items. Contractor is responsible for confirming compatibility of proposed substitution with related products and materials.

**1-3.2.1 Conditions for Substitution.** City will consider Substitution for Cause based on, but not limited to, the following:

- Requested substitution is consistent with the Contract Documents and will produce indicated results.
- Substitution request is fully documented and properly submitted.
- Requested substitution will not adversely affect Contractor's construction schedule.
- Requested substitution is compatible with other portions of the Work.
- Requested substitution has been coordinated with other portions of the Work.

- Requested substitution provides specified warranty.
- If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

**1-3.3 Substitution for Convenience.** Changes proposed by the Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner. If submitted by Contractor, Contractor is responsible to confirm compatibility of proposed substitution with related products and materials.

**1-3.3.1 Conditions for Substitution.** City will consider Substitution for Convenience based on, but not limited to, the following:

- Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include increased cost of other construction by Owner, and similar considerations.
- Requested substitution does not require extensive revisions to the Contract Documents.
- Requested substitution is consistent with the Contract Documents and will produce indicated results.
- Substitution request is fully documented and properly submitted.
- Requested substitution will not adversely affect Contractor's construction schedule.
- Requested substitution is compatible with other portions of the Work.
- Requested substitution has been coordinated with other portions of the Work.
- Requested substitution provides specified warranty.
- If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

## **1-4 PERMITS.**

**1-4.1 Community Development Department.** The project is subject to permit(s) from the Community Development Department. The Contractor is required to pull the applicable project permits (i.e. building, plumbing, electrical, landscape, grading, etc.) with the permit costs borne by the City.

**1-4.1.1 Fire Permit.** If required, the Contractor shall be required to obtain a separate project Fire permit for any relocations and/or additions to the fire system. Contractor shall provide all documents and information required for the permit.

**1-4.1.2 Inspection.** The Contractor shall be required to coordinate all inspections and gain approval necessary for all permits issued by the Community Development Department.

Building inspection request line (24-hour service) (714) 738-6542

Information on the Voice Permits™ system

<https://www.cityoffullerton.com/government/departments/community-and-economic-development/building-and-safety/inspections>

**1-4.2 City Encroachment Permit.** The Contractor shall obtain an encroachment permit from the Public Works Engineering Department prior to starting any work on City property and/or right of way. The permit will be issued at no cost.

## **1-5 HAZARDOUS MATERIALS.**

**1-5.1 General.** Prior to bidding, the City completed a building investigation for asbestos and lead-based paint materials. Results of building investigation are included in the appendix for reference.

The City has completed remediation of the hazardous materials expected to be impacted by construction work. For the purposes of bidding, the Contractor shall assume no abatement work will be required.

## **1-6 PROJECT CLOSEOUT.**

**1-6.1 Warranty and Product Information.** Contractor shall provide all applicable documentation associated with product materials and warranties for City records. Failure to provide will result in delay executing the Notice of Project Completion and release of retention payment.

**1-6.2 Record Plans.** Contractor shall maintain a 'red-lined' sets of plans showing and detailing any and all revisions/modifications to the construction activities. Plans shall be provided to the City at the conclusion of the project. Failure to provide will result in delay executing the Notice of Project Completion and reduction of retention payment.

**1-6.3 Measurement and Payment.** Payment for Project Closeout shall be included in the unit bid prices for related work and shall include full compensation for furnishing all labor, tools, equipment, and materials involved, and no additional compensation will be allowed therefore.

## **1-7 MISCELLANEOUS CONSTRUCTION ITEMS.**

**1-7.1 General.** The Contractor shall provide all labor, materials, equipment, tools, incidentals, and perform all work necessary to complete the project. For all work required and shown on the construction plans and specifications for which no specific bid item or price is listed in the bid schedule, it shall be understood that such work, equipment, labor, tools, and materials shall be provided as part of the listed bid items.

All work and material shall be completed in accordance with the latest California Codes, Project plans, current construction practices and City requirements and standards as applicable.

**1-7.2 Requirements.** Work shall also include the following items:

- A. Furnishing, developing, applying, and providing watering equipment for the entire project, including the water required for extra work, where separate payment for water would otherwise be required.
- B. Protection of all facilities (public and private) not affected by the construction and not

shown on the plans to be reconstructed. The Contractor shall replace these items if damaged or had to be removed as needed for construction with new materials equal to the original, as required by the Engineer. Unless otherwise noted on the plans, the contractor shall protect all walls, fences, concrete, planters, irrigation systems, etc. and shall replace with new materials equal to the original in case of any damage to existing facilities.

- C. Project site shall be left clean and free of dirt, sand, debris, trash, equipment, etc. at the end of each day. Failure to maintain a clean project site shall result in a \$250 fine per calendar day.
- D. This item shall also be interpreted to include the removal and disposal of any additional items not specifically mentioned herein, or included in a specific bid item, found within the work limits or as noted on the plans.

**1-7.3 Measurement and Payment.** Payment for Miscellaneous Construction Items shall be included in the unit bid prices for related work and shall include full compensation for furnishing all labor, tools, equipment, and materials involved, and no additional compensation will be allowed therefore.

## **1-8 MOBILIZATION.**

**1-8.1 General.** Mobilization shall consist of preparatory work and operations, including but not limited to those necessary for the movement of personnel, equipment, supplies, and incidentals to the project site; for the establishment of all offices, buildings and other facilities necessary for the work on this project; pulling of all required permits; providing required insurance coverages, and for all other work and operations which must be performed or cost incurred prior to beginning work on the various contract items on the project site.

Demobilization including all work and operations necessary to perform final clean-up, move personnel, equipment, supplies, and incidentals from the project site, remove all offices, and other facilities that were necessary for work on the project, and for other work that must be performed or costs incurred prior to final acceptance of the work.

Mobilization is deemed to include all aspects of mobilization and de-mobilization work occurring during the life of the project for any reason.

The Contractor shall furnish equipment sufficient to execute the work within the period allowed in the approved schedule.

The Contractor shall promptly demobilize equipment no longer needed to perform the work.

All facilities required for Contractor's use shall be furnished and maintained by the Contractor at the locations designated on the Contract Drawings or as directed by the Engineer.

The Contractor shall furnish and maintain adequate number of portable sanitary facilities throughout the project duration for use by their own personnel and Subcontractors.

The security of all materials and equipment in the Contractor storage area shall be the responsibility of the Contractor. The City of Fullerton is not liable for any theft or damage to materials or equipment in Contractor's storage area.

**1-8.2 Measurement and Payment.** Payment for Mobilization shall be included in the contract lump sum price for Mobilization and shall be full compensation for all costs incurred by the Contractor for doing all the work involved in mobilization as specified herein. Progress payment for this item shall be based on the percentage of project work completed under this item, at the time of billing.

## **1-9 DEMOLITION AND REMOVALS.**

**1-9.1 General.** Demolition and removal of existing improvements shall conform to the project plans, applicable building codes, and acceptable construction practices.

Demolition shall include removing any miscellaneous structures, amenities, plumbing, electrical and landscaping as indicated on the Plans.

All existing improvements, including those on property, shall be protected in place. Any damage to and removal of improvements to be protected in place shall be repaired and replaced by the Contractor at their expense.

All removed material shall be immediately hauled away and properly disposed of outside the project limits. The Contractor shall be responsible for all damages and claims that may arise as a result of this disposal.

**1-9.2 Measurement and Payment.** Payment for Demolition and Removals shall be included in the contract lump sum price for related work and shall be full compensation for all items of work and all appurtenant work including furnishing all labor, materials, tools, equipment and incidentals.

**CITY OF FULLERTON**

**TECHNICAL SPECIFICATIONS  
FOR BUILDING CONSTRUCTION**

**VOLUME 1 of 1**

**FOR THE**

**INDEPENDENCE PARK GYMNASIUM RENOVATION**

**IN THE CITY OF FULLERTON, CALIFORNIA**

**May 27, 2026**

**PREPARED BY:**

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SECTION 01 34 00  
SHOP DRAWINGS, PROJECT DATA AND SAMPLES

**PART 1 - GENERAL****1.1 Scope of Work****A. Submit:**

Submit to the City shop drawings, project data and samples required by specification sections.

**B. Related Requirements Specified Elsewhere:**

General Conditions  
Special Conditions

**C. Construction Schedule:**

Designate dates for submission and dates reviewed shop drawings, project data and samples will be needed for each product.

**PART 2 – REQUIREMENTS****2.1 Items with Long Lead Times**

The contractor shall identify any items with long lead times in the schedule of values (see General/Special Conditions) as well as in the shop drawings to be submitted.

**2.2 Shop Drawings**

Original drawings, prepared by Contractor, subcontractor, supplier or distributor which illustrate some portion of the work, showing fabrication, layout, setting or erection details.

Furnished at Contractor's expense by Contractor.

Prepared by qualified detailer.

Identify details by reference to sheet and detail numbers on Contract Drawings.

Minimum sheet size: 8 1/2" by 11".

**D. Reproduction for Submittals:**

Reproducible bond paper with three bond prints.

**2.3 Product Data****E. Manufacturer's Standard Schematic Drawings:**

Modify to delete information which does not apply.

Supplement standard information where applicable to work.

**F. Manufacturer's Catalog Sheets, Brochures, Diagrams, Schedules, Performance Charts, Illustrations and other Standard Descriptive Data:**

Clearly mark each copy to identify pertinent information.

Show dimensions and clearances required.

Show performance characteristics and capacities.

Show wiring diagrams and controls.

## 2.4 Samples

Physical examples to illustrate materials, equipment or workmanship, and to establish standards by which completed work is judged.

### G. Office Samples:

Of size and quantity to clearly illustrate:

Functional characteristics of product or material, with integrally related parts and attachment devices.  
Full range of color samples.

After review, samples may be used in construction project.

### H. Field Samples and Mock-Ups:

Erect at project site at location acceptable to Engineer/Architect.  
Construct complete, including work of all trades required in finished work.

## 2.5 Contractor's Responsibilities

Review shop drawings, project data and samples prior to submission.  
Verify field measurements, field construction criteria, catalog numbers and similar data.  
Coordinate each submittal with requirements of work and of Contract Documents.

### I. Responsibility for Errors and Omissions in Submittals:

Not relieved by Architect's review of submittals.

### J. Responsibility for Deviations in Submittals from Contract Documents:

Not relieved by Architect's review unless Architect gives written acceptance of specific deviations.

Notify City staff in writing at time of submission of deviations in submittals from requirements of Contract Documents.

Begin no work requiring submittals until return of submittals with Architect's stamp and signature indicating review.

Distribute copies after Architect's review.

## 2.6 Submission Requirements

Schedule all submittals not later than 30 days after Award of Contract.

The City will not be responsible for delays to the Contractor for any submittal not received within the specific time.

Submit 6 sets of shop drawings, catalogs, samples, etc. for City's retention, one copy for Architect, and one copy for consultants (If require).

Transmittal letter shall be in duplicate, containing date, project title and number, Contractor's name and address, the number of each shop drawing, project data and sample submitted, notification of deviations from Contract Documents, and other pertinent data.

Submittal shall include:

- Date and revision date;
- Project title, number, park name or names.
- Names of : Agency, Contractor, Subcontractor, Supplier, Manufacturer, separate detailer, where pertinent;
- Identification of material;
- Relation to adjacent structure or materials;
- Field dimensions, clearly identified;
- Specification section number;
- Applicable standard, such as ASTM # or Federal Specification;
- Space for Landscape Architect's stamp;
- Identification of deviations from Contract Documents;
- Contractor's stamp, initialed or signed, certifying review of submittal, verification of field measurements and compliance with Contract Documents.

## **2.7. Resubmission**

### **K. Shop Drawings:**

Revise initial drawings as required and resubmit as specified for initial submittal.

Indicate on drawings any changes which have been made other than those requested by the Architect.

### **L. Project Data and Samples:**

Submit new datum and samples as required for initial submittal.

## **2.8. Distribution After Review**

Distribute stamped copies of shop drawings and project data to:

- Contractor's file
- Job site file
- Record Documents file
- Subcontractor
- Supplier
- Fabricator.

### **M. Samples:**

Distribute as directed.

**END OF SECTION 01 34 00**

SECTION 01 73 29  
CUTTING AND PATCHING

## PART 1 - GENERAL

The provisions of the Standard Specifications for Public Works Construction (Green Book), latest adopted edition, apply except as modified herein.

**1.1 Related Work Specified Elsewhere:**

General Provisions  
Special Provisions  
Concrete: Division 3

**1.2 Description:**

Execute cutting (including excavating), fitting or patching of work required to:

Make several parts fit properly;  
Uncover work to provide for ill-timed work;  
Remove and replace defective work;  
Remove and replace work not conforming to the Contract Documents;  
Remove samples of installed work as required for testing;  
Install specified work in existing construction;  
Properly join work by others.

In addition to contract requirements, upon written instructions of the City Representative:

Uncover work to provide for City Representative's observation of covered work;  
Remove samples of installed materials for testing;  
Remove work to provide for alteration of existing work.

Do not endanger any work by cutting or altering work or any part of it.

**1.3 Submittals:**

Prior to cutting which affects structural safety of work or work of another Contractor, submit written notice to the Agency Representative requesting consent to proceed with cutting, including:

Identification of the work;  
Description of affected work;  
Necessity for cutting;  
Effect on other work, on structural integrity of the project;  
Description of proposed work.  
Designate:  
Scope of cutting and patching;  
Contractor and trades to execute work;  
Products proposed to be used;  
Extent of refinishing;  
Alternatives to cutting and patching;  
Designation of party responsible for cost of cutting and patching.

Prior to cutting and patching done on instruction of the City's Representative, submit cost estimate.

Should conditions of work or schedule indicate change of materials or methods, submit written recommendations to City Representative, including:

Conditions indicating change;  
Recommendations for alternative materials or methods;  
Submittals as required for substitutions.  
Submit written notice to Agency Representative, designating time work will be uncovered, to provide for observation.

#### **1.4 Payment for Costs:**

Costs caused by ill-timed or defective work, or work not conforming to Contract Documents, including costs for additional services of the Architect shall be borne by Contractor.

Work done on instructions of the City Representative, other than defective or non-conforming work shall be borne by City.

### **PART 2 - PRODUCTS**

Materials for replacement of work removed shall comply with specifications for type of work to be done.

### **PART 3 - EXECUTION**

#### **3.1 Inspection:**

Inspect existing conditions of work, including elements subject to movement or damage during cutting and patching or excavating and back-filling.

After uncovering work, inspect conditions affecting installation of new products.

Refer to Appendix 1 for additional requirements for the Treatment of Historic Materials.

#### **3.2 Preparation:**

Before cutting provide shoring, and support as required to maintain structural integrity of project; provide protection for other portions of project; and provide protection from the elements.

#### **3.3 Performance:**

Execute fitting and adjustment of products to provide finished installation complying with specified tolerances and finishes.

Execute cutting and demolition by methods which will prevent damage to other work, and will provide proper surfaces to receive installation of repairs and new work.

Execute excavating and backfilling as specified as required by the scope of work.

Restore work which has been cut or removed; install new products to provide completed work conforming to Contract Documents.

Refinish entire surfaces as necessary to provide an even finish:

Continuous surfaces - to nearest intersections.  
Assembly - entire refinishing.

END OF SECTION 01 73 29

**SECTION 02 41 00  
DEMOLITION****PART 1 - GENERAL****1.1. Scope of Work:**

- A. Furnish equipment and perform labor required to execute this work as indicated on the drawings, as specified, and as necessary to complete the contract including but not limited to these major items:
  - 1. Protection of existing work to remain
  - 2. Removal of partitions, doors, floor coverings and ceilings
  - 3. Storage and protection of doors, windows, etc. to be reused.
  - 4. Removal of mechanical and electrical fixtures and services
  - 5. Debris removal
  - 7. Refer to the demolition plans for additional requirements
  - 7. Refer to the Demolition, Removals, and Patching and Existing Remodeling & Renovation Notes on sheet G-1 of the drawings

**1.2 Related Work:**

- A. Temporary facilities
- B. All new work.
- C. Disconnecting cutting, capping or relocating any active utility line encountered
- D. Lead-based paint and asbestos has been removed from areas of work.
  - 1. Refer to Appendix #1 for the Lead-Based Paint Clearance Inspection Report, included for reference.
  - 2. The contractor shall provide the following: **ONLINE NOTIFICATIONS** – SCAQMD must be notified, using the online web app, **prior to** any work activities taking place for (a) renovations that impact ACM (except for renovations involving less than 100 square feet total of ACM surface area); (b) all renovations involving the clean-up of damaged or disturbed ACM; and (c) all demolitions. Pre-registration with SCAQMD is required to use the web app.

**1.3 Quality Assurance:**

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of work of this section.
- B. Use equipment adequate in size, capacity and numbers to accomplish the work in a timely manner.

**1.4 Applicable Reference Standards:**

- A. Safety requirements for demolition published by the American National Standards Institute (ANSI A10.6)

**PART 2 - GENERAL REQUIREMENTS – EXISTING CONDITIONS****2.1 Field Conditions:**

- A. Take into consideration as necessary work all obvious existing conditions and installations on the site as though they were completely shown or described. Accept the site of the work as it exists and clear obstructions to the work indicated.
- B. **Refer to the General Provisions and Special Provisions for requirements for mandatory pre-bid job walk. All bidding contractor shall be required to attend.**
- C. All contractors submitting proposals for this work shall first examine the site and all conditions and limitations thereon and thereabouts. All proposals shall take into account all such conditions and limitations whether or not the same are specifically shown or mentioned in any of these documents and every proposal shall be construed as including whatever sums are needed to complete the work in every part as shown, described or reasonably required or implied and attain the completed conditions contemplated by the contractor.
- D. Take careful note of the fact that the surrounding park facilities will be open to business as usual during the life of this contract. No interruption of traffic flow, utility services or owner's usual activities will be permitted without previous scheduling with the owner.

**2.2 Applicable Codes:**

- A. Perform all work in accordance with the building code of the governing body having jurisdiction, the governing state industrial safety orders and the requirements of the Occupational Safety and Health Act (OSHA).

**2.3 Unforeseen Conditions:**

- A. Include in the base bid all miscellaneous cutting, demolition, and removals necessary as a result of unforeseen conditions and the reworking, replacement, repair, and patching surfaces as required to make new work join and match existing surfaces to remain. No extra payments based on the plea of unforeseen conditions will be allowed.

**2.4 Phasing of the Work:**

- A. Confer with the owner as to the sequencing and phasing of the performance of various parts of the work. City staff has no requirement to maintain service to the building during construction, with the exception of fire protection. Cooperate fully to the end that the fire protection service is maintained in operation until immediately before removal is required to permit installation of new work, if required.

**2.5 Noise Control:**

- A. Carry on all work in a manner which will produce the least amount of noise. Instruct all workers in noise control procedures.

**PART 3 - EXECUTION****3.1 Protection:**

- A. Glass - Provide such protection as may be required to prevent glass breakage at no additional cost. Replace in kind all broken glass.
- B. Lowering Material - Provide hoists and chutes as required to lower material. Throwing, dropping, or permitted free fall of material and debris from heights which would cause damage to work to remain, undue noise or nuisance or excessive dust is expressly prohibited.

- C. Protection of Personnel - Erect signs, barricades and such other forms of warning as may be required to prevent personnel from putting themselves in the way of injury.
- D. Existing Work to Remain - Provide such forms of protection as may be necessary to prevent damage to existing work and equipment to remain.

### 3.2 General:

- A. Doors, Frames, and Hardware – Store and protect doors to be reused as noted on the drawings. Maintain and protect all hardware to be reused. Remove and dispose of all unused doors, frames, and hardware.
- B. Partitions - Remove partitions, finish, studs and top and bottom plates where only a partial run is removed cut back finish material to the center of the next adjacent support to remain. Leave remaining material with a clean terminal line with no loose material adhering. Remove all shot-pins at floor.

### 3.3 Mechanical, Electrical, and Plumbing:

- A. Review with owner and determine lines to be removed and those to be kept active or to be reactivated. Protect lines to remain. Provide for minimum service interruption of lines to remain.
- B. Remove fixtures and equipment as indicated. When indicated for reuse, clean & store as directed and protect identify point of reuse.
- C. Remove lines completely wherever possible. Cut and cap or plug in a positive manner behind the back of finish material.

### 3.4 Removed Materials & Debris:

- A. All removed material not otherwise designated and all debris becomes the property of the contractor who shall remove it from the site.
- B. Do not allow materials and debris generated by demolition activities to accumulate. Remove daily and dispose of in a legal manner.
- C. Leave all spaces broom clean with all ledges and corners properly cleaned.

### 3.5 Floor Finishes:

- A. Floor Finishes - Remove all existing floor finishes.

### 3.6 Salvage Conditions:

- A. Salvage existing fixtures and equipment as shown. Store and protect as required. Coordinate method and/or disposal with owner.

### 3.7 Additional Requirements:

- A. The General Contractor shall shore up all walls as necessary.
- B. Refer to other demolition and construction drawings for additional information.
- C. The General Contractor shall be responsible for providing all demolition required to complete the work as shown in these drawings whether specifically shown or not.
- D. Demolition includes the removal of all fixtures, furnishings, and equipment in the entire area of the remodel/addition and as required to complete the work, including, but not limited to, light fixtures, HVAC registers, power outlets & switches, thermostats, fire extinguishers, exit signs, cabinetry, or anything else that exists in the area of work, whether specifically shown or not. The General Contractor shall coordinate with city staff any items to be turned over to the city for reuse.

END OF SECTION 02 41 00

**SECTION 03 30 00**  
**CAST-IN-PLACE CONCRETE**

**PART 1 - GENERAL**

1.1 Scope of Work Included in this Section:

- A. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified, and as necessary to complete the Contract, including, but not limited to, these major items:

1. Building Footings & Foundations
2. Interior Floor Slabs
3. Cement Finish, Joints, Saw Cuts, & Patching
4. Setting of items to be inserted into concrete
5. Finish of concrete covered by this specification section.
6. Curing
7. Testing
8. Sealers.

1.2 Related Work Specified Elsewhere:

Structural Steel: Section 05 12 00  
Rough Carpentry: Section 06 10 00

1.3 General Requirements:

- A. Field Conditions.
1. Verify drawing dimensions with actual field conditions. Inspect related work and adjacent surfaces.
  2. Finish all surfaces to present a uniform appearance throughout the area involved, and throughout adjacent areas with the same treatment.
  3. Where finishing occurs adjacent to finished metal or other finished surfaces, particularly where serrated or indented, remove all traces of cement film before it hardens. This applies particularly to stair nosings and similar items.
- B. Deliver and store all material in such a manner as to protect it from damage and deterioration.
- C. Design, construction, and safety of all formwork shoring and re-shoring shall be the complete responsibility of the Contractor.
- D. It shall be the responsibility of the Contractor to ensure that all applicable safety laws are strictly enforced and to maintain a safe construction project.
- E. Bundle reinforcement and tag with suitable identification to facilitate sorting and placing.
- F. Store all reinforcement to protect from rust, oil, dirt, and splash.

1.4 Quality Assurance:

- A. Testing, materials and workmanship shall conform to the requirements of the Standard Specifications and the applicable Building Code. The most stringent requirement shall apply.

- B. Material quality standards and testing procedures shall be in accordance with the American Society for Testing Materials, hereinafter referred to as "ASTM". All ASTM standards and testing procedures shall be the latest requirements.
- C. The following codes and standards apply to, and form a part of, this section, where applicable:
1. The 2022 Edition of the California Building Code (2022 CBC).
  2. ACI 301 "Specifications for Structural Concrete for Buildings
  3. American Concrete Institute Standard "Recommended Practice for Concrete Formwork", ACI 347R.
  4. Fabrication and installation of reinforcing steel shall be in conformance with the Manual of Standard Practice for Detailing Reinforced Concrete Structures ACI 315.
  5. ACI 318 "Building Code Requirements for Reinforced Concrete"
  6. ACI 304 "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete"
  7. American Welding Society, AWS D1.4, "Structural Welding Code – Reinforcing Steel," Latest Edition
  8. Concrete Reinforcing Steel Institute, "Manual of Standard Practice"
  9. ASTM E1155 "Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers."
- D. Tests:
1. All tests shall be made by a testing laboratory acceptable and approved by the Structural Engineer.
  2. The cost of sampling and testing concrete required by the specifications shall be borne by the Owner.
  3. Sampling of reinforcing steel shall be done by a representative of the testing laboratory.
  4. One tensile and one bend test shall be made of each ten tons or fraction thereof for each size reinforcing steel bar #5 and larger. These tests shall be performed only if required by the Test and Inspection Request Form prepared by the Structural Engineer.
  5. Prepare and distribute copies of test reports as required by Section 1.41.
  6. Additional tests shall be made when and as directed by the Structural Engineer. Costs of test shall be borne by the Owner.
- E. One mechanical analysis and one decantation test shall be made of the sand and coarse aggregate proposed for the work. Additional tests shall be made when directed by the Structural Engineer.
- F. Concrete specimens shall be taken when directed by the Structural Engineer. At least one pair of specimens shall be taken from each pour of concrete or from each one-hundred cubic yards of concrete or major fraction thereof. One cylinder from each pair shall be tested at 7 days. One from each pair shall be tested at the age of 28 days. Concrete for specimens shall be taken from place of deposit. Specimens shall be prepared and tested in accordance with the latest ASTM specifications (ASTM C192).
- G. Prepare and distribute test reports as required by City staff or the structural engineer.
- H. Additional tests shall be made when and as directed by the Structural Engineer. Cost of tests shall be borne by Owner.
- I. Defective Concrete:
1. Should concrete strengths not attain the minimum specified at 28 days, the area of substandard work shall be examined by the Structural Engineer. The defective concrete shall be removed and replaced or the work shall be strengthened in a manner as directed by the Structural Engineer.

2. The cost of all examination and testing of defective material, as well as corrective measures, shall be borne by the Contractor.
3. Minor rock pockets may be chipped out and drypacked where permitted by the Structural Engineer.

1.5 Submittals:

- A. The contractor shall submit (6) copies of the concrete mix design to the architect & structural engineer for review & approval. Refer to section 01 34 00 for additional requirements. Allow a minimum of one week to review the mix design prior to ordering concrete.

**PART 2 - PRODUCTS**

2.1 Formwork Materials:

- A. Where finish concrete is below grade or scheduled to be plastered, plywood or sawed lumber formwork shall be constructed of substantial material as selected by the Contractor.
- B. Where finished concrete is above grade and scheduled to be exposed, use Plyform Class I and II B-B, EXT-DFPA.
- C. Form coating shall be a non-grain-raising and non-staining type that will not leave residual matter on the surface of the concrete or adversely affect bonding to concrete of paint, plaster, or other applied materials.
- D. Tie wire: Black annealed, not lighter than No. 12.
- E. General. Forms shall be constructed true to line and grade; shall conform to the shape and dimensions of the required concrete and shall be sufficiently tight to prevent the leakage of mortar and sufficiently rigid to prevent displacement or sagging between supports. Forms shall be so constructed that they can be removed without damage to the concrete. Forms for curved surfaces shall be so constructed and placed that the finished surface will not deviate from the arc of the curve, flat spots shall not be permitted.
- F. Approval of Forms and Reinforcement. Forms and metal reinforcement shall be checked and approved by the Engineering or Building Inspector before concrete is placed.

2.2 Reinforcement Materials:

- A. Reinforcing steel bars shall be of the Intermediate Grade conforming to ASTM A615, Grade 40 for size #3, and Grade 60 for sizes #4 & larger, and shall be rolled from new billets. All bars shall be identified by mil heat numbers. Refer to the reinforcing notes on the structural drawings for additional information & requirements.
- B. Steel support chairs shall be galvanized. Steel chairs making contact with exterior concrete surfaces shall have plastic coated legs so that finished concrete surfaces will not be marred or stained by rusting.
- C. Tie wire shall be 16 gage annealed wire.
- D. Welded wire fabric shall conform to ASTM A185.

E. Refer to the General notes on sheets S-1 for additional information.

1. Fabrication:

Fabricate bars of indicated size. Accurately form to shapes and lengths indicated by methods not injurious to the materials. Do not heat reinforcement for bending. Bars with kinks or bends not scheduled will be rejected.

2. Reinforcing Steel and Wire Mesh:

Reinforcing steel shall conform to Section 201-2.2 of the Standard Specifications and shall be as stated in the structural notes on the drawings.

Wire mesh shall conform to Section 201-2.4, Standard Specifications.

2.3 Concrete Materials:

A. All building concrete for the project shall achieve the minimum ultimate compressive strength at 28 days as stated in the concrete notes on the structural drawings.

B. Portland Cement shall be as stated in the concrete notes on the drawings and shall conform to ASTM C150, unless Type V is specified on Engineering Drawings for reactive soils conditions.

C. Concrete aggregate shall conform to ASTM C33. All aggregate shall be well graded and selected from a source that has a proven history of non-reactivity. Maximum aggregate size shall be one inch.

D. Fine aggregate shall consist of washed natural sand having hard, strong and durable particles and which does not contain more than 2% by weight of clay, loam, shale, alkali, organic matter or other deleterious substances.

E. Coarse aggregate shall consist of clean, hard, fine grained, sound crushed rock or gravel, which does not contain more than 5% by weight of flat, chip-like, thin, elongated, friable or laminated pieces. Any piece having a major dimension in excess of two and one-half (2-1/2) times the average thickness and which will adversely affect the strength of the concrete shall not be used.

F. Moisture membrane. American Sisalkraft's "Moistop" or Visqueen (thickness per foundation plan). See paragraph 2.12.

G. Water shall be potable clean and free from deleterious amounts of acids, alkalis, and organic materials.

1. Proportions and Mixing:

a. The concrete shall be composed of cement, sand and coarse aggregate in the proportions as determined by the testing laboratory. Cost of mix design shall be borne by Owner.

b. Maximum slump of concrete shall be six (6) inches. The concrete shall be mixed as directed herein:

c. Each transit mixer shall be equipped with automatic devices for recording the number of revolutions of the drum prior to completing the mixing, with peripheral drum speed of approximately 200 feet per minute.

d. Transit-mix concrete shall be mixed for a period of not less than ten minutes. At least three minutes of the mixing period shall be immediately prior to discharging at the job.

- e. Transit-mix concrete shall not be delivered to the work with the total specified amount of water incorporated therein. Two gallons of water per cubic yard shall be withheld, and may be incorporated in the mix, before the concrete is discharged from the mixer truck.
  - f. Transit-mix concrete shall be rejected if not placed in final position within ninety (90) minutes after water is first added to the batch. The concrete, at time of placing, shall be in such condition that it can be properly placed.
2. Proportioning shall be by weight of loose, dry material, 94 pounds of cement shall be considered one cubic foot. Fine aggregate volume shall be at least 35%, with a maximum of 50%, of the sum of the separate fine and coarse aggregate volumes. Weighing equipment shall be accurate to within one pound and be adjustable for varying aggregate moisture content. A beam auxiliary shall register any part of the last 100 pounds of each aggregate. The aggregate hopper shall have a volume adjustment
- a. Accurately control the proportions, water content, and air content.
  - b. Admixture (Other than waterproofing and integral color): If admixture is used, conform to type specified. Quantity per sack of cement and method of using admixture shall be in accordance with published recommendations of manufacturer and laboratory mix design.
  - c. Cement Grout: One part by volume Portland cement and 2-1/2 parts fine aggregate. Mix dry. Add just enough water to make mixture flow under its own weight.
  - d. Patching Mortar: Mix liquid. Combine dry mix with liquid and add water in proportions recommended by manufacturer.
- 2.4 Concrete Surface Retarder:
- A. Form Grade Concrete Surface Retarder, by L.M. Scofield Co., ChemRex, Tamms Industries, or other approved by Architect.
- 2.5 Curing and Protection Paper:
- A. Sisalkraft Orange Label or other conforming to ASTM C171, as approved by the Architect.
- 2.6 Divider Strips Embedded in Concrete Finish:
- A. One piece extruded zinc alloy strips of the type and size required by Duggan Manufacturing Co., Los Angeles, or other as approved.
- 2.7 Slip Resistant Additive:
- A. "Emerchrome" floor hardener, by L.M. Scofield Co., or approved equal.
- 2.8 Expansion Joint Sealer:
- A. For Use Except Where Sealants Specified Under Caulking and Sealants are Required:  
"Igas Joint Sealer", by Sika Chemical Corp., or other approved by the Architect.
- 2.9 Curing Materials:
- A. Liquid Curing Compound: W.R. Meadows Vocomp-30 Acrylic Curing and Sealing Compound with the characteristics shown below.

1. Color of Product: White Emulsion.
2. Dry Film Appearance: Clear, Non-Yellowing.
3. Weight per gallon: 8.6
4. Water Retention: Kg/m<sup>2</sup> @ 72 hours: 0.30
5. Reflectance: N/A
6. Flash Point: F: >212
7. Volatile Organic Compound (VOC) g/L: 150 Other similar products, water based, acrylic curing and sealing compound shall be non-yellowing, clear, meeting the following requirements:
8. ASTM C309, Type 1, Class B
9. AASHTO M 148, Type 1, Class B
10. ASTM C1315, Class A, Section 6.4.1 – non-yellowing.

- B. Concrete Curing Membrane: Provide white opaque polyethylene or white-burlap polyethylene, in conformity with ASTM C171. Product sheet shall be non-staining reinforced type. No clear, and no “regular paper” may be used.

#### 2.10 Concrete Admixtures

- A. General: Provide admixtures produced by established reputable manufacturers and use in compliance with the manufacturer's printed directions. Do not use admixtures which have not been incorporated and tested in accepted mixes, unless otherwise authorized in writing by the Architect.
- B. The following admixtures may be used with written approval of Architect. Conform to manufacturers recommendations for use.
1. Water Reducing: ASTM C 494. Shall provide a minimum of 5% water reduction, 10% increase of 28 day compressive strength, drying shrinkage at 21 days shall be less than concrete without admixture.
  2. Acceleration or Retarding: ASTM C 494
  3. Air Entraining: ASTM C 260

- C. Calcium chloride not permitted.

#### 2.11 Joint Materials

- A. Form slab edges with wood
- B. Fiber Joint Filler: ASTM D1751 non-extruding pre-molded bituminous impregnated fiberboard units. Plain or punched for dowels as required.
- C. Joint Sealants: Refer to Section 07 92 00.

#### 2.12 Vapor Barrier/Retarder

- A. Provide vapor barrier/retarder cover over prepared base material. Use only materials which are resistant to decay when tested in accordance with ASTM E154, comply with ACI 302 for thickness, and as follows:
1. Vapor barrier/retarder: ASTM D2103, polyethylene sheeting, 15 mil thickness, impact strength greater than 70 grams per mil, 10 ft. minimum width. Provide minimum 2 inch wide waterproof plastic self-adhering tape for sealing all joints, edges and ends of sheeting. Material shall be Rufco 3000B by Raven Industries, 10 mil Stego Wrap, Griffolyn T-105 by Reef Industries, or Nervastral Barrier by Rubber and Plastics Compound Co.

2. Provide all accessories such as tapes, pipe, conduit, and other penetration “boots” which are to work together with vapor barrier as a system. Field fabrication of such “boots” is acceptable.
- 2.13 Bonding, Patching, & Finishing Material
- A. Bonding Agent: W.R. Meadows Intralok, or other high solids acrylic polymer latex product meeting ASTM C1059, Type I standard.
  - B. Patching Mortar: W.R. Meadows Meadow-Patch T1 or other single-component polymer-modified cementitious thin mortar product meeting 3 hour final set in accordance with ASTM C191, and 6500 psi compressive strength after 28 days in accordance with ASTM C109.
- 2.14 Concrete Densifier and Concrete Hardener
- A. W.R. Meadows, Inc. (800) 342-5976 or equal.
    1. Seal Tight Liqui-Hard Concrete Densifier and Chemical Hardener Compound. VOC Content: Meets maximum VOC content of 400 g/l. for concrete protective coatings as required by US EPA Architectural Coatings Rule.
- 2.15 Concrete Degreaser
- A. W.R. Meadows, Inc. (800) 342-5976 or equal.
    1. Concrete Degreaser and Stripper: Seal Tight Ultrite Degreaser
      - a. Description: Biodegradable, heavy-duty, concrete degreaser and stripper.
      - b. Appearances: Clear, light yellow
      - c. pH: 10.9
      - d. Flash Point: 130 degrees F (54 degrees C)
      - e. Stability: Stable
      - f. Solubility in Water: Excellent
      - g. Rinsability with Water: Excellent
- 2.16 Mix Design
- A. Prepare design mixes for each type and strength of concrete.
    1. Proportions: For each material including admixtures and water, state water-cement ratio and maximum allowable water content, using not less than the minimum cement content required in paragraphs ‘proportioning’.
    2. Materials: Manufacturer’s name, designation and source of each material.
    3. Modified Mix: Same as other concrete types except remove 50% of the coarse aggregate.
- 2.17 Mixing Concrete
- A. Ready-Mixed Concrete: Concrete shall be supplied by an established commercial ready-mix plant conforming to ASTM C94.
    1. Truck Mixers: Minimum 2 cu.yd. capacity, equipped with accurate revolution counter. Operate at rated speed. Discontinue use of mixers producing unsatisfactory concrete or showing more than 10% difference in sand-cement or water-cement ratios in samples taken from front, center and back of mixer.
    2. Mixing Time: Total at least 15 minutes, with at least 5 minutes immediately after addition of water, and at least 10 minutes just before discharging.
    3. Mixing Water: Withhold 2-1/2 gallons per cubic yard from pre-determined water content. All or part thereof may be added at site, as directed.

- B. Re-tempered Concrete: Concrete not placed within 90 minutes after water is introduced into mix or which as stood for 30 minutes after leaving mixer shall not be used.

#### 2.18 Proprietary Concrete Topping

- A. Provide Elastizell lightweight concrete topping system composed of ASTM C150 cement or mortar cement, lightweight aggregate or pea gravel, ASTM C33 sand, admixtures recommended in writing by manufacturer and reviewed by Architect, and a liquid latex bonded moisture barrier approved by Elastizell.

### **PART 3 - EXECUTION**

#### 3.1 Formwork Erection:

- A. Comply with ACI 347R.
- B. All concrete above grade shall be cast-in-plywood forms.
- C. All concrete below grade shall be cast-in-plywood or sawed lumber forms.
- D. Concrete below grade may be poured directly against earth in open trenches where specifically approved by the Structural Engineer.
- E. All forms shall be constructed true to line and level, sufficiently tight to prevent leakage of mortar, and shall conform exactly to the dimensions of the finished concrete as shown on the drawings.
- F. In walls and columns over 8' high, clean out panels shall be provided at the bottom of forms to facilitate cleaning prior to pour.
- G. Where studs in formwork are spaced not over 12" o.c., 5/8" minimum plywood shall be used. Where studs are spaced not over 16" o.c., 3/4" minimum plywood shall be used.
- H. For cheek walls Contractor shall form and pour all stairs first. Cheek walls shall be formed and poured after acceptance of the step construction. Cheek walls shall be a minimum of 10" wide.
- I. Place long dimension of plywood sheets perpendicular to direction of studs.
  1. Removal of Forms:  
Do not disturb or remove forms until the concrete has developed sufficient strength to safely sustain its own weight and the superimposed loads above. After concrete is placed, the following minimum time periods shall elapse before the removal of forms:

	<u>Forms</u>	<u>Shores</u>
Sides of walls and edges of slabs and footings.	3 days	5 days

#### 3.2 Vapor Barrier/Retarder

- A. Place interior slabs on grade over vapor barrier/retarder consisting of specified vapor barrier/retarder sheet over Soils 2" min. bed of washed natural sand. Turn up edges of vapor barrier/retarder 2 inches. Lap edges 6 inches. Seal all edge laps and penetrations in accordance with manufacturer's printed recommendations for solvent or heat welding. Roll sub-grade smooth prior to placing vapor barrier/retarder.
  1. After placement of vapor barrier/retarder sheet complete with penetration boots, cover with sand and compact to depth shown on drawings.
  2. Exercise care when forming curbs and other articulations to not puncture, dislodge, or otherwise damage vapor barrier/retarder.

3. Tears, punctures and other damages to vapor barrier/retarder shall be repaired as recommended in manufacturer's published instructions. Should it become evident by Contractor, Inspector, Architect and/or CM that adequate protection of vapor barrier/retarder has not been achieved and multiple tears, punctures and other damages have occurred, remove and replace vapor barrier/retarder at no additional cost to Owner. No addition Contract Time will be granted.

### 3.3 Reinforcement Placement:

- A. Coordinate all work with other trades.
- B. All bars shall be as shown on the drawings, accurately placed and wired in position by 16 gauge annealed wire. Tie stirrups to bars at both top and bottom. Bend wire ties away from forms.
- C. Maintain proper distance and clearance between parallel bars and forms. Provide metal spreaders and spacers to hold steel in position as necessary.
- D. Support steel at proper height upon approved chairs, transverse steel bars with hangers, or in other manner as necessary to accurately place and secure bars. Maintain clear spacing between parallel bars of not less than 1-1/2 times the bar diameter, but in no case less than 1-1/2". Lap and splice bars in the manner and at the locations shown on the drawings.
- E. Bars on footings or slabs on grade shall be supported on concrete blocks. Reinforcing steel in beams and suspended slabs shall be supported on steel chairs.
- F. Provide additional reinforcing bars at sleeves and openings.
- G. Before placing reinforcing and again before concrete is placed, clean reinforcement of loose mill scale, oil or other coating that might destroy or reduce bond.
- H. Refer to the reinforcing steel section of the structural general notes on sheet S-1 for information regarding rebar splicing.

### 3.4 Joints

- A. Provide construction, isolation, and control joints as indicated or required. Locate construction joints so as to not impair the strength and appearance of the structure. Place isolation and control joints in slabs-on-ground to stabilize differential settlement and random cracking.
- B. Construction Joints: Construct in accordance with Drawings, ACI, and customary trade practices as approved by Architect and/or CM.

### 3.5 Placing of Concrete:

- A. Before the placing of any concrete, all forms shall be thoroughly cleaned and wet. Concrete shall be poured into forms immediately after it is mixed, and so that no separation will occur. No concrete which has stood for more than fifteen (15) minutes after leaving the mixer shall be used in the building. The freshly poured concrete shall be vibrated with electrically operated vibrating equipment in order to produce a concrete of maximum density. Concrete shall be rejected if not placed in final position within ninety (90) minutes after water is first added to the batch.
- B. Sandblast all surfaces on which concrete is to be placed and all construction joints, with the exception of existing concrete at the building (refer to Appendix 1 for the treatment of historic materials).
- C. Maximum free drop of concrete shall not be more than 4'-0". Use tremies in deeper sections.
- D. The location of all stoppages shall be approved by the Structural Engineer.

- F. The flow surface of the freshly poured concrete shall be level wherever any pour is stopped and tight dams shall be built as necessary to accomplish this result. Construction joints shall be made only when unavoidable, and then only at the point determined by the Structural Engineer. Details of such joints shall be as directed by the Structural Engineer.
- G. Before the placing of any concrete, the surface of the previously poured concrete shall be wet.
1. Drypack:
    - a. Drypack shall be composed of one (1) volume of Portland Cement and three (3) volumes of fine aggregate and only enough water shall be added to set the mixture (no free water and no slump). Drypack shall be tamped into place and thoroughly water cured.
    - b. Do not use drypack that has been mixed longer than thirty (30) minutes.
  2. Embedded Items:
    - a. The Contractor shall cooperate with all tradesmen to ensure that all conduit, anchor bolts, sleeves, inserts, hangers, etc., are properly installed and secured in correct position. All embedded items shall be thoroughly clean and free from rust, scale, oil, or other foreign matter. All embedded items, including bolts, shall be securely held in their final positions by means of wood templates before any concrete is poured.
    - b. Pipes, other than electrical conduit, shall not be embedded in structural concrete. Conduit shall be located within the middle half of the slab and its outside diameter shall not be greater than one-third (1/3) of the slab thickness.
    - c. The Contractor shall properly form all reglets and rebates required in the concrete to receive flashings, frames and other equipment. Dimensions and details shall be obtained from the equipment to be provided for.

### 3.6 Finish of Formed Surfaces

- A. Rough Form Finish: For formed concrete surfaces not exposed-to-view in the finish work, unless otherwise indicated. This is the concrete surface having texture imparted by form facing material used, with tie holes and defective areas repaired and patched and fins and other projections exceeding ½ inch in eight rubbed down or chipped off.
- B. Smooth Form Finish: For formed concrete surfaces exposed-to-view, or that are to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, dampproofing, painting or other similar system. This is as-cast concrete surface obtained with selected form facing material, arranged orderly and symmetrically with a minimum of seams. Repair and patch defective areas with fins or other projections of 1/8 inch or more completely removed and smoothed. For smooth-formed concrete surfaces that have had forms removed as early as permitted, perform the following procedures to further finish the surfaces.
1. Smooth-Rubbed: No later than one day after removing forms, wet and rub surfaces to produce uniform color and texture, using the cement paste created by the rubbing process.
  2. Grout-Cleaned: Wet surfaces and apply a sand-cement grout that will match the color of the concrete. Fill voids, removing excess grout. When grout whitens, rub surface and keep it damp for minimum 36 hours (includes after hours, on weekends, and holidays).
  3. Cork-Floated: Wet surface and apply a stiff sand-cement grout that will match the color of the concrete. Machine-grind grout into voids and cork float with a swirling motion.
- C. Construction Joints: Clean and roughen the surface of all horizontal construction joints by removing the entire surface and exposing clean aggregate solidly embedded in mortar matrix.

- D. Patch tie holes with grout. Surfaces shall be made acceptable to Architect or CM.

### 3.7 Floating:

- A. Bring slabs to proper level, using screeds and strikeoff with a straightedge. Remove excess water and laitance. Compact by rolling with weighted rollers and by tamping with grid tampers. Float with power rotary floating machine. Thoroughly hand-tamp areas not accessible for rolling. Float areas not accessible for power floating by hand, using a wood float. Test surface with a 10' straightedge, and eliminate high and low spots of 1/8" or more. Cumulative tolerances are not allowed.

- 1. Screeds.

Of such type and construction, and so spaced and located as to provide surface tolerances specified. Use continuous screeds to provide surface over which to drag straightedges. Refer to requirements under Concrete Section which apply to this work.

### 3.8 Metal Divider Strips:

- A. Where concrete floors finish against other materials, set combination screed and divider strip, secured in place and protected by shores until concrete on opposite side is installed. Insure that top of screed is at the exact required relationship with the top of the two finished surfaces to finish flush.

### 3.9 Embedded Items:

- A. Set items as exact required elevations, level and in proper relationship to other work. Where items have a drainage function, insure that slabs slope to them properly. Adjust finish work to properly connect and fit to other work.

### 3.10 Defective Finishing:

- A. Finish which is not true to line and plane, which is not thoroughly troweled and properly surfaced as required, which varies in excess of requirements along a 10' straightedge, which scuffs or has a rough top surface (except where required), which does not connect properly to adjoining work, which does not slope to drains, which does not match approved samples, or is not properly cured, will be deemed defective. Remove and replace with proper work and material conforming with contract requirements, and to limits directed by the Architect.

### 3.11 Protection:

- A. Protect all finished work from damage by impact or from building rubbish. Protect work of others from damage by this work. Protect exposed slabs and slabs which receive applied coatings from soiling from foot traffic and subsequent work performed after finishing; use protective paper cover hereinbefore specified. Maintain protection in effective condition as long as the need exists. Control the use of water within the building so that no damage to previously installed work or existing structure and finish occurs.

### 3.12 Markings:

- A. At expansion joints and elsewhere as indicated on the drawings, provide markings with a rounded edging or marking tool to a 1/4" radius.
- B. In textured work, edge and mark with a combination edging and smoothing tool approximately 1-1/2" wide.

- C. Where so indicated, or where required tooled markings may have been inadvertently omitted, provide markings cut into surface of cured concrete with a diamond abrasive saw. Properly coordinate this work with the work of other trades in order to avoid damage to adjacent surfaces. Unless detailed otherwise, cut sawed markings 1/8" wide by 3/4" deep.
- D. Make marking lines straight or curved where required by the drawings, equally spaced and parallel to adjacent lines or walls, edges and other construction, and of uniform depth and cross section, with intersections accurately formed.

### 3.13 Bases:

- A. Provide cement base where indicated. Mix: Two parts fine aggregate to one part Portland cement with a minimum amount of water to make a relatively dry mixture. Shape all work true to detail.

### 3.14 Curing:

- A. All concrete on grade shall be covered within 24 hours after troweling with a strong waterproof, non-staining, 2-ply kraft paper with an asphalt membrane in the center, reinforced with crossed fibers embedded in the asphalt. The paper shall be lapped 3 inches at the joints and sealed at joints and edges in an approved manner. The paper shall remain in place until removal is authorized. Heavy boards shall be provided when necessary to protect the paper and slabs from damage by other construction work.

### 3.15 Schedule of Finishes:

- A. The applicator of process concrete finishes must examine the substrate and the conditions under which work is to be performed and notify the Contractor in writing of unsatisfactory conditions. Do not proceed with the work until satisfactory conditions have been corrected in a manner acceptable to the applicator.
- B. Comply with air pollution and safety regulations of governing authorities.
- C. Protect adjacent materials and finishes from dust, dirt, and other surface or physical damage during finishing operations. Provide all protection as may be required and remove from site at completion of the work.
- D. Float finish all slab surfaces which are to receive trowel finishes and other surface or physical damage during finishing operations. Provide all protection as may be required and remove from site at completion of the work.
- E. Float finish all slab surfaces which are to receive trowel finishes and other finishes as specified and noted on drawings. After screeding and consolidating slabs, begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Hand-float in areas inaccessible to power units. Check and level surface plane to a tolerance not exceeding 1/8" in 10' when tested with a 10' straight edge. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.

### 2. Slab Finishes:

- a. Scratch Finish: Apply scratch finish to slab surfaces that are to receive concrete floor topping or mortar setting beds for tile, Portland cement, and other bonded applied cementitious finish flooring material, and as otherwise indicated.
  - i. After placing slabs, plane surface to FF/SOV:45, FF/MLV:30, and FL/SOV:35, FL/MLV24 tolerances as determined by ASTM E1155. Slope

surfaces uniformly to drains where required. After flattening, roughen surface before final set, with stiff brushes, brooms, or rakes.

- b. Float Finish: Apply float finish to slab surfaces to receive trowel finish and other finishes as specified, and slab surfaces which are to be covered with membrane or other waterproofing, or roofing, and as otherwise indicated.
  - i. After screening, consolidating, and flattening concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats, or by hand-floating if area is small or inaccessible to power units. Check and flatten surface plane to tolerance with minimum FF/SOV:45, FF/MLV:30, and FL/SOV:35, FL/MLV24 tolerances as determined by ASTM E1155. Cut down high spots and fill low spots. Uniformly slopes surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth granular texture.
- c. Trowel Finish: Apply trowel finish to slab surfaces to be exposed-to-view, and slab surfaces to be covered with resilient flooring, paint or other thin film finish coating system, or carpeted.
  - i. After floating, begin first trowel finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface, Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and with a surface plane tolerances of FF/SOV:50, FF/MLV:36, and FL/SOV:50, FL/MLV35 as determined by ASTM #1155. Grind smooth surface defects which would telegraph through applied floor covering system.
  - ii. Carpeted areas shall receive a surface plane tolerance of FF/SOV:25, FF/MLV:17, and FL/SOV:20, FL/MLV15 as determined by ASTM E1155.
- d. Steel Trowel Finish: Provide steel trowel finish to all concrete surfaces as noted on drawings and hereinafter specified.
- e. Non-Slip Trowel Finish: Apply non-slip swirl trowel finish meeting non-slip requirements specified in Section 01 19 00. After concrete surface has been floated, and steel troweled, use a steel finishing trowel, held flat, and apply a fine textured swirl finish.
- f. Sealer (Refer to Section 09900 for additional Sealer Product Information): Apply to scheduled areas in accordance with manufacturer's published instructions.

#### **PART IV - QUALITY CONTROL**

##### 4.1 Smoothness Tolerance:

- A. Interior and exterior cement finish surfaces shall be of such smoothness and evenness that they shall contact the entire length of a 10' straight edge laid in any direction, with an allowable tolerance of 1/8 inch. Any operations necessary to achieve this result shall be performed by the Contractor at no additional cost to the Agency.

##### 4.2 Inspections:

- A. Inspections will be provided as necessary. Call for inspection two (2) working days prior to need.

- B. The Contractor shall call for inspection during specific phases of construction. They shall include:
  - 1. All form work prior to pouring.
  - 2. All footings prior to pouring.
  - 3. Subgrade prior to pouring.
- C. Contractor shall notify the Engineer twenty-four (24) hours prior to pouring any concrete.
- D. Any work covered prior to inspection shall be opened to view by the Contractor at his expense.

4.3 Testing:

- A. Tests required. Compression tests of concrete shall be made as required by the Building Code except that compression tests of any grade of concrete shall be made whenever the quantity of that grade used in the project exceeds 25 cubic yards. At least two identical cylinders of each grade of concrete shall be taken of each 100 cubic yards of concrete or fraction thereof placed in the work. The cylinders shall be tested in a testing laboratory and test reports submitted to the Engineer.
- B. Storage of test cylinders on the site and after delivery to the testing shall be in accordance with A.S.T.M. Designation C31.
- C. All concrete not covered by the Building Code will be tested according to Standard Specifications.
- D. Should the strength by test fail, the mix shall be adjusted so that the resulting concrete will comply with the minimum requirements, and all additional expense resulting from such adjustment shall be borne by the Contractor. Further, should the strength of any grade by test fall below minimum, concrete from the defective pours which is in place may be tested by the core method, and if such tests show the concrete to be defective, the concrete shall be removed and replaced or adequately strengthened as required under the governing Code; and all expenses involved shall be borne by the Contractor.

**END OF SECTION 03 30 00**

**SECTION 04 20 00  
UNIT MASONRY****PART 1 - GENERAL**

- 1.1 Scope:
- A. Furnishing and installing concrete masonry units for the building exterior restrooms as shown on the construction drawings.
  - B. Protective measures for the prevention of damage to completed masonry and other work.
  - C. Removal of and disposal of surplus materials, debris, dirt, stains, etc., caused by the work, leaving the premises and all finished surfaces clean.
  - D. Setting and incorporating steel reinforcing into the masonry.
  - E. Setting and incorporating of steel inserts supplied by other trades.
- 1.2 Related Work Specified Elsewhere:
- A. Footing Concrete: Section 03 30 00 (Building).
  - B. Structural Steel: Section 05 12 00.
  - C. Miscellaneous Metals: Section 05 50 00.
- 1.3 References
- A. ANSI/ASTM A82 – Cold-Drawn Steel Wire for Concrete Reinforcement.
  - B. ASTM A123 – Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - C. ASTM A924 – Steel Sheet, Zinc Coated, (Galvanized) by the Hot-Dip Process.
  - D. ASTM A615 – Deformed and Plain Billet Steel Bars for Concrete Reinforcement.
  - E. ASTM C90 – Hollow Load Bearing Concrete Masonry Units.
  - F. ASTM C145 – Solid Load Bearing Concrete Masonry Units.
  - G. IMIAC – International Masonry Industry All-Weather Council: Recommended Practices and Guide Specification for Cold Weather Masonry Construction.
- 1.4 Submittals
- A. Submit shop drawings under provisions of Section 01 34 00.
  - B. Submit shop drawings indicating bars sizes, spacings, locations, quantities of reinforcement, bending and cutting schedules, supporting and spacing devices.
  - C. Submit product data under provisions of Section 01 34 00.
  - D. Submit product data for masonry units and fabricated wire reinforcement.
  - E. Submit manufacturer's certificate under provisions of Section 01 41 00 that products meet or exceed specified requirements.

- F. Submit manufacturer's installation instructions under provisions of Section 01 34 00.
- G. Submit shop drawings showing proposed expansion joint locations.

#### 1.5 Qualifications

- A. Installer: Company specializing in performing the work of this Section with minimum five years documented experience.
- B. Installing contractor shall be current and active member of the local chapter of The Masonry Institute and provide written proof of such membership.

#### 1.6 Environmental Requirements

- A. Masonry construction shall be in compliance with "Recommended Practices and Specifications for Cold weather Masonry Construction," latest edition, by the International Masonry Industry all Weather Council and as specified herein.
- B. Lay no concrete masonry unit when air temperature is below 40 degrees F unless materials are protected from weather and laid up in shelter. In such instances, maintain materials and surrounding air temperature to minimum 50 degrees F prior to, during and 48 hours after completion of masonry work.
- C. In temperatures exceeding 100 degrees F, do not lay out mortar beds ahead of placing units. Use a very light fog spray, not sufficient to penetrate masonry, on vertical surface of masonry to aid in mortar curing during first 24 hours after placing units.

#### 1.7 Quality Assurance

- A. Concrete masonry unit manufacturer shall certify in writing that masonry units furnished meet or exceed requirements of these specifications.
- B. All masonry work shall be in accordance with The Masonry Society publication TMS 602 – "Specification for Masonry Structures".
- C. All masonry work shall be in accordance with all of the requirements of Section 04 05 00 – Materials & Methods For Design of Dry Single-Wythe Concrete Masonry Wall.

#### 1.8 Storage of Materials

- A. Deliver materials to job site in undamaged condition.
- B. Store concrete masonry units on raised platforms. Cover and protect units from inclement weather.
- C. Store mortar and grout materials in manner to prevent intrusion of moisture and contaminants.

### **PART 2 - PRODUCTS**

#### 2.1 Concrete Masonry Units:

- A. Acceptable Product Manufacturers:
  - 1. Angelus Block Co., Inc.  
Sun Valley Plant  
11374 Tuxford St., Sun Valley, Ca. 91352/ (818)767-8576
  - 2. Orco Block Co.,  
Orange/Los Angeles  
11100 Beach Blvd., Stanton, Ca. 90680/ (714) 527-2239

3. Interior Walls: 4x8x16 Precision CMU, Natural Gray.  
Refer to the drawings for location.

B. Product Requirements:

1. Reinforcing Bars: ASTM A615, grade 60, unless otherwise shown on the drawings, using deformed bars for number 3 and larger.
2. Bending: ACI 318.
3. Wire Reinforcement: ASTM A82.

2.2 Reinforcement and Anchorage:

- A. Hollow Load Bearing Block Units: ASTM C90, Grade N, Type 1 – Moisture Controlled; medium weight. If required by Drawings or local code jurisdiction, provide precision, split-faced, scored, sandblasted (smooth), integrally colored, autoclaved, and/or UL rated units.
1. Where block walls are to be exposed, and tops of walls are not to be covered or concealed by other materials, provide caps and other shapes to finish block wall. Caps and other shapes shall be those acceptable to Architect or Owner upon their review of submittal.

2.3 Mortar Materials

- A. Provide mortar of the type and color specified that conforms to ASTM C 270.

1. All mortar shall have Dry Block integral water repellent.

- B. When required, provide mortar of the type and color specified that conforms to ASTM C 270 except use mortar cement that conforms to ASTM C 1329.

1. Under proportion specifications, use mortar cement instead of masonry cement.
2. Under property specifications, use mortar cement instead of Portland cement lime.

- C. Mortar Mix:

1. Mortar for all walls shall be Type S only.
2. All such mortar shall contain the recommended amount of DryBlock mortar admix for water-repellency and to assure proper bond strength.

- D. Mortar Mixing:

1. Make workability and consistency of mortar such that it can be worked with a trowel. Water for tempering shall be available at all times.
2. Do not permit mortar to stand one (1) hour without mixing.
3. Discard any mortar which has begun to set or is not used within 2-1/2 hours after initial mixing. Retemper mortar which has stiffened to restore its workability.
4. Mix colored mortar to produce uniform color throughout.

- E. Mortar Installation:

1. All exterior block walls shall be laid with full mortar coverage on horizontal and vertical face shells, and mortar shall contain the DryBlock System integral mortar admix as per label instructions.
2. All joints shall be well tooled.
3. No raked joints shall be permitted.
4. Attention shall be given to NCMA TEK 53 for joint and crack control and NCMA TEK 13 and 13A and TEK 126 for proper flashing.

5. Weep holes shall be provided above all lintels and vertical obstructions per industry standards.
6. Weep holes shall be constructed with the use of a sash cord above all horizontal grout pours in the wall (including bond beams and lintels and vertical obstructions). There shall be weep holes spaced at a maximum of 32 inches o.c. between vertical grout pours. The sash cord shall be laid next to the mortar bed of the outside face shall and be exposed to the open cores of the block. For grouted cells, run sash cord or braided plastic rope through cavities before grouting, all the way to below grade drains. If needed, run cord in back of solid lintels.

#### 2.4 Accessories

##### A. Control Joint Fillers:

1. Contraction Joint Material: ASTM D 2000, M1AA-805 Rubber Shear keys with a minimum durometer hardness of 80.
2. Prefabricated rubber-like material of 80 durometer hardness in conformance with ASTM D 2240. Use key of shape indicated on Drawings and of dimensions that completely fill and fit neatly, without forcing, in masonry unit jamb sash grooves and provide control joint width of 3/8" with a tolerance of 1/16". Use shear section of 5/8" minimum thickness.
3. Provide Fire Resistive Joint sealant at fire rated CMU walls; joints to be constructed in accordance with I.C.B.O. Report No. 3198 and Tremco's published instructions to obtain fire rating, for fire-rated walls noted on the Drawings.

##### B. Asphalt Emulsion: As follows:

1. Metal surfaces: ASTM D 1187, Type II
2. Porous Surfaces: ASTM D 1227, Type III, Class I

##### C. Control Joints

1. Provide Control Joint Products at Control joints where shown on the Drawings, as specifically designed for the wall width.
2. Rapid Rubber Control Joint or Rapid Poly-Joint D/A 2006/2007, by Dur-O-Wal.
3. Hohmann & Barnard #QS rubber control joint or #VS PVC control joint.

### **PART 3 - EXECUTION**

#### 3.1 Examination

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. Verify items provided by other Sections of work are properly sized and located.
- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.
- D. Beginning of installation means installer accepts existing conditions.

#### 3.2 Preparation

- A. Direct and coordinate placement of metal anchors supplied to other Sections.
- B. Provide temporary bracing during installation of masonry work.

#### 3.3 Coursing

- A. Establish lines, levels, and coursing indicated. Protect from displacement.

- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Form concave mortar joints, except where installation is to be permanently and completely covered with subsequent construction materials such as veneer plaster and waterproofing, install with flush joints
- D. Unless noted otherwise, use “running bond” method.

### 3.4 Placing and Bonding

- A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- B. Lay hollow masonry units with face shell bedding on head and bed joints.
- C. Buttering corners of joints or excessive furrowing of mortar joints are not permitted except where curvilinear design requires such be done to yield proper curve as shown on Drawings.
- D. Remove excess mortar as Work progresses.
- E. Interlock intersections and external corners.
- F. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- G. Perform jobsite cutting of masonry units with proper tools to provide straight, clean, un-chipped edges. Prevent broken masonry unit corners or edges.
- H. Isolate masonry from other construction with compressible joint filler.
- I. As Work progresses and prior to completion of any portion of the Work, cover the top of Work with appropriate waterproof materials to prevent infiltration of liquid water or moisture vapor.

### 3.5 Reinforcement and Anchorages – Reinforced Unit Masonry

- A. Install horizontal joint reinforcement. See drawings.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below opening. See Drawings.
- C. Place joint reinforcement continuous in first and second joint below top of walls.
- D. Lap joint reinforcement ends. Refer to Drawings.
- E. Support and secure reinforcing bars from displacement. Maintain position within ½ inch of dimensioned position.
- F. Clean reinforcement before installation. Ensure that it is clean from rust, mill scale, earth, liquid or frozen water, and other materials which might reduce bond to mortar or grout. Do not use reinforcement bars with kinks or bends not shown on Drawings or final shop drawings, or bars with reduced cross-section due to excessive rusting or other causes.
- G. Position reinforcement accurately at the spacing indicated or required. Support and secure vertical bars against displacement. Horizontal reinforcement may be placed as the masonry work progresses. Where vertical bars are shown in close proximity, provide a clear distance between bars of not less than the nominal bar diameter or 1 inch, whichever is greater.

H. Splice reinforcement bars where shown; do not splice at other points unless accepted in writing by the Architect. Provide lapped splices, unless otherwise indicated. In splicing vertical bars or attaching to dowels, lap ends, place in contact and wire tie.

1. Provide not less than minimum lap shown, or if not shown, as required by local governing code.

### 3.6 Prosecution of the Work

- A. Lay masonry units with core cells vertically aligned clear of mortar and unobstructed.
- B. Reinforce masonry unit cores and cavities with reinforcement bars and grout as indicated.
- C. Retain vertical reinforcement in position at top and bottom of cells and at intervals not exceeding 192 bar diameters.
- D. Wet masonry unit surfaces in contact with grout just prior to grout placement.
- E. Grout spaces less than 2 inches in width with fine grout using low lift grouting techniques. Grout spaces 2 inches or greater in width with course grout using high or low lift grouting techniques.
- F. When grouting is stopped for more than one hour, terminate grout 1-1/2 inch below top of upper masonry unit to form a positive key for subsequent grout consolidation.
- G. Low Lift Grouting: Place first lift of grout to a height of 16 inches and rod for grout consolidation. Place subsequent lifts in 8 inch increments and rod for grout consolidation.

### 3.7 Joints

- A. Do not continue horizontal joint reinforcement through control and expansion joints.
- B. Form control joint with a sheet building paper bond breaker, fitted to one side of the hollow contour end of the block unit. Fill the resultant elliptical core with grout fill. Rake joint at exposed unit faces for placement of backer rod and sealant.
- C. Size control joint in accordance with Section 07 92 00 for sealant performance.
- D. Do not exceed 24 feet between expansion and control joints. Exact location shall be shown on the shop drawings, reviewed and approved by the Architect prior to installation/application.

### 3.8 Built-In work

- A. As work progresses, build in materials and products shown on Drawings, and other items furnished by other Sections.
- B. Build in items plumb and level.
- C. Do not build in organic materials subject to deterioration.

### 3.9 Tolerances

- A. Maximum Variation From Alignment of Structural Elements: ¼ inch.
- B. Maximum Variation From Unit to Adjacent Unit: 1/32 inch.
- C. Maximum Variation From Place of Wall: ¼ inch in 10 feet and ½ inch in 20 feet or more.
- D. Maximum Variation From Plumb: ¼ inch per story non-cumulative; ½ inch in two stories or more.

- E. Maximum Variation From Level Coursing: 1/8 inch in 3 feet and ¼ inch in 10 feet; ½ inch in 30 feet.
- F. Maximum Variation of Joint Thickness: 1/8 inch in 3 feet.

### 3.10 Cutting and Fitting

- A. Cut and fit infills, drains, pipes, weeps, conduit, sleeves and grounds. Coordinate with other Sections of work to provide correct size, shape, and location.
- B. Obtain Architect approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

### 3.11 Protection of Finished work

- A. Protect finish installation.
- B. Without damaging completed work, provide protective boards at exposed external corners which may be damaged by construction activities.

### 3.12 Defective Workmanship and Materials:

All work which does not conform to the requirements of the specifications shall be deemed defective and shall be removed from the site, or shall be strengthened and/or replaced as directed by the owner.

### 3.13 Cleaning:

At the completion of masonry work, thoroughly clean all masonry walls and leave interior and exterior surfaces of walls free from mortar and other stains. Remove all scaffolding and equipment used in the work. Clean up all debris, refuse and surplus materials and remove them from the premises.

- 3.14. Refer to the structural notes on sheet S-1 for testing requirements and additional information.

**END OF SECTION 04 20 00**

**SECTION 05 12 00  
STRUCTURAL STEEL****PART 1 - GENERAL**

## 1.1 Scope:

- A. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified, and as necessary to complete the Contract, including but not limited to these major items:
  - 1. All structural steel framing, and support members including plates and channels;
  - 2. Furnishing of anchor bolts, base plates, expansion plates, shear stud connectors.

## 1.2 Related Work Specified Elsewhere:

Setting of anchor bolts. Section 03 30 00 (Building)  
Miscellaneous Metal Work; Section 05 50 00

## 1.3 References

- A. ASTM A53 – Hot-Dipped, Zinc-coated Welded and Seamless Steel Pipe.
- B. ASTM A108 – Steel Bars, Carbon, Cold-Finished, Standard Quality.
- C. ASTM A123 – Zinc (Hot Dipped Galvanized) Coatings on Iron and Steel Products.
- D. ASTM A153 – Zinc Coating (Hot Dip) on Iron and Steel Hardware.
- E. ASTM A307 – Carbon Steel Externally Threaded Standard Fasteners.
- F. ASTM A325 – High Strength Bolts for Structural Steel Joints.
- G. ASTM A500 – Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Round and Shapes.
- H. ASTM A501 – Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
- I. ASTM A992 – Standard Specification for Steel for Structural Shapes for Use in Building Framing.
- J. AWS A2.0 – Standard Welding Symbols.
- K. AWS D1.1 – Structural Welding Code.
- L. AISC – Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
- M. AISC – Specification for Architectural Exposed Structural Steel.
- N. SSPC – Steel Structures Painting Council.

## 1.4 Submittals

- A. Submit under provisions of Section 01 34 00.
- B. Shop Drawings:

1. Indicate profiles, sizes, spacing, and locations of structural members, openings, attachments and fasteners.
  2. Connections not detailed.
  3. Cambers loads.
  4. Indicate welded connections with AWS A2.0 welding symbols. Indicate net weld lengths.
  5. Shop drawings shall be prepared by and submitted with the wet-signature of a professional structural engineer currently licensed in the State of the project work.
  6. Provide steel shop drawings to Architect and Structural Engineer of record for review prior to fabrication. Allow at least 2 week for shop drawing review by the architect and engineer of record.
- C. Manufacturer's Mill Certificate: Submit under provisions of Section 01 45 00 certifying that products meet or exceed specified requirements.
- D. Mill Test Reports: Submit under provisions of Section 01 45 00 Manufacturer's Certificates, indicating structural strength, destructive and non-destructive test analysis.
- E. Welder' Certificates: Submit under provisions of Section 01 45 00 Manufacturer's Certificates, certifying welders employed on the Work, verifying AWS qualifications within the previous 12 months.
- 1.5 Quality Assurance
- A. Fabricate structural steel members in accordance with AISC-Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
  - B. Maintain one current copy of document on site at all times.
- 1.6 Qualifications
- A. Fabricator: Company specializing in performing the work of this Section with minimum five years documented experience.
  - B. Erector: Company specializing in performing the work of this Section with minimum five years documented experience.
  - C. Design connections not detailed on the Drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed at the place where the Project is located.
- 1.7 Field Measurements
- A. Verify in writing that field measurements are as shown on shop drawings.
- 1.8 Testing and Inspections
- A. Independent Laboratory shall check structural steel erection for compliance with AISC Specifications including Section 8 or the "Structural Joints Using ASTM A325 or A490 Bolts", latest Edition. Coordinate erection and testing to facilitate construction.
  - B. Inspection will be required of a random selection of 10 percent of all high strength shop and field bolting. To be acceptable, 95 percent of all bolts inspected shall comply with Section 8 of the AISC. If the bolting fails to meet these requirements, bolts shall be reworked and additional testing of 50 percent of all bolts shall be performed until the above requirements are met. Additional testing shall not be at Owner expense.

- C. Testing laboratory shall perform visual inspection on 10 percent of all fabricated pieces prior to shipping and on all field work (as applicable) at the site as follows:

1. Beam/Column Moment Connection Welds:.....100 Percent
2. Beam to Column/Ended Plate welds and Brace welds....100 Percent
3. Joist Girder to Column/Beam Welds.....50 Percent
4. Joist to Beam/Embedded Plate Welds:.....10 Percent
5. Edge Angle to Beam/Joist Welds.....10 Percent
6. Miscellaneous Framing Welds:.....10 Percent

To be accepted, 85 percent of all visual welds shall be inspected in accordance with AWS D1.1. If the welds fail to meet these requirements, the welds shall be reworked and additional visual inspections of 100 percent of all welds shall be made until above requirements are met. Additional testing and inspections shall not be at Owner expense.

- D. Perform ultrasonic testing in accordance with AWS D1/1 on 100 percent of all partial and full penetration welds (if applicable).

## **PART 2 - MATERIAL**

- 2.1 Material: New tested stock of domestic manufacture complying with standard specifications hereinafter referenced. If foreign material is used, it shall meet or exceed the requirements of all authorities having jurisdiction. Refer to the structural drawings for additional information.
- 2.2 Structural Steel for Plates, Angles, & Channels: Conform to ASTM A36 unless noted otherwise on Drawings.
- 2.3 Structural Wide Flange Shapes: Conform to ASTM A572 or A992.
- 2.4 Machine Bolts: Conform to ASTM A307, Grade A and ANSI B18.2, square or hexagonal heads at Contractor's option.
- 2.5 Arc-Welding Electrodes: Conform to requirements of AWS; as required for the conditions of intended use. Use E70XX electrodes.
- 2.6 Welding Materials: AWS D1.1; type required for materials being welded.
- 2.7 Steel Tubes: Conform to ASTM A-500, Grade B.
- 2.8 Structural Pipe: Conform to ASTM A53, Grade B.
- 2.9 Anchor Bolt/Rods: ASTM F1554.
- 2.10 Bolts, Nuts, and Washers: ASTM A325 galvanized to ASTM A153 for galvanized members which occur in exterior exposed conditions, and both exposed and concealed conditions at interior locations, specifically in wet and potentially wet areas or areas of elevated moisture conditions and the connecting hallways thereto and from. Confirm locations by using RFI Form enclosed in Project Manual if there are any questions about locations requiring galvanizing.
- 2.11 Metalizing:
  - A. All steel items and fabrications shall be metalized with aluminum-zinc 85/15, at a rate of 0.010 inch coating where shown and where they may be specified to be metalized or galvanized. Typically metalize steel items and fabrications which are as follows:
    1. Exterior steel building components and fabricated items which are located on the exterior ambient side of the building and in areas subject to elevated water, moisture, or humidity conditions (defined as greater than 70 percent RH on a sustained basis), as follows:

- a. Rolled, pressed and forged steel shapes, plates, bars and strip 1/8 inch thick and heavier.
  - b. Assembled steel products. Metalize after fabrication with work assembled in as large sections as can be handled.
  - c. Iron and steel hardware.
  - d. All ferrous metal work after fabrication.
2. All building components exposed to exterior ambient conditions.
  3. All exposed interior building components located in areas subject to elevated water, moisture, or humidity conditions (greater than 70 percent RH).
  4. All exposed interior building components located in areas which have concentrated chlorinated environments.

#### 2.12 Paint for Steel Items not Metalized:

- A. Shop Primer for Ferrous Metal: Manufacturer's or Fabricator's standard fast-curing, lead-free, "universal" primer; selected for good resistance to normal atmospheric corrosion, for compatibility with finish paint systems indicated and for capability to provide a sound foundation for field-applied topcoats despite prolonged exposure; complying with performance requirements of FS Tr-P645.
- B. Coordinate selection of metal primer with finish paint requirements specified in Section 09 91 13 & 09 91 23.
- C. Galvanizing Repair Paint: Organic zinc rich paint complying with DOD-P-ZI035 or SPCC Paint-20, with dry film containing not less than 94% zinc dust by weight.
- D. Bituminous Paint: Cold-applied asphalt mastic complying with SPCC-Paint 12 except containing no asbestos fibers.
- E. Provide a paint finish per specification section 09 91 13 & 09 91 23 on all exposed steel components and fabrications. Color per plans or match adjacent material color.

#### 2.13 Fabrication

- A. Continuously seal joined members by continuous welds. Grind exposed welds smooth.
- B. Fabricate and assemble structural assemblies in shop to greatest extent possible. Fabricate items of structural steel in accordance with AISC Specifications and as indicated on final shop drawings. Provide camber in structural members where indicated.
  1. Properly mark and match-mark materials for field assembly. Fabricate for delivery sequence which will expedite erection and minimize field handling of materials.
  2. Where finishing is required, complete assembly, including welding of units, before start of finishing operations. Provide finish surfaces of units, before start of finishing operations. Provide finish surfaces of members exposed in final structure free from markings, burrs, and other defects and imperfections.
- C. Connections: Weld or bolt shop connections, as indicated.
- D. Bolt field connections, except where welded or other type connections are indicated.
- E. Provide high-strength threaded fasteners for all bolted connections, except where unfinished bolts are indicated.
- F. Provide unfinished threaded fasteners for only bolted connections of secondary framing members to primary members (including pulins, girts, and other framing members taking only nominal stresses) for temporary bracing to facilitate erection.
- G. High-Strength Bolted Connections: Install high-strength threaded fasteners in accordance with AISC "Specifications for Structural Joints Using ASTM A325M-93 or A490M-93 Bolts" (RCRBSJ).

- H. Welded Construction: Comply with AWS Code for procedures, appearance and quality of welds, and methods used in correcting welding work.
- I. Steel Wall Framing: Select members which are true and straight for fabrication of steel wall framing. Straighten as required to provide uniform, square, and true members in completed wall framing.
- J. Build up welded door frames attached to structural steel framing. Weld exposed joints continuously and grind smooth. Plug weld steel bar stops to frames, except where shown removable. Secure removable stops to frames with countersunk, cross-recessed head machine screws, uniformly spaced not more than 10 inches on centers, unless otherwise indicated.
- K. Holes for Other Work: Provide holes required for securing other Work to structural steel framing, and for passage of other work through steel framing members, as shown on final shop drawings.
- L. Provide threaded nuts welded to framing, and other specialty items as indicated to receive other work.
- M. Cut, drill, or punch holes perpendicular to metal surfaces. DO not flame cut holes or enlarge holes by burning. Bear holes in bearing plates.

#### 2.14 Finish:

- A. Prepare structural component surfaces in accordance with SSPC SP-2.
- B. Shop prime structural steel members. Do not prime surfaces that will be field welded, in contact with concrete or high strength bolted.

#### 2.15 Test:

- A. Identified Material: If material is properly identified, mill report will be accepted.
- B. Unidentified Material: One tension and bend test for every 5 tons or fractional part thereof. Copies of all test reports shall be submitted to the Architect & structural engineer a reasonable time before starting fabrication.

#### 2.16 Tests of Welding and Bolting:

- A. Testing agency shall inspect all shop and field welding and furnish qualified Deputy Inspectors approved by the Architect/structural engineer and registered with the Building Department under which the project is constructed. Testing and inspection shall comply with all regulations of the Building Department having jurisdiction. Testing agency shall certify in writing upon completion of the work that the welding has been performed by fully qualified welders in accordance with drawing and specification requirements and with all applicable requirements of regulatory agencies having jurisdiction.

#### 2.17 Refer to the plans for additional notes & typical details.

### **PART 3 - EXECUTION**

- 3.1 Painting - Ferrous Metal: Properly clean and prepare for painting in compliance with SSPC-SP3 except where more aggressive cleaning is required use SSPC-SP6/NACE 3. Apply one shop coat of material of the type specified. Thoroughly and completely cover all exposed surfaces as well as surfaces concealed after assembly. Apply primer by brush or spray gun, as best adapted to the paint material and surface conditions. Allow primer to become dry and hard before handling. Apply second coat primer to 1 mil minimum dry coat thickness and touch up after installation and leave in proper conditions to receive finish coats.

- 3.2 Field Measurements: Before starting work, obtain field measurements pertaining to or affecting this work, and verify the locations and exact positions of concrete and anchor bolts occurring therein.
- 3.3 Workmanship:
- A. Workmanship: Equal to the best standard practices in modern structural shops and conforming to applicable provisions contained in the AISC Code of Standard Practice, except where these requirements govern.
  - B. Injury and Excessive Stress. Transport, handle and erect structural steel in shop and field to preclude injury. In no case shall it be subject to excessive stress in any part or connection.
- 3.4 Fabrication and Assembly:
- A. Before being fabricated or worked, material shall be thoroughly wire brushed, cleaned of loose mill scale and rust, and straightened by methods that will not injure it. After punching or working the component parts of a member, remove twists or bends before the parts are assembled. Finished members shall be free from twists, bends, and open joints when erected.
  - B. Field Joining. Members and sections shall be of sizes, weights, shapes, and arrangements indicated, closely fitted, and finished true to line and in precise position necessary to allow accurate erection and proper joining of parts in the field. Drifting to enlarge unfair holes will not be allowed. Rolled sections, except for minor details, shall not be heated without prior approval.
  - C. Contact. Component parts of built-up members shall be well pinned and rigidly maintained in close contact using clamps or temporary bolting during welding. Compression joints depending upon contact bearing shall have bearing surfaces accurately milled perpendicular to their axes, or as detailed.
- 3.5 Gas Cutting: Use of a cutting torch is allowed where the metal being cut is not carrying stress during the operation, and provided stresses will not be transmitted through a flame-cut surface. Make gas cuts smooth and regular in contour. To determine the effective width of members so cut, deduct 1/8 inch from the width of the gas cut edges. Make the radius or re-entrant gas cut fillets as large as practicable, but in no case less than one inch. Grind smooth and paint.
- 3.6 Punching, Drilling and Reaming: Material may be punched 1/16 inch larger than the nominal diameter of the bolt, wherever the thickness of the metal is equal to or less than the diameter of the bolt plus 1/8 inch. Where the metal is thicker than the diameter of the bolt plus 1/8 inch, holes shall be drilled or sub-punched or reamed. The diameter for sub-punched holes and the drill for sub-drilled holes shall be 1/16 inch smaller than the nominal diameter of the bolt to be accommodated. Precisely locate finished holes to insure passage of bolts through assembled materials without drifting. Enlarge holes, where necessary, to receive bolts by reaming. Poor matching of holes is sufficient cause for rejection.
- 3.7 Welding: Welding and welded joints. Detail and execute in accordance with the requirements of the American Welding Society standards and as modified by AISC Specifications or as detailed and noted on the drawings. In the event of conflict, the notes and details on the drawings shall take precedence. Structural welding shall be done by Innershield or Submerged arc.
- 3.8 Erection:
- A. Erect structural steel by professional riggers, carefully planned and laid out so that a minimum of cutting will be necessary. Erect the work plumb, square and true to line and level, and in precise positions as indicated. Provide temporary bracing and guys wherever necessary to provide for loads and stresses to which the structure may be subjected, including those due to erection equipment and its operation, and leave in place as long as necessary to safeguard all parts of the work.

1. Temporary Connections. As erection progresses, the work shall be securely bolted up as necessary to maintain the steel in proper position while field bolting and welding is being done, and as necessary to take care of dead loads, wind and erection stresses. No field welding or high strength bolting shall be done until the work has been properly aligned, plumbed and leveled.
  2. Sequence. Carry out the erection of structural steel in proper sequence with the work of other trades. Frame, bed, and anchor to the concrete and related work in strict accordance with the detailed drawings and approved setting diagrams.
  3. Erection Tolerance. In accordance with the latest AISC Code of Standard Practice of Steel Buildings and Bridges.
- 3.9 Anchor Bolts: Furnish to the site when and as required to maintain job progress, for installation under Concrete or Masonry Section, all anchor bolts to be embedded in the concrete or masonry for the securing of structural steel in proper position. Provide the necessary drawings and templates for the setting of such anchor bolts in the concrete forms. Be jointly responsible with others for the proper location and installation, and make good deficiencies and errors. Setting of anchor bolts in hardened concrete, necessitated through error or oversight, shall be made under direction of the Architect.
- 3.10 Grouting of Plates: Be responsible for maintaining bearing plates in proper location and in proper level while they are being grouted and be jointly responsible for a perfect job. Refer to Concrete Section for materials, mix and procedures for grouting of plates.
- 3.11 Cutting Structural Steel: Provide cuts in structural steel for mechanical, plumbing and electrical pipes as approved by Architect/structural engineer. Locate as shown on Mechanical, Plumbing and Electrical drawings. Grind smooth and paint.

**END OF SECTION 05 12 00**

**SECTION 05 50 00  
METAL FABRICATION**

**PART 1 - GENERAL**

1.1 Scope:

- A. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified, and as necessary to complete the Contract, including, but not limited to, the following items.
- B. The extent of miscellaneous metal fabrications is shown on Drawings and includes items fabricated from iron and steel shapes, sheet goods, plates, bars, strips, tubes, pipes, and castings.
- C. Items included, but are not limited to:
  - 1. Columns and miscellaneous structural members.
  - 2. Angles and plates.
  - 3. Miscellaneous supports (concealed or exposed) for other finishes, equipment or construction.
  - 4. Shapes, sleeves, anchors, connectors, plates, backing plates, supports and fastenings required, but which are not specified in other sections.
  - 4. Woven wire panel.
  - 6. Prime coating ungalvanized steel items.
  - 7. Painting all exposed structural steel & miscellaneous metals per Section 09 91 13 (Exterior) and 09 91 23 (Interior).
  - 8. Welding.
- D. Inserts and Anchorages: Furnish inserts and anchoring devices which must be set in concrete or built into other construction for installation of miscellaneous metal work. Provide setting drawings, templates, instructions and directions for installation of anchorage devices. Coordinate delivery with other work to avoid delay.

1.2 Related Work Specified Elsewhere:

Setting of items to be embedded in concrete. Sections 03 30 00 (Building)  
Finish Hardware, Section 08 71 00.  
Finish Painting, Section 09 91 13 & 09 91 23.  
Prefabricated metal items - Pertinent sections.

1.3 General Requirements:

- A. Field Conditions. Verify drawing dimensions with actual field conditions. Inspect related work and adjacent surfaces. Report to the owner and architect all conditions which prevent proper execution of this work.
- B. Shop Drawings. Submit six (6) sets in accordance with Sections 01 34 00 and 05 12 00, showing in complete detail all information required for fabrication, finishing and installation of this work.
- C. Codes. Materials and work shall conform to the governing Building Code. In case of conflict between these specifications and the Building Code, the more stringent shall govern.
- D. General. Examine all drawings and specifications and include all miscellaneous metal which is specified in other sections. Provide all connections, anchors, bolts, and other fastenings as required. Do all cutting, punching, drilling and tapping required for proper assembly of the work.
- E. Delivery. Ensure that items to be set in concrete or masonry are delivered at the proper time.

- F. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

1.4 Work Furnished but Installed by Others:

Furnish connections and connectors necessary for the completion of the work of other sections of these specifications.

1.5 Quality Assurance:

- A. Material quality standards and testing procedures shall be in accordance with the American Society for Testing Materials, hereinafter referred to as ASTM. All ASTM standards and testing procedures shall be the latest requirements.
- B. All fabrication and erection of steel work shall be in conformance with the requirements of the American Institute of Steel Construction (AISC).
- C. All welding and built-up welded members shall conform to the requirements of the American Welding Society (AWS).
- D. Tests and Inspections: See Section 01 41 00 and 01 42 00.

- 1. Tests and Inspections shall be made by a testing laboratory approved by the Structural Engineer.
- 2. The cost of sampling and testing shall be borne by the owner.
- 3. One tension and one bend test shall be made for each size and shape of steel designated in the Test and Inspection Request Form.
- 4. Prepare and distribute test reports as required by Section 01 41 00.
- 5. Additional tests of material shall be made when, and as directed by the Structural Engineer. Cost of these tests shall be borne by the owner.
- 6. Inspection of welding designated on the Test and Inspection Request Form shall be made by an Inspector approved by the Structural Engineer who shall certify that the welding is in compliance with these drawings and specifications. The Contractor shall provide access to the work for inspection purposes, and shall notify the Inspector when work is to be performed. The cost of this inspection shall be borne by owner.

1.6 Submittals:

Submit six sets of shop drawings of work specified herein and as shown on drawings & details. Fabrication and/or erection prior to receipt of Structural Engineer's approval is at Contractor's sole risk. All shop and fabrication drawings shall be referenced to the applicable sections or details on the Contract Drawings. Shop drawings not so referenced will be rejected.

1.7 Warranty

- A. All fabrications and assemblies under this section of specifications shall be warranted for two (2) years from date of Owner acceptance from defects in materials, products and workmanship – shop and field labor.
  - 1. At the option of the Owner, repair or remove and replace all such defective materials and products at no additional cost to Owner during the warranty period, and at the convenience of the Owner. There shall be no prorations.

1.8 Refer to all construction drawings, including notes on the architectural plans and details.

**PART 2 - MATERIALS**

## 2.1 Materials and Components

- A. Metal Surfaces, General: For fabrication of miscellaneous metal work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness.
  - 1. Wherever metal is to be corrosion-resistant and is to be in contact with treated wood, metal shall be stainless steel or steel shall be G185 finish in conformity with E2-94 of the American Wood Preserver' Association. This standard shall take precedence to other finishes as specified hereafter.
- B. Malleable Iron Casting; Conform to ASTM A47.
- C. Welding Rods: Conform to requirements of AWS for intended use & ASTM E70XX.
- D. Steel Plates, Shapes and Bars: ASTM A 36 and A992.
- E. Steel Tubing: Hot-formed, seamless, ASTM A 501 or cold-formed, ASTM A 500.
- F. Structural Steel Sheet: Hot-rolled, ASTM A 570; or cold-rolled ASTM A611, Class 1; of grade required for design loading.
- G. Galvanized Structural Steel Sheet: ASTM A 446, of grade required for design loading.
- H. Steel Pipe: ASTM A 53; Type S; Grade B; black finish unless galvanizing is required; standard weight (Schedule 40), unless otherwise shown or specified.
- I. Brackets, Flanges and Anchors: Cast or formed metal of the same type material and finish as supported rails, unless otherwise indicated.
- J. Concrete Inserts: Threaded or wedge type, galvanized ferrous castings, either malleable iron ASTM A 47 or cast steel ASTM A 27. Provide bolts, washers and shims as required, hot-dip galvanized, ASTM A153.
- K. Fasteners: provide zinc-coated fasteners for exterior use or where built into exterior walls. Select fasteners for the type, grade and class required.
  - 1. Bolts and Nuts: Regular hexagon head type, ASTM A 325.
  - 2. Lag Bolts: Square head type, FS FF-B-561.
  - 3. Machine Screws: Cadmium plated steel, FS FOF-S-92.
  - 4. Wood Screws: Flat head carbon steel, FS FF-S-1 I .
  - 5. Plain Washers: Round, carbon steel, FS FF-W-92.
  - 6. Lock Washers: Helical spring type carbon steel, FS FF-W-84.
  - 7. Masonry Anchorage Devices: Expansion shields, FS FF-S-325.
- L. Non-Metallic, Non-Shrink Grout: CE-CRD-C621, factory pre-mixed grout. Provide one of the following:
  - 1. Masterflow 713; Chemrex, Inc.
  - 2. Five Star Grout; U.S. Group Corp.
  - 3. Upeon; Upeo Chem. Div., USM Corp.
- M. Proprietary Support Framing System for Other Finishes, Equipment or Construction System: Provide Unistrut Metal Framing products.
  - 1. For exposed use in wet, potentially wet, or elevated moisture conditions: Provide Type 304 Stainless Steel.

2. For permanently concealed use in wet, potentially wet, or elevated moisture conditions: Provide Type 316 Stainless Steel.
3. For all other conditions, concealed or exposed: Provide hot-dipped galvanized.

N. Paint:

1. Shop Primer for Ferrous Metal: Manufacturer's or Fabricator's standard, fast-curing, lead-free, "universal" primer; selected for good resistance to normal atmospheric corrosion, for compatibility with finish paint systems indicated and for capability to provide a sound foundation for field-applied topcoats despite prolonged exposure; complying with performance requirements of FS Tr-P-645.
2. Coordinate selection of metal primer with finish paint requirements specified in Division 9.
3. Galvanizing Repair Paint: Organic zinc rich paint complying with DOD-P-ZI035 or SPCC Paint-20, with dry film containing not less than 94% zinc dust by weight.
4. Bituminous Paint: Cold-applied asphalt mastic complying with SPCC-Paint 12 except containing no asbestos fibers.
5. Provide a paint finish on all metal per specification section 09 91 13 and 09 91 23, color as noted on plans or match adjacent material color.

2.2 Fabrication

- A. Use materials of size and thickness shown or, if not shown, of required size and thickness to produce strength and durability in finished product. Work to dimensions shown or accepted on shop drawings, using proven details of fabrication and support. Use type of materials shown or specified for various components of work.
- B. Use hot-rolled steel bars for work fabricated from bar stock, unless shown or specified to be fabricated for cold-finished or cold-rolled stock.
- C. Supply as part of this Section, miscellaneous small parts of material thinner than 10 gage, or items specifically called out in this section, when such supply is a normal and accepted part of the work.
- D. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32 inch unless otherwise shown. Form bent metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- E. Weld corners and seams continuously, complying with AWS recommendations. At exposed connections, grind exposed welds smooth and flush, to match and blend with adjoining surfaces.
- F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type shown or, if not shown, Phillips flat-head countersunk screws or bolts.
- G. Provide type of anchorage show. Coordinate with supporting structure. Fabricate and space anchoring devices as shown and as required to provide adequate support for intended use.
- H. Cut, reinforce, drill and tap miscellaneous metal work as required to receive finish hardware and similar items.
- I. Fabricate joints which will be exposed to weather in a manner to exclude water or provide weep holes where water may accumulate.
- J. Galvanizing: All steel items and fabrications (including trellis/shade fabrication) shall be galvanized and where items of Work may be specified to be galvanized. Typically galvanize steel items and fabrications which are as follows:
  1. Exterior steel lintels supporting masonry, and all other building components and fabricated items which are located on the exterior ambient side of the building and in areas subject to

elevated water, moisture, or humidity conditions (defined as greater than 70 percent RH on a sustained basis), as follows:

- a. ASTM A 123 for galvanizing rolled, pressed and forged steel shapes, plates, bars and strip 1/8 inch thick and heavier.
  - b. ASTM A 386 for galvanizing assembled steel products. Do galvanizing after fabrication with work assembled in as large sections as can be handled.
  - c. ASTM A 153 for galvanizing iron and steel hardware.
  - d. Hot dip galvanize all ferrous metal work after fabrication.
2. All building components exposed to exterior ambient conditions.
  3. All exterior to-be-concealed building components receiving subsequent finishing or other construction.
  4. Wherever metal is to be corrosion-resistant and is to be in contact with treated wood, metal shall be stainless steel or steel shall be G185 finish in conformity with E12-94 of the American Wood Preservers' Association.
  5. Use galvanizing repair paint acceptable to Architect following assembly of parts requiring field welding of components and parts.
- K. Shop Painting: Shop paint miscellaneous metal work, except members or portions of members to be embedded in concrete or masonry, surfaces and edges to be field welded, and galvanized surfaces, unless otherwise specified.
1. Remove scale, rust and other deleterious materials before applying shop coat. Clean off heavy rust and loose mill scale in accordance with SPCC SP-2 "Hand Tool Cleaning", or SPCC SP-3 "Power Tool Cleaning" or SPCC SP-7 "Brush-Off Blast Cleaning".
  2. Remove oil, grease and similar contaminants-in accordance with SPCC SP-1 "Solvent Cleaning".
  3. Immediately after surface preparation, brush or spray on primer in accordance with manufacturer's instructions, and at a rate to provide uniform dry film thickness of 1.0 mils for each coat. Use painting methods which will result in full coverage of joints, comers, edges and exposed surfaces.
  4. Apply one shop coat to fabricated metal items, except apply 2 coats of paint to surfaces inaccessible after assembly or erection. Change color of second coat to distinguish it from the first.

### 2.3 Miscellaneous Metal Fabrications

- A. Manufacture or fabricate items to sizes, shapes and dimensions required. Furnish malleable iron washers for heads and nuts which bear on wood structural connections; elsewhere, furnish steel washers.
- B. Hot dip galvanize all exterior metal work after fabrication unless otherwise indicated. All projections, barbs, and icicles shall be removed after galvanizing.
- C. Rough Hardware: Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels and other miscellaneous steel and iron shapes as required for framing and supporting woodwork and countertops, and for anchoring or securing woodwork and countertops to concrete or other structures. Furnish fabricated steel (ASTM A 36) shapes, plates and bars, welded into assemblies of types and sizes indicated. Straight bolts and other stock rough hardware items are specified in Division 6 sections.
  1. Finish fabricated assemblies intended for exterior or potentially elevated moisture or water-use, with hot-dip zinc coating (ASTM A153), including bolts and other fasteners.
- D. Miscellaneous Framing and Supports: Provide miscellaneous steel framing and supports which are not a part of structural steel framework, as required to complete work.
  1. Fabricate miscellaneous units to sizes, shapes and profiles shown or, if not shown, of required dimensions to receive adjacent other work to be retained by framing. Except as otherwise shown, fabricate from structural steel shapes and plates and steel bars, of

- welded construction using mitered joints for field connection. Cut, drill and tap units to receive hardware and similar items.
2. Equip units with integrally welded anchor straps for casting into poured concrete or building into masonry wherever required. Furnish inserts if units must be installed after concrete is placed. Except as otherwise shown, place anchors 24 inches o.c. and provide minimum anchor units of 1-1/4 x 1/4 x 8 inch steel straps.
- E. Miscellaneous Steel Trim, Provide shapes and sizes as required for profiles shown. Except as otherwise noted, fabricate units from structural steel shapes and plates and steel bars, with continuously welded joints and smooth exposed edges. Provide cutouts, fittings and anchorages as required for coordination of assembly and installation of other work. Galvanize miscellaneous steel trim where indicated.
- 2.4 Items Embedded in Concrete:
- Provide bolts, eyebolts, dowels, anchors, plates, inserts, and other miscellaneous items that are to be installed in forms before concrete pouring, or for building into masonry, as indicated. Examine and check the drawings for the number type and location of such items.
- 2.5 Installation:
- Install all items plumb, level and square, securely and rigidly attached to supporting construction and as detailed.
- 2.6 Description of Items:
- Those items which are standard or stock design which are sufficiently detailed or described on the drawings to permit their fabrication and installation are not covered herein even though they may be included in the scope.
- 2.7 Welding:
- All welding shall conform to requirements of the Committee for Standard Tests for Welds of the American Welding Society. All welding shall be electric arc process. Welds exposed in finish work shall be filled out flush, ground and dressed. Welders for structural shall be certified.
- 2.8 Inspection of Welding:
- Inspection of all welding shall be done under the direct supervision of an approved and licensed welding inspector. Steel fabricator shall notify the welding inspector prior to and shall not commence any welding without the welding inspector present. The owner shall be furnished a report by the welding inspector verifying that the welds conform to the drawings and specifications. (See Inspector of Work - Section 01 42 00.)

### **PART 3 - EXECUTION**

- 3.1 Preparation:
- A. Coordinate anchorages, setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, such as concrete inserts, anchor bolts and miscellaneous items having integral anchors, which are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.
- 3.2 Installation:
- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction, including threaded

fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screw and other connectors as required.

- B. Cutting and Fitting: Perform cutting, drilling and fitting required for installation of miscellaneous metal fabrications. Fit exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind joints smooth and touch-up shop paint coat. Do not weld, cut or abrade the surfaces of exterior units which have been not-dip galvanized after fabrication, and are intended for bolted or screwed field connections.
- C. Placement: Set work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Provide temporary bracing or anchors in formwork for items which are to be built into concrete, masonry or similar construction.
- D. Field Welding: Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, and methods used in correcting welding work.
- E. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint or zinc chromate primer.
- F. Touch-up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.
- G. Repair of Galvanized Surfaces: Repair areas damaged by welding, cutting or during handling, transport or erection in accordance with ASTM A 780 by application of multiple coats of galvanizing repair paint, to dry film thickness of 8 mils.

**END OF SECTION 05 50 00**

**SECTION 06 10 00  
ROUGH CARPENTRY**

**PART 1 - GENERAL**

1.1 Scope:

Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified and as necessary to complete the Contract, including, but not limited to these major items:  
Wood structural and non-structural framing and partitions;  
Floor, Wall, Roof sheathing;  
Furring and stripping;  
Opening framing and curbs;  
Bridging, blocking, backing, nailers, ledger, bucks and grounds;  
Miscellaneous rough carpentry items as indicated and required for complete installation;  
All rough hardware.

1.2 Related Work Specified Elsewhere:

Finish Carpentry: Section 06 20 00.

Backpainting: Painting, Section 09 91 13 (Exterior) & 09 91 23 (Interior).

1.3 General Requirements:

- A. Field Conditions: Verify drawing dimensions with actual field conditions. Inspect related work and adjacent surfaces.
- B. Notes: General notes on the drawings are part of this section.

**PART 2 - MATERIALS**

2.1 Lumber: Manufactured, graded and grade-marked in compliance with the following reference specifications and grading rules. Grades and species as noted on drawings.

2.2 Glued Laminated Lumber: All glued laminated members shall be as specified on the structural drawings.

2.3 Rough Cut Lumber: All lumber referred to on the drawings as "rough cut" or "rough sawn" shall comply with the size and specifications for "full sawn" full dimension lumber, or "standard mill rough" lumber before surfacing four sides to net dimensions of standard finished lumber. Re-sawn or re-manufactured lumber from standard finished lumber sizes is not acceptable.

2.4 Douglas Fir:

- A. Grade in compliance with one of the following:

- 1. "Standard Grading and Dressing Rules No. 16 for Douglas Fir, West Coast Hemlock, Sitka Spruce, Western Red Cedar", by the West Coast Lumber Inspection Bureau.
- 2. "Grading Rules," latest edition, issued by the Western Wood Products Association, Portland, Oregon.

2.5 Plywood:

- A. U.S. Department of Commerce, Product Standard PS1-19, graded and grade-marked by the American Plywood Association.

1. Roof Sheathing. As noted on drawings, with waterproof glue.
  2. Wall Sheathing. As noted on drawings, with waterproof glue.
- 2.6 Bolts:
- A. Conform to ASTM A307, Grade A, square or hexagonal head, sizes and spacing as required by the drawings. All heads and nuts bearing on wood shall be fitted with washers.
  - B. Bolts, nuts and washers for use in locations subject to moisture, for outside use or in portions of the structure which are not completely enclosed, or elsewhere as specified or indicated: Galvanize in compliance with ASTM A153.
- 2.7 Nails:
- A. Sizes and types indicated, specified or required for the purpose, in compliance with FS FF-N-105A. Unless specified otherwise, use galvanized or aluminum nails for nailing redwood.
  - B. Special Purpose Nails. As manufactured by the Independent Nail Corp., Bridgewater, MA, or similar and equal as manufactured by Philstone Nail Corp., Needham Heights, MA, or other as approved by the structural engineer. Requirements for galvanizing or other types of non-corrosive coating as specified above.
  - C. "Screw-Tite" common spiral thread nails.
  - D. "Screw-Tite" hardened steel, knurled masonry nails (0.148"-0.177 dia.) masonry nails (0.250" dia.).
  - E. Concrete stub nails (0.148" dia.).
  - F. Powder-actuated fasteners may be used only where specifically permitted hereinafter, or when subsequently approved, provided all available safety features and guards are used.
  - G. Use low velocity equipment, if adequate. Submit detailed list of equipment and type of fasteners for owner's approval prior to use.
- 2.8 Timber Connectors: Refer to drawings.
- 2.9 Miscellaneous Materials: As hereinafter specified and as specified on the drawings.
- 2.10 Lumber Seasoning:
- A. Air or kiln dry lumber of grades better than No. 1 before surfacing to a moisture content not exceeding 19%. Before incorporation of Douglas Fir No. 1 or lower grades into the work, allow all lumber to attain a state of equilibrium with the local atmosphere. Air season all lumber not less than 30 days before covering with finish materials.
  - B. If specifications for pressure treating state the maximum percentages of moisture content at the time of treatment, comply with those requirements.
- 2.11 Pressure Treatment - Material in Contact with Concrete:
- Lumber in contact with concrete or masonry: Either Douglas Fir, Larch or Hemlock pressure treated in compliance with FS TT-W-5711. When treated members are cut to shape or size, perform such cutting or shaping before treatment. Where members are cut after treatment or countersunk for flush installation of bolt heads, paint the cut surfaces with two saturating coats of treating liquid before installation. Studs in contact with concrete floors shall be dipped in treatment solution to a height of

## 6'. Accepted Treatments:

<u>Preservative</u>	<u>Applicable FS for Formula</u>	<u>Final Retention lbs./cu.ft.</u>
Chromated Zinc Chloride	TT-W-551	0.75
Wolman Salts	TT-W-573	0.35
Acid Cupric Chromate	TT-W-546	0.50
Chemonite	TT-W-571c	0.30

**PART 3 - EXECUTION**

## 3.1 Carpentry Installation:

- A. Workmanship: Perform entire work in accordance with the best standards of practices relating to the trade and carefully plan and lay out the required work as required. Properly accommodate the work of other trades. Accurately saw-cut and fit lumber into the respective locations, true to line, grade, and level, as indicated or required, and permanently secure in proper position with spikes, nails, lag screws, bolts, hangers, or other fastenings to make the work substantial and rigid in all parts and connections.
- B. Connections: Make connections between members tight, accurate and secure. Place fastenings without splitting wood; pre-drill when required. Drill bolt holes same size as bolt diameter. Drill holes for lag screws same size as thread root diameter; and counterbore, same depth and diameter as shank. Turn lag screws into place, do not drive. Provide bolts and lag screws with washers under every head and nut bearing on wood. Tighten bolts and lag screws at installation; carefully retighten just prior to closing in or at completion of project.

## 3.2 Roof:

- A. Joist, beams and girders: Use longest practicable lengths, place with crown side up. Splice only over bearings. Cut in solid blocking at ends and over bearings. Double up all headers and trimmers wherever normal joist spacing is interrupted by mechanical work or any other penetration.
- B. Rafters: Place crown side up. Cut in solid blocking at ends and over bearings.
- C. Ledgers, headers and nailers: Accurately cut to required sizes and securely fasten to structure. Fasten wood nailers on steel frames with recessed bolt heads, installed with washers.
- D. Bridging: Provide bridging spaced 8' o.c. maximum, using full depth 2" thick solid blocking. Place at mid-span where span is greater than 8' and less than 16', or as otherwise shown.
- E. Plywood: All plywood nailing shall be inspected and approved before covering. Refer to drawings for nailing. Stagger joints.
- F. Framing Devices: Provide stock framing devices including joists hangers, 3-way framing anchors, clips, shear plates, metal straps, timber connectors, post caps, post anchors, and other stock iron work. Securely fasten to structure using size and quantity of nails, screws and bolts recommended by manufacturer of device, unless otherwise indicated. Drill holes for bolts in steel plates and angles 1/16" greater than bolt diameter.

## 3.3 Wood Stud Partitions and Walls:

- A. Plates: Doubled, with splices staggered at least 4' and with corners and intersections lapped and nailed.
- B. Studs adjacent to concrete or masonry: Attach with power-driven fasteners (three to each stud), unless otherwise indicated.

- C. Opening: Frame openings with full height stud at each jamb with adjacent cripple supporting header and nailed to stud. Use single member headers, full width of studs, vertical dimension as indicated on drawings.
- D. Blocking: Provide fire stops at ceiling line, either composed of continuous plate or blocking of 2" x width of stud installed between studs. Provide intermediate blocking between floor and ceiling where required by code.
- E. Provide 2" thick blocking cut between studs and properly located where required for attachment of handrails, wall hung equipment, and similar accessories and equipment.
- F. Provide horizontal blocking installed at proper height above floor for installation of electrical switch boxes, receptacle boxes and similar items of equipment. This blocking may be omitted only where a stud is properly located for attachment of the box. Provide blocking to receive pail hook braces of service sinks.
- G. Frame out openings as required for installation of recessed equipment. Verify sizes from the trade furnishing the equipment.
- H. Corners and Intersections: Frame with at least three (3) studs.
- I. Cutting Limitations for Pipes and Conduits: (All cutting, boring, and metal reinforcing shall be performed by the sections affected.)
- J. Install all piping and conduit on the centerline of the partition: Do not install in notches cut in the face of the stud or plate except where reinforced with metal straps. Bore holes for passage of pipes and conduit no larger than 1/4" more than the outside diameter of the pipe or conduit and in no event larger than to leave a minimum of 1" of wood between the hole and face of stud.
- K. Where horizontal runs of piping are required, such horizontal piping may be installed in notches provided the pipe is located no closer than 1" from the face of the stud on either side and the notch bridged over with a metal strap or angle on plastered partitions or an angle on drywall partitions.
- L. Metal Strap: 13 gage x 12" long carbon steel, drilled or punched to receive three 8d "Holdfast" or "Screw Tite" spiral shank nails each end.
- M. Steel Angle: 1" x 1" x 1/8" steel angle nailed to face of stud as above specified. Install angle flush or slightly back from edge of stud to avoid interference with gypsum board of lath.
- N. Where necessary, plates may be cut in two, provided the cut is bridged with a metal strap or angle per Agency Representative's direction and the alignment of the plate is maintained.
- O. Furring and Strapping: Provide and shim where indicated or where necessary to align faces of finished materials in a single plane.

**END OF SECTION 06 10 00**

**SECTION 06 20 00  
FINISH CARPENTRY****PART 1 - GENERAL**

## 1.1 SCOPE:

- A. All wood molding and trim.
- B. All fascias, etc.
- C. Installation of finish hardware, etc.
- D. Installation of doors and frames
- E. Exterior wood replacement & restoration.

## 1.2 RELATED WORK INCLUDED ELSEWHERE:

- A. Rough carpentry: Section 06 10 00.
- B. Back-painting: Painting, Section 09 91 13 (Exterior) & 09 91 23 (Interior).

## 1.3 QUALITY ASSURANCE:

- A. Except as otherwise shown or specified, comply with specified provisions of Woodwork Institute of California (WIC) "Manual of Millwork", "Custom Grade", using the most stringent joinery methods.
- B. Measurements. Before proceeding with woodwork required to be fitted to other construction, obtain measurements and verify dimensions and any shop drawing details as required for accurate fit.

## 1.4 SUBMITTALS:

- A. Shop Drawings, Architectural Woodwork. Submit six sets of shop drawings in accordance with Division 1, showing in complete detail all information required for fabrication, finishing and installation of this work.
- B. Certification, Architectural Woodwork. Before delivery of architectural woodwork items to job site, submit a WIC Certified Compliance Certificate indicating that woodwork meets the requirements of the Woodwork Institute of California for the specified grade or grades.

## 1.5 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Protect woodwork during transit, delivery, storage and handling to prevent damage, soiling and deterioration.
- B. Do not deliver woodwork until painting, wet work, grinding and similar operations which could damage, soil or deteriorate woodwork have been completed in installation areas. If, due to unforeseen circumstances, woodwork must be stored in other than installation areas, store only in area which meet the requirements specified for installation areas.

## 1.6 JOB CONDITIONS:

- A. Examination of Substrate and Conditions. The Installer must examine the substrate and the conditions under which the work under this section is to be performed, and notify the Contractor in writing of any unsatisfactory conditions. Do not proceed with work under this section until

satisfactory conditions have been corrected in a manner acceptable to the Installer.

- B. Protect installed woodwork from damage by other trades until owner's acceptance of the work. Advise Contractor of required protection procedures.

## **PART 2 - PRODUCTS**

### 2.1 MATERIALS:

- A. All materials for work of this section shall be in accordance with the following grading rules: (Use latest edition of Standards.)
- B. All finish wood/lumber materials shall be kiln dried and shall not exceed a moisture content of 12%
- C. All Douglas fir finish lumber shall be manufactured and graded in accordance with AF&PA National Design Specifications (NDS), latest edition.
- D. All redwood finish lumber shall be manufactured and graded in accordance with "Standard Specifications or Grades of California Redwood Lumber of California Redwood Association," latest edition.
- E. All Ponderosa pine, Sugar pine, and White pine finish lumber shall be manufactured and graded in accordance with "Standard Grading Rules of Western Pine Association," latest edition.
- F. All Douglas fir plywood used as finish lumber on interior of building shall be "Interior Type," complying with "Product Standard PS 1-66" issued by the National Bureau of Standards, United States Department of Commerce. Grades shall be "A-A" for good two sides, "A-C" for good one side, and "A" selected by owner for exposed side scheduled for natural wood grain finish. Plywood for exterior use (at picnic shelters) shall be similar but shall be "exterior type" made with exterior type glue.

### 2.2 LOCATION OF FINISH LUMBER TO BE USED IN THE INTERIOR WORK:

- A. Unless noted otherwise, all exposed base and trim, when of wood, shall be Douglas fir, unless otherwise noted on the drawings.

### 2.3 INTERIOR FINISH LUMBER IN EXPOSED PORTIONS:

- A. All exposed moldings, trim and other wood finish members, shall be Vertical Grain Douglas fir, unless otherwise noted on the drawings.

### 2.4 EXTERIOR FINISH EXPOSED LUMBER:

- A. All eave fascias, stucco moldings and any other wood trim used to stop exterior plaster shall be "Clear All Heart" grade redwood, unless otherwise noted on the drawings.
- B. All exposed case work, jambs, trim, sills, and moldings, not used to stop plaster, shall be Douglas fir, "C and Btr.," vertical grain, unless otherwise noted on the drawings.

## **PART 3 - EXECUTION**

### 3.1 GENERAL WORKMANSHIP:

- A. All finish carpentry work shall be done under direction of experienced carpentry foreman. Foreman shall plan and coordinate his work with work of all other trades so that all work may proceed in an orderly manner. All carpenters shall be skilled mechanics, experienced in finish carpentry work.

- B. Exposed surfaces of interior wood finish and case work shall be thoroughly sandpapered with grain of wood free from sander marks, ready for painter's finish. Unless otherwise indicated or specified, all interior wood finish shall be secured to place with finish nails of proper sized set. All damage to exposed surfaces shall be carefully scraped out and hand sandpapered with grain of wood.
- C. Priming and backpainting: Exterior wood trim, interior wood finish and case work shall be primed or sealed and backpainting within 24 hours after delivery to building. Priming and backpainting is specified in the Painting Section.
- D. All interior wood finish shall be milled from kind of wood specified herein, or scheduled, or detailed. All wood finish shall be accurately scribed to contracting surfaces, joints metered, splices beveled and all joints tight. Trim shall be set plumb and level and adequately secured with finish nails of proper size, then set. All damage to exposed surfaces shall be scraped out and hand sanded ready for painter's finish.

**END OF SECTION 06 20 00**

**SECTION 06 40 00  
ARCHITECTURAL WOODWORK**

**PART I-GENERAL****1.01 Related Work Specified Elsewhere:**

Stripping, Blocking, Nailers and Rough Bases not part of Cabinets: Section 06 10 00  
Finish Hardware not Furnished by Mill: Section 08 71 00.

**1.02 Shop Drawings:**

Submit six sets of shop drawings to architect for review.

Shop drawings shall show list of materials and hardware, sizes, sections, elevations and details of construction and assembly as required by Section 1, Millwork Shop Drawings of the WIC Manual of Millwork.

Shop drawings shall indicate all grounds, backing, blocking, sleepers and other items required for the installation of casework which are to be furnished and installed as part of the structure by the General Contractor.

The WIC Certified Compliance Grade Stamp indicating the grade specified shall be affixed to the Millwork Shop Drawings, certifying that the casework will be manufactured in accordance with the WIC grade specified.

**1.03 Standards and Certification:**

Before delivery to the job site, the fabricator shall issue a WIC Certified Compliance Certificate, certifying that the Plastic Covered Modular Casework products he will furnish for this project fully meets all requirements of "Custom" grade. The WIC Certified Compliance Grade Stamp shall be affixed to the casework shop drawings, certifying that the casework will be manufactured in accordance with WIC Deluxe grade. Further, each unit of Plastic Covered Modular Casework shall bear the WIC Certified Compliance Grade Stamp indicating "Custom" grade, and each Plastic Laminated Counter Top shall bear the Certified Compliance Grade Stamp indicating WIC "Custom" grade.

**1.04 General:**

Protect Millwork items against dampness during and after delivery. Wrap and/or store in clean well ventilated area where not exposed to extreme change of temperature and humidity.

Field measurements shall be made as required for the work of this section. Report any major discrepancy between the drawings and field dimensions to the Architect in writing.

Ensure that the most stringent standards for joinery are followed as they relate to any surface which could come in occasional or constant contact with water or elevated moisture/humidity.

**PART II-PRODUCTS****2.01 General:**

Manufacture casework in accordance with WIC (Woodwork Institute of California) Manual of Millwork,

Section 25A, Laminated Plastic Covered Modular Casework, Custom grade, except as modified hereinafter.

## **2.02 Modifications to WIC Manual:**

All exposed corners of doors and drawers shall be radiused 1/4".

Dimensions and configurations of cabinets shall be as indicated on the drawings.

High pressure plastic laminate: Nevamar, Formica or Wilson-Art, conforming to NEMA LD-1 in colors as selected, 1/16" thick for countertops and work surfaces, and 1/32" thick for other surfaces.

Shelves: Shall be 3/4" thick for spans up to 35", and 1" thick for spans over 35" up to 48", and shall be adjustable to 1" centers. Metal shelf standards shall not be let into the end panels. Notch shelving to clear standards.

Metal strike plates: Provide all cabinet door and drawer locks with metal strike plates to protect against particle board rip-out.

Doors: Overlay type, hinged to swing flat against the face of adjoining cabinet or the side of cabinet, with radiused corners, and tee-edged with joint hidden under hinge. Do not notch door or cabinet ends, or divisions to receive hinge.

Cabinet interiors, including faces and edges of shelving therein, and interior door faces: Finish with 0.030 inch cabinet liner.

Toe kick base: Continuous 6' high ceramic tile or rubber base with 3/8" radius cove (as indicated on drawings) and formed interior and exterior corners.

## **2.03 Hardware:**

Hinges: Heavy duty wrap-around offset for overlay doors with non-removable pin, dull chrome finish.

Pulls: Surface mounted aluminum US26D Quality #813, Stanley #4484, or equal.

Catches: Magnetic, National Lock #61-570, Stanley #41, or equal for doors with no locks. Federal Specification FF-H-111, Type F-1075-AC for inactive leaf of pairs of doors with locks.

Drawer slides: Full extension with no deflection, 1/2" slide space, 100 lb. load capacity.

Adjustable Shelf Standards: KV #255 with #256 shelf clips, Grant #125 with #21 shelf clips, or equal.

Door and Drawer locks: Corbin, Drawer Lock #0738, Door Lock #0737 for single doors and active leaf of pairs of doors, master keyed to match Owner's system. Provide two (2) keys for each lock. (Locks at all doors and drawers at all cabinets.)

Screws: Straight shank double thread particle board screws.

## **2.04** All plastic laminate shall be Nevamar or approved equal.

Color: To be selected by City staff from full color range available from manufacturer.

## **2.05** All countertops shall be Solid Surface. Color: Verify final color with City staff, selected from full color range available.

**PART III-EXECUTION****3.01 Installation:**

All cabinet work shall be performed in the same shop with experienced journeymen personnel under the supervision of a thoroughly experienced foreman. Each cabinet shall be a complete and self-supporting web, as the cabinet condition may require.

Specified finish hardware shall be installed after all finish work has been completed. Inspect all drilling operations for surface splinters or delaminations. Any piece bearing such imperfections shall be rejected.

Unless otherwise indicated on the drawings, all countertops shall have self-edged fronts and edges and an integral covered backsplash. Where no splash occurs, scribe the back edge of the counter top to the wall. Extend back splash as shown on drawings.

Joints in the counter tops shall be secured with 1/8" x 3/4" cold-rolled steel straps at 3" o.c., the full length of all joints.

Adhesive shall be used under a cold-press method using a pressure of not less than 30 psi.

Completed tops shall be secured to the cabinets with #10 x 1 1/4" RHWS, minimum of 4 screws per cabinet. Additional screws shall be installed at the front and back of each cabinet on both sides of the counter top joints.

Install cove base (as indicated on drawings) on toe kick base in accordance with manufacturer recommendations.

Adhesive shall be used under a cold-press method using a pressure of not less than 30psi.

Completed tops shall be secured to the cabinets with #10 x 1 1/4" RHW, minimum of 4 screws per cabinet. Additional screws shall be installed at the front and back of each cabinet on both sides of the counter top joints.

Install rubber base on toe kick base in accordance with manufacturers recommendations.

Coordinate work with Divisions 15 and 16 for Mechanical, Plumbing, and Electrical work to be integrated into casework. All holes in counter tops used to run electric power chords, phone lines, cables, etc. shall be fitted with a rubber or plastic gromet with a color to match laminate.

**3.02 Clean-Up:**

Upon completion of installation and as a condition of final approval, all debris, sawdust, excess materials, packages, equipment and trash which may have resulted from this work, shall be removed from the site. All cabinet and millwork and adjacent surfaces shall be left clean and acceptable.

**END OF SECTION 06 40 00**

**SECTION 07 21 00  
THERMAL INSULATION**

**PART 1 - GENERAL**

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Glass-fiber blanket insulation.
2. Loose-fill insulation.

B. Related Requirements:

1. Section 06 10 00 - "Sheathing" for foam-plastic board sheathing installed directly over wood or steel framing.
2. Section 09 24 00 - "Portland Cement Plastering" for sound attenuation blanket used as acoustic insulation.
3. Section 07 21 14 - Mineral Wool Batt Insulation

1.3 ACTION SUBMITTALS

A. Product Data: For the following:

1. Glass-fiber blanket insulation.
2. Loose-fill insulation.

B. Sustainable Design Submittals:

1. Product Data: For recycled content, indicating postconsumer and pre-consumer recycled content and cost.
2. Product Data: For adhesives, indicating VOC content.
3. Laboratory Test Reports: For insulation, indicating compliance with requirements for low-emitting materials.

1.4 INFORMATION SUBMITTALS

A. Installer's Certification: Listing type, manufacturer, and R-value of insulation installed in each element of the building thermal envelope.

1. For blown-in or sprayed fiberglass and cellulosic-fiber loose-fill insulation, indicate initial installed thickness, settled thickness, settled R-value, installed density, coverage area, and number of bags installed.
2. Sign, date, and post the certification in a conspicuous location on Project site.

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

C. Submit product data for each insulation type. See Section 01 34 00.1.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

## **PART 2 - MATERIALS**

### 2.1 GLASS-FIBER BLANKET INSULATION

- A. Insulation shall comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
- B. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- C. Glass-Fiber Blanket Insulation, Polypropylene-Scrim-Kraft Faced: ASTM C665, Type II (nonreflective faced), Class A (faced surface with a flame-spread index of 25 or less); Category 1 (membrane is a vapor barrier).
  1. Basis-of-Design Product: Subject to compliance with requirements, provide CertainTeed Corporation; CertaPRO® Sustainable Insulation or comparable product by one of the following:
    - a. Johns Manville; a Berkshire Hathaway company.
    - b. Knauf Insulation.
    - c. Owens Corning.
  2. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches (305 mm) and wider in width.
  3. Required R-values:
    - a. Roof areas between rafters: Minimum R-30.
    - b. All exterior walls: Minimum R-13 at 2x4 and Minimum R-19 at 2x6 stud walls,
    - c. All interior walls between conditioned spaces or restrooms: Minimum R-13 at 2x4 and Minimum R-19 at 2x6 stud walls.

### 2.3 INSULATION FASTENERS

- A. Adhesively Attached, Spindle-Type Anchors: Plate welded to projecting spindle; capable of holding insulation of specified thickness securely in position with self-locking washer in place.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. AGM Industries, Inc.
    - b. Gemco.
  2. Plate: Perforated, galvanized carbon-steel sheet, 0.030 inch (0.762 mm) thick by 2 inches (50 mm) square.
  3. Spindle: Copper-coated, low-carbon steel; fully annealed; 0.105 inch (2.67 mm) in diameter; length to suit depth of insulation.
- B. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch- (0.41-mm-) thick galvanized-steel sheet, with beveled edge for increased stiffness, sized as required to hold insulation securely in place, but not less than 1-1/2 inches (38 mm) square or in diameter.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. AGM Industries, Inc.
    - b. Gemco.

2. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in the following locations:
    - a. Crawl spaces.
    - b. Ceiling plenums.
    - c. Attic spaces.
  - C. Insulation Standoff: Spacer fabricated from galvanized mild-steel sheet for fitting over spindle of insulation anchor to maintain air space of 2 inches (50 mm) between face of insulation and substrate to which anchor is attached.
    1. Manufacturers: Subject to compliance with requirements, provide products by the following:
      - a. Gemco.
  - D. Anchor Adhesive: Product with demonstrated capability to bond insulation anchors securely to substrates without damaging insulation, fasteners, or substrates.
    1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      - a. AGM Industries, Inc.
      - b. Gemco.
- 2.4 ACCESSORIES
- A. Insulation for Miscellaneous Voids:
    1. Glass-Fiber Insulation: ASTM C764, Type II, loose fill; with maximum flame-spread and smoke-developed indexes of 5, per ASTM E84.
    2. Spray Polyurethane Foam Insulation: ASTM C1029, Type II, closed cell, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E84.
  - B. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.
    1. Adhesives shall have a VOC content of [70] <Insert value> g/L or less.
    2. Adhesive shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
  - C. Eave Ventilation Troughs: Preformed, rigid fiberboard or plastic sheets designed and sized to fit between roof framing members and to provide ventilation between insulated attic spaces and vented eaves.
- 2.5 If required, support insulation with line wire at 12" O.C. perpendicular to bottom chord of rafters.
- 2.6 Thickness of insulation material shall be such that it will fit in the available space without compressing.

### **PART 3 - EXECUTION**

#### 3.1 PREPARATION

- A. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation or vapor retarders, or that interfere with insulation attachment.

### 3.2 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and applications.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.
- C. Install insulation with manufacturer's R-value label exposed after insulation is installed.
- D. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- E. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

### 3.3 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

- A. Blanket Insulation: Install in cavities formed by framing members in accordance with the following requirements:
  - 1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
  - 2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
  - 3. Maintain 3-inch (76-mm) clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
  - 4. Attics: Install eave ventilation troughs between roof framing members in insulated attic spaces at vented eaves.
  - 5. For wood-framed construction, install blankets in accordance with ASTM C1320 and as follows:
    - a. With faced blankets having stapling flanges, lap blanket flange over flange of adjacent blanket to maintain continuity of vapor retarder once finish material is installed over it.
  - 6. Vapor-Retarder-Faced Blankets: Tape joints and ruptures in vapor-retarder facings, and seal each continuous area of insulation to ensure airtight installation.
    - a. Exterior Roof: Set units with facing placed toward interior of construction.
- B. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:
  - 1. Glass-Fiber Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft. (40 kg/cu. m).
  - 2. Spray Polyurethane Insulation: Apply in accordance with manufacturer's written instructions.

### 3.4 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes.
- B. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

**END OF SECTION 07 21 00**

**MINERAL WOOL INSULATION**  
**Section 07 21 14**  
**Mineral Wool Batt Insulation**

**PART 1 - GENERAL****1.1 SUMMARY**

- A. Section Includes: Mineral wool batt insulation for acoustical control and fire-protection applications.
- B. Related Sections:
  - 1. Section 07 21 00 – Glass Fiber Insulation.

**1.2 SUBMITTALS**

- A. Product Data: Submit product characteristics, performance criteria, and limitations, including installation instructions.
- B. Sustainable Design: Submit manufacturer's sustainable design certifications as specified with each product.

**1.3 QUALITY ASSURANCE**

- A. Mock-Up: If requested, provide a mock-up of materials proposed for use for review of workmanship. Accepted mock-ups may remain in place.
- B. Preconstruction Meeting: Convene a minimum of two weeks prior to commencing work of this section. Agenda shall include materials proposed for use, sequence of construction and coordination with installation of adjacent and covering materials.

**1.4 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery: Deliver materials to the job site in original packages, containers, or bundles bearing the brand name and manufacturer's identification.
- B. Storage: Store materials in dry locations with adequate ventilation, free from water, and in such a manner to permit easy access for inspection and handling.
- C. Handling: Handle using procedures recommended by the manufacturer for materials and personnel.

**1.5 WARRANTY**

- A. Warranty: Provide manufacturer's standard limited warranty against manufacturing defects.

**PART 2 - PRODUCTS****2.1 MANUFACTURER**

- A. Basis-of-Design: Thermafiber® SAFB™ (Sound Attenuation Fire Blanket) by Thermafiber, Inc. (an Owens Corning company), One Owens Corning Parkway, Toledo, OH 43659. Toll free 888-834-2371, Fax 260-563-8979, or [www.owenscorning.com](http://www.owenscorning.com).

**2.2 MATERIALS**

- A. Mineral Wool Batts: Formaldehyde-free option, non-combustible, moisture-resistant, non-corrosive, non-deteriorating, mildew-resistant, and vermin-resistant mineral.
- B. Standards and Codes Compliance:
  - 1. NFPA 101: Class A rated interior finish.
  - 2. ASTM C 665: Type I, non-corrosive.
  - 3. ASTM E 136: Non-combustible.
  - 4. CAN/ULC S114: Complies.

5. ASTM C 1104: Absorbs less than 1% by volume.
  6. ASTM E 84/CAN/ULC S102: Flame Spread 0, Smoke Developed 0.
- C. Properties:
1. Density: 4.0 pcf for 1-inch thickness, 2.5 pcf for thicknesses 1-1/2 inches to 7 inches.
  2. Manufacturing Tolerance: Plus 1/4 inch, minus 1/8 inch for thickness, plus or minus 1/8 inch for widths, plus or minus 1/2 inch for lengths.
- D. Fiber Type: Standard fiber 70% pre-consumer recycled content.
- E. Fiber Type: EPA Choice fiber; minimum 75% pre-consumer recycled content; complies with EPA Preference Program.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine the areas and conditions under which work of this section will be installed. Do not proceed with installation until unsatisfactory conditions have been corrected.

#### **3.2 INSTALLATION**

- A. Install insulation in accordance with approved submittals, manufacturer's written recommendations, and guidelines.
1. Interior Stud Cavity: Friction-fit SAFB securely between studs. Butt ends of blankets closely together and fill all voids.
  2. Creased SAFB: Using SAFB 1 inch wider than regular blankets, bow the blankets slightly to fit into stud cavity. Slit the blankets vertically 1 inch deep with a utility knife down the center.
  3. Floor-Ceiling: Friction-fit SAFB securely between floor joints.
  4. Ceiling Overlayment: Lay SAFB over ceiling panels extending 48 inches beyond all partitions. Tightly fit around all hangers, obstructions, and penetrations.
- B. Do not over-compress insulation to fit into spaces.
- C. Fit insulation closely around electrical boxes, pipes, ducts, frames, and other objects in or passing through insulation.
- D. Install products in proper relationship with each other and adjacent construction.
- E. Repair damage to adjacent materials caused by insulation installation.

#### **3.3 PROTECTION**

- A. Protect installed products from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.
- B. Protect installed products and accessories from damage during construction.

**End of Section 07 21 14**

**SECTION 07 60 00  
FLASHING AND SHEET METAL**

**PART 1 - GENERAL**

1.1 RELATED WORK SPECIFIED ELSEWHERE:

- A. Joint Sealants: Section 07 92 00
- B. Painting: Sections 09 91 13 & 09 91 23

1.2 QUALITY ASSURANCE:

- A. Requirements of Regulatory Agencies: Conform to the requirements of SMACNA.

1.3 GUARANTEE:

- A. Guarantee materials and workmanship for two (2) years.

1.4 SUBMITTALS

- A. The contractor shall submit flashing and sheet metal shop drawings for review. Refer to Section 01 34 00 for additional submittal requirements.

**PART 2 - PRODUCTS**

2.1 SHEET METAL:

- A. Aluminum:                   ASTM B209, alloy 3003, temper H14.  
Finish: AA-CC22A41.  
Minimum thickness: 0.032".
- B. Galvanized Steel:        ASTM A526, commercial quality  
Coating Designation: G90, ASTM A 525.  
Minimum thickness or gage: 0.0217".

2.2 FASTENERS:

- A. Nails: Galvanized steel material, flathead, wire, barbed, slating type, FS FF-N-105B.
- B. Screws: Self-tapping sheet metal type, FS FF-S-107C.
- C. Exposed Screws: Self-tapping screws with neoprene coated stainless steel washers.

2.3 EXPANSION ANCHORS: FS FF-B-588.

2.4 SOLDER: Aluminum manufacturer's standard.

2.5 SEALANT: One part polysulfide, silicone or polyurethane type, manufacturer's standard.

2.6 BITUMINOUS PLASTIC CEMENT: FS SS-C-153B, Type I.

2.7 PRIMER COATING: FS TT-P-641F, Type I.

2.8 PAINTING: Paint all sides of all flashing and sheet metal per specification Section 09 91 13.

## 2.9 FABRICATION:

- A. Cleats: Minimum width 2".  
Same material and thickness as sheet metal.
- B. Reglets: Same material and thickness as sheet metal.  
Shop formed corners and joint connectors.

**PART 3 - EXECUTION**

## 3.1 INSPECTION:

- A. Verify that substrates are smooth and clean to extent needed for sheet metal work.
- B. Verify that reglets, nails, cants and blocking to receive sheet metal are installed and are free of concrete and soil.
- C. Do not start sheet metal work until conditions are satisfactory.

## 3.2 PREPARATION:

- A. Before installing sheet metal, verify shapes and dimensions of surface to be covered.
- B. Refer to appendix 1, for the treatment of historic materials, for additional requirements for all building exterior work.

## 3.3 INSTALLATION:

- A. General. Install work watertight, without waves, warps, buckles, fastening stresses or distortion, allowing for expansion and contraction.
- B. Hem exposed edges.
- C. Angle bottom edges of exposed vertical surfaces to form drips.
- D. Seams. Common lock seams: 5/8" finished width. Four ply loose lock.
- E. Flat Lock Seams: 3/4" finished width. Four-ply flat lock, maletted tight. Sweated full with solder.
- F. Cover Plate seams: Space abutting sheets 1/2" apart, plus fastener thickness. Cover joint with 4" wide back-up and cover plate set in sealant. Match plates to flashing profile. Secure to substrate with screws installed through open space between flashing sheets.
- G. Cleats. Spaced Cleats: 2' o.c. Secure to substrate with fasteners and cover heads with cleat tabs.
- H. Continuous Cleats: Secure to substrate with fasteners spaced 1' o.c.
- I. Reglets: Install in accurate locations, straight, in-line and with leak-proof joints.
- J. Soldering: Clean and flux metals prior to soldering. Sweat solder completely through seam width.
- K. Sealant Installation: Apply 1/4" diameter bead, centered on full length of joint.
- L. Bituminous Plastic Cement: Trowel 1/8" thick.

- M. Painting: Apply asphalt coating compound to each contacting metal face of dissimilar metals. Paint all sides of all flashing and sheet metal per specification Section 09 91 13.
  - N. Roof Counterflashing: Overlap base flashing 4" minimum. Install bottom edge tight against base flashing. Lap seam vertical joints 3" minimum and apply sealant. Miter, lap seam and close corner joints with solder or sealant.
  - O. Roof Penetration Flashing: Base flashing. Extend flange onto roof 6" minimum away from penetration. Extend flange upward around penetration to at least 8" above roofing felts. Fold back upper and side roof flange edges 1/2" minimum. Solder-lap joints.
  - P. Counterflashing. Overlap base flashing 1" minimum with storm collar sloped away from penetration. Secure to penetration with draw band and sealant.
  - Q. Equipment Support Flashing: Fully cap support. Overlap base flashing 4". Solder-lap joint. Provide sealant around penetration through flashing.
- 3.4 REPAIRING:
- A. Repair or replace damaged work.
- 3.5 CLEANING:
- A. As work progresses, neutralize excess flux with 5% to 10% washing soda solution and thoroughly rinse.
  - B. Leave work clean and free of stains, scrap and debris.

**END OF SECTION 07 60 00**

**SECTION 07 92 00  
JOINT SEALANTS****PART 1 - GENERAL**

## 1.1 SCOPE:

- A. This section contains general specifications pertaining to all weather-sealing and caulking throughout the project and becomes a part of all sections containing reference hereto, or where materials of the types specified in this section are required by the drawings.

## 1.2 GENERAL REQUIREMENTS:

- A. Guarantee. Provide written guarantee for all caulking and sealants against all defects of material or application for a period of two years after date of acceptance. All failures that may occur within this period due to defective application or materials shall, upon written notification of such failure, be repaired or replaced with proper materials and labor as approved by the Architect, at no additional cost to the City.
- B. Submit six samples of various types (and colors where applicable) of materials specified, prior to delivery of materials to the job.
- C. Deliver materials to the job in original unopened containers bearing manufacturer's name, product designation and date of manufacture.
- D. Install proprietary materials specified in compliance with manufacturer's instructions. Send copies of manufacturer's instructions at least two (2) weeks before installation.

**PART 2 - MATERIALS**

## 2.1 MATERIALS:

- A. Use sealants of the following types and manufacture. Unless specified or directed otherwise, use materials to match color of adjacent materials. Where adjacent materials on each side of the joint are different colors, the Landscape Architect will select sealant colors. If the desired color is not available from one manufacturer, select proper color from another manufacturer. Use those sealants from the following list as appropriate for the application, per manufacturer's recommendations.

## 2.2 INCIDENTAL MATERIALS:

- A. Staining Characteristics. All joint filler, primers, or other materials used in conjunction with sealant shall be of such composition as to not cause staining of the sealant or the materials to which they are applied.
- B. Compressible Joint Filler. Closed cell neoprene, plastic foam, or urethane, as recommended by the sealant manufacturer for use in conjunction with the sealant.
- C. Primers. As recommended by the sealant manufacturer for uses in conjunction with the sealant for application onto the various types of materials to which the sealer is applied.
- D. Cleaners, where required in lieu of primers. As recommended by the sealant manufacturer.

**2.3 MATERIAL TYPES:**

- A. Type #1 - One-part polysulfide, FS TT-S-00230C.
  - 1. Elastoseal #230 by Pacific Polymers, 15081 Moran Street, Unit E, Westminster, California.
  - 2. Uniparmastic by Parr, Inc., distributed by C.R. Laurence Co., 720 Mateo Street, Los Angeles, California.
  - 3. PTI 747, by Protective Treatments of Dayton, Ohio.
  
- B. Type #2 - Two-part polysulfide, FS TT-S-00227E.
  - 1. Elastoseal #227 by Pacific Polymers, 15081 Moran Street, Unit E, Westminster, California.
  - 2. Parmastic by Parr, Inc., distributed by C.R. Laurence Co., 720 Mateo Street, Los Angeles, California.
  - 3. PTI 748, by Protective Treatments of Dayton, Ohio.
  
- C. Type #3 - One-part silicone sealant, FS TT-S-1543.
  - 1. General Electric 1200 non-paintable, distributed by C.R. Laurence Co., 720 Mateo Street, Los Angeles, California.
  - 2. Dow Corning 780 and 781, Dow Chemical, Midland, Michigan.
  
- D. Type #4 - Two-part silicone.
  - 1. General Electric 1600, distributed by C.R. Laurence Co., 720 Mateo Street, Los Angeles, California.
  
- E. Type #5 - Multi-part urethane sealant, FS TT-S-00227E, non-sag or pourable consistency, non-staining.
  - 1. Elastothane 227 by Pacific Polymers, 15081 Moran Street, Unit E, Westminster, California 92683.
  - 2. PRC 270 by Products Research, 2900 Empire Street, Burbank, California.
  
- F. Type #6 - Latex acrylic calk for drywall and interior calking.
  - 1. Parr Latex Calk by Parr, Inc., distributed by C.R. Laurence Co., 720 Mateo Street, Los Angeles, California.
  - 2. Elastoseal Latex by Pacific Polymers, 15081 Moran Street, Unit E, Westminster, California 92683.

**PART 3 - APPLICATION**

- 3.1 Joint Filler. Accurately position within the joint to establish and control the uniform designated thickness of sealant.
  
- 3.2 Apply material with sufficient pressure to completely fill the void space and to assure complete wetting of contact area to obtain uniform adhesion. During application, keep tip of nozzle at bottom of joint, forcing sealant to fill from bottom to top. Finish joints smooth and flush with adjacent surface unless detailed to be finished below the surface.
  
- 3.3. Perform joint preparation, including cleaning and priming, in accordance with manufacturer's instructions.

- 3.4 Provide manufacturer's inspection of conditions prior to start of the work and initial supervision at the start of each application, in order to insure that any physical conditions which would result in defective work are properly corrected before materials are applied, that properly instructed personnel are available to do the work, and that proper procedures are being followed. Provide such inspection and supervision by qualified personnel. Report all unsatisfactory conditions existing at the time of inspection in writing to the Architect for correction before proceeding with the work.
- 3.5 Notify the manufacturer at least 72 hours prior to the time inspection if required.
- 3.6 Failure or refusal of the manufacturer to provide the inspection and supervision as required hereunder constitutes grounds for non-acceptability of materials manufactured by him even though such materials have been specified or approved.

**END OF SECTION 07 92 00**

**SECTION 08 11 00  
METAL DOORS AND FRAMES**

**PART 1 - GENERAL**

1.1 SUMMARY

- A. Section Includes:
  - 1. Hollow Metal Doors and Frames.
- B. Related Sections:
  - 1. Section 08 71 00 Finish Hardware.
  - 2. Section 09 91 13 & 09 91 23 Exterior & Interior Painting.

1.2 REFERENCES

- A. ASTM E152, Fire Tests of Door Assemblies.
- B. ASTM A525, specification for Steel Sheet, Zinc Coated.
- C. ANSI/SDI 100, Recommended Specifications for Standard Steel Doors and Frames.
- D. ANSI/SDI 119, Performance test Procedures for Steel Door Frames and Anchors.
- E. NFPA 80, Standard for Fire Doors and Windows.
- F. NFPA 101, Life Safety Code.
- G. ANSI A151.1, Test Procedure and Acceptance Criteria for Physical Endurance, Steel Doors and Frames.
- H. ANSI A224.1, Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
- I. SDI 107, Hardware on Steel Doors, Reinforcement Application.
- J. Applicable model building code.
- K. California Title 24.
- L. UBC 7-2, Fire Tests of Door Assemblies.
- M. UBC 7-4, Fire Tests of Window Assemblies.

1.3 SUBSTITUTIONS & SUBMITTALS

- A. Shop Drawings: Submit six copies. Indicate door and frame elevations, sections, materials, gauges, finish, fabrication/erection details, locations of hardware and vision lites and louvers.
- B. Certification of Compliance: Provide letter of certification that all materials comply with these Specifications.

- C. Samples: Submit as requested by Architect. Samples shall be returned after review.
- D. Substitutions: Make substitution requests in accordance with Division 1. Architect reserves the right to access an hourly fee to review and evaluate substitutions.

#### 1.4 QUALITY ASSURANCE

- A. Steel Door and Frame Supplier: direct factory supplier who employs a Certified Door Consultant (CDC) or person with equivalent experience, available at reasonable times during course of Work, for consultation to Owner, Architect and Contractor.
- B. Label Construction: A physical label or approved marking shall be affixed to the fire door or fire door frame at an authorized facility as evidence of compliance with procedures of the labeling agency.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: coordinate delivery to the appropriate locations (shop or field) for installation.
- B. Storage of Doors: Doors shall be stored in an upright position under cover. Place the units on at least 4" (101.6 mm) wood sills on floors in a manner that will prevent rust and damage. Do not use non-vented plastic or canvas shelters which create a humidity chamber and promote rusting. If the corrugated wrapper on the door becomes wet, or moisture appears, remove the wrapper immediately. Provide a 1/4" (6.35 mm) space between the doors to promote air circulation.
- C. Storage of Frames: Frames shall be stored under cover on 4" (101.6 mm) wood sills on floors in a manner that will prevent rust and damage. Do not use non-vented plastic or canvas shelters, which create a humidity chamber and promote rusting. Assembled frames shall be stored in a vertical position, five units maximum in a stack. Provide a 1/4" (6.35 mm) space between frames to promote air circulation.
- D. Inspect delivered items for damage. Minor damage may be repaired provided repaired items are equal to new Work and accepted by the Architect. Provide new items when directed. Comply with VOC regulations when repairing damage.

#### 1.6 SEQUENCING AND SCHEDULING

- A. Deliver doors and frames to the jobsite in a timely manner so not to delay progress of other trades.
- B. Issue purchase orders to suppliers so as not to interfere with normal quoted delivery times.

#### 1.7 WARRANTY

- A. Steel doors and frames supplied with a one (1) year warranty against defects in materials and workmanship.

#### 1.8 ENVIRONMENTAL

- A. Packaging and Disposal: package in biodegradable packs, paper or cardboard boxes. Dispose of non-biodegradable packs, plastic, styrofoam, polystyrene, and polyurethane to a licensed or authorized collector for proper disposal. Comply with the applicable standards and laws for VOC.

**PART 2 - PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

- A. Steelcraft Manufacturing Co., Cincinnati, Ohio
- B. Curries Co., Mason City, Iowa
- C. Ceco Corp., Oakbrook, Illinois

2.2 MATERIALS

- A. Steel requirements: Doors and frames manufactured of commercial quality, stretcher leveled flatness, cold rolled steel per ASTM A366 and A568 general requirements. Galvanized doors and frames at exterior locations to A60 minimum coating weight. Stainless steel doors manufactured with Type 304, dull finish. Internal reinforcing may be manufactured of hot rolled pickled and oiled steel per ASTM A569.
- B. Coating Materials:
  - 1. Primer: Manufacturer's standard rust inhibiting primer to ANSI A224.1.
- C. Core Materials:
  - 1. Doors: Non-toxic honeycomb or vertical steel stiffened internal reinforcing manufactured of hot rolled, pickled and oiled steel per ASTM A569. Exterior doors shall be insulated.
  - 2. Fire labeled doors with temperature rise rating: Mineral fiber core, temperature rating per code.
- D. Glass Light Frames: Flush with door face, fabricated of 18 ga. steel.

2.3 FABRICATION

A. Doors:

- 1. Classification: SDI.

a. Exterior Doors:

GRADE	MODEL	GAUGE	DESCRIPTION	CYCLES
III	1	14	Extra Heavy Duty, Full Flush	5,000,000
	1.		Exterior Entry doors at North & South Elevations	
		a.	Steel-stiffened core (heavy-duty construction)	
		b.	Tempered vision lites	
		c.	Powder-coated finish	
	2.		Exterior Entry Doors at East Elevations	
		a.	Steel-stiffened core (heavy-duty construction)	
		b.	Smooth Flush Face (no vision panels)	
		c.	Powder-coated finish	

b. Interior Doors:

GRADE	MODEL	GAUGE	DESCRIPTION	CYCLES
II	1	16	Heavy Duty, Full Flush	5,000,000
	1.		Steel-siffened core (heavy-duty construction)	
	2.		Smooth flush face (no panels)	
	3.		Paint-grade finish (field paintable)	

2. Vertical lock edges:
  - a. Beveled 1/8 inch in 2 inches.
  - b. Exterior, seamless construction by tack welding and fill.
  - c. Interior, manufacturers standard interlocking and glued edge.
3. Top and bottom channels:
  - a. Not less than 14 gauge, flush or inverted.
  - b. Welded to the face sheets.
  - c. Exterior doors: flush steel top channel.
4. Astragals: Flat security type or Z type per details.

B. Frames:

1. Construction:
  - a. 16 gauge cold rolled steel at interior locations; 14 gauge galvanized at exterior locations.
  - b. 14 gauge, full width, face and head reinforcement for non-labeled openings over 48" in width.
  - c. Frames to be grouted where installed in masonry construction
  - d. Factory-applied exterior-rated polyester powder-coated finish
2. Corner Construction: Weld full depth and face; grind smooth and re-prime. Weld includes faces, rabbets, soffit, and stops.
3. Provide temporary shipping spreaders to help protect frames from damage during transit and handling. Remove spreaders prior to setting frame.

C. Frame Anchors:

1. Attachment to Masonry Construction:
  - a. Galvanized.
  - b. Adjustable, flat, corrugated, or perforated T shaped with leg not less than 2 inches wide by 10 inches long, or wire type, not less than 3/16 inches in diameter.
2. Attachment to Drywall Construction:
  - a. Steel or Wood Stud type to accommodate frame jamb depth and face dimension on welded type frame.
3. Provide one anchor for every 30 inches of jamb or fraction thereof.
4. Floor Anchor: Angle clip type.
  - a. 16 Gauge.
  - b. Two fasteners per jamb.
  - c. Weld to bottom of each jamb.
1. Existing Masonry or Concrete:
  - a. 3/8 inch countersunk flat head bolt and expansion shields.
  - b. Locate 6 inches from top and bottom and maximum 24 inches on center.
  - c. Weld pipe spacers or other type of spacers, per manufacturer's standard design, in back of frame soffit.
2. Head Struts: Per details.

- D. Preparation for Hardware:
1. Reinforce per SDI 107.
  2. Lock and Closer reinforcement: box type.
  3. Door Hinge reinforcement: 7 gauge or equivalent, manufacturer's standard.
  4. Punch strike jambs to receive three silencers; double leaf frames to receive manufacturer's standard preparation.
  5. Hardware locations per "Recommended Locations for Builders' Hardware for Standard Steel Doors and Frames".
  6. Provide welded in place guards for all hardware cutouts in frame.
  3. Electrical preps: provide welded-in-place boxes, special designed anchors, raceways and access panels as required.

### **PART 3 - EXECUTION**

#### 3.1 SETTING FRAMES

- A. Set frames in accordance with SDI 105.
- B. Set welded frames in place prior to construction of adjacent partition work. Properly brace frame until permanent anchors are set.
- C. Install frames plumb and true with only hairline seam at corner joints.
- D. Install fire rated frames in accordance with NFPA 80.

#### 3.2 DOOR INSTALLATION

- A. Clearances:
1. 1/8 inch between door and frame at head and jambs.
  2. 1/8 inch at meeting edges of pairs.
  3. 1/8 inch at transom panels, without transom bar.
  4. 3/4 inch above finish floor at sills without threshold.
  5. 1/4 inch at sill with threshold.
  - 6.

#### 3.3 ADJUSTMENT AND CLEANING

- A. Remove dirt and excess sealants, mortar, or glazing compounds from exposed surfaces.
- B. Adjust moving parts for smooth operation. Use shims as required.
- C. Fill dents, holes, etc. with metal filler and sand smooth and flush with adjacent surfaces. Paint to match adjacent surface.

**END OF SECTION 08 11 00**

**SECTION 08 40 00****ALUMINUM STOREFRONT AND ENTRANCES****PART I-SUMMARY****1.01 Section includes:**

- A. Aluminum-Framed Storefront

**1.02 Related Sections:**

- A. Rough Carpentry 06 10 00
- B. Caulking & Sealants 07 92 00
- C. Glass & Glazing 08 80 00

**1.03 References**

- A. American Architectural Manufacturers Association (AAMA)
- B. American Society for Testing and Materials (ASTM)
- C. Aluminum Association (AA)

**1.04 System Description**

- A. General: In addition to requirements shown or specified, comply with:
  - 1. Applicable provisions of AAMA Aluminum Storefront and Entrance Manual for design, materials, fabrication and installation of component parts.
- B. Design Requirements: Arcadia AG451T Series is a framing system that provides for flush glazing on all sides without projected stops, with glass in the center of the frame. Framing system suitable for outside or inside glazing.
- C. Performance Requirements:
  - 1. Limit air leakage through assembly to 0.06 CFM/min/sq. ft. ( $.00003 \text{ m}^3/\text{sm}^2$ ) of wall area at 6.24 PSF (300 Pa) as measured in accordance with ASTM E283.
  - 2. Water Resistance: No water leakage when measured in accordance with ASTM E331 with a static test pressure of 10PSF(480 Pa).
  - 3. Dynamic Water Resistance: No water leakage, when measured in accordance with AAMA 501.1-94 with a dynamic test pressure of 10PSF(480 Pa).
  - 4. Limit mullion windload deflection of L/175 with full recovery of glazing materials, when measured in accordance with ASTM E 330.
  - 5. System shall not deflect more than 1/8" at the center point, or 1/16" at the center point of a horizontal member, once deadload points have been established.
  - 6. System shall accommodate expansion and contraction movement due to surface temperature differential of 180 degrees F.
  - 7. Seismic testing shall conform to AAMA recommended static test method for evaluating performance of curtain walls and storefront wall systems due to horizontal displacements associated with seismic movements and building sway.
  - 8. Thermal Performance – When tested in accordance with AAMA 1503.1 and 1502.7 the following results should be attained: U-Maximum .63/CRF – minimum of 59.
  - 9. National Fenestration Rating Council (NFRC) specific application evaluation.

**1.05 Quality Assurance**

- A. Single Source Responsibility:  
Obtain entrances, storefronts, ribbon walls, window walls, curtain walls, window systems, and finish through one source from a single manufacturer.
- B. Provide test reports from AAMA accredited laboratories certifying the performances as specified in 1.03.

**1.06 Warranty**

- A. System shall be warranted against failure and/or deterioration of metals due to manufacturing process for a period of two (2) years.

**PART II – PRODUCTS****2.01 Manufacturers**

- A. Acceptable Manufacturers:
  - 1. Arcadia, Inc., 3225 East Washington Blvd., Vernon, CA. Telephone 323/269-7300, Fax 323/269-7390 or approved equal.
- B. Acceptable Products:
  - 1. Arcadia, Inc., AG451T Series, 2" x 4-1/2" center glazed system thermally broken for 1" glass (screw alpine/shear block system) or approved equal.

**2.02 Framing Materials and Accessories**

- A. Framing members, transition members, mullions, adaptors, and mounting:  
Extruded 6063-T6 aluminum alloy (ASTM B221 – Alloy G.S. 10a T6).
- B. Screws, fastening devices, and internal components: Aluminum, stainless steel, or zinc-plated steel in accordance with ASTM.A-164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from aluminum.
- C. Glazing Gasket
  - 1. Compression-type design, replaceable, molded or extruded santoprene, polyvinyl chloride (PVC), or ethylene propylene diene monomer (EPDM).
  - 2. Shall be of type that locks securely into the glazing reglet to prevent glazing gaskets from disengaging.

**2.03 Finish**

- A. Finish all exposed areas of aluminum and components as indicated.
  - 1. An Architectural Class II or I color anodic coating conforming with AA-M12C22A34/AA-M12C22A44.
    - a. Anodized finish color shall be Colornodic, color to match existing frames or as otherwise noted on the drawings.

**2.04 System Fabrication**

- A. Continuous sub-sill shall be provided under sill members to collect water infiltration and divert from the interior of the system.
- B. Framing members shall be internally reinforced and secured at head and sill as necessary for structural performance requirements, for hardware attachment, and as indicated.
- C. Fasteners shall be so located as to ensure concealment from view in the final assembly.

**PART III-EXECUTION****3.01 Examinations**

- A. Examine conditions and verify substrate conditions are acceptable for product installation.

**3.02 Installation**

- A. Install in accordance with approved shop drawings and manufacturers installation instructions.

**3.03 Field Quality Control**

- A. Test the storefront for water leaks in accordance with AAMA 501.2-94. Conduct test in the presence of the Architect. Correct deficiencies observed as a result of this test.

**END OF SECTION**

**SECTION 08 71 00  
DOOR HARDWARE****PART 1 - GENERAL**

## 1.1 SUMMARY

## A. Section Includes:

1. Door Hardware for new interior and exterior doors.

## B. Related Sections:

1. Section 06 20 00 - Finish Carpentry: Finish Hardware Installation
2. Section 07 92 00 - Joint Sealers – exterior thresholds

## 1.2 SPECIFIC OMISSIONS: Hardware for the following is specified or indicated elsewhere.

- A. Signs, except where scheduled.
- B. Toilet accessories, including grab bars.
- C. Installation.
- D. Rough hardware.
- E. Access doors and panels, except cylinders where detailed.

## 1.3 REFERENCES:

Use date of standard in effect as of Bid date.

- A. American National Standards Institute – ANSI 156.18 – Materials and Finishes.
- B. BHMA – Builders Hardware Manufacturers Association
- C. DHI – Door and Hardware Institute
- D. NFPA – National Fire Protection Association
  1. NFPA 80 – Fire Doors and Windows
  2. NFPA 105 – Smoke and Draft Control Door Assemblies
  3. NFPA 252 – Fire Tests of Door Assemblies
- E. UL – Underwriters Laboratories
  1. UL10C – Positive Pressure Fire Tests of Door Assemblies.
  2. UL 305 – Panic Hardware
- F. WHI – Warnock Hersey Incorporated
- G. State of California Building Code (CBC), latest edition.
- H. Local applicable codes
- I. SDI – Steel Door Institute
- J. WI – Woodwork Institute
- K. AWI – Architectural Woodwork Institute
- L. NAAMM – National Association of Architectural Metal Manufacturers

## 1.4 SUBMITTALS &amp; SUBSTITUTIONS

## A. SUBMITTALS:

Submit six copies of schedule per Section 01 34 00. Only submittals printed one sided will be accepted and reviewed. Organize vertically formatted schedule into "Hardware Sets" with index of doors and headings, indicating complete designations of every item required for each door or opening. Include following information:

1. Type, style, function, size, quantity and finish of hardware items.
  2. Use BHMA Finish codes per ANSI A156.18.
  3. Name, part number and manufacturer of each item.
  4. Fastenings and other pertinent information.
  5. Description of door location using space names and numbers as published in the drawings.
  6. Explanation of abbreviations, symbols, and codes contained in schedule.
  7. Mounting locations for hardware.
  8. Door and frame sizes, handing, materials, fire-rating and degrees of swing.
  9. List of manufacturers used and their nearest representative with address and phone number.
  10. Catalog cuts.
  11. Wiring Diagrams.
  12. Manufacturer's technical data and installation instructions for electronic hardware.
- B. Bid and submit manufacturer's updated/improved item if scheduled item is discontinued.
- C. Deviations: Highlight, encircle or otherwise identify deviations from "Schedule of Finish Hardware" on submittal with notations clearly designating those portions as deviating from this section.
- D. If discrepancy between drawings and scheduled material in this section, bid the more expensive of the two choices, note the discrepancy in the submittal and request direction from Architect for resolution.
- E. Substitutions per Division 1. Include product data and indicate benefit to the Project. Furnish operating samples on request.
- F. Furnish as-built/as-installed schedule with closeout documents, including keying schedule, wiring diagrams, manufacturers' installation, adjustment and maintenance information, and supplier's final inspection report.

## 1.5 QUALITY ASSURANCE:

## A. Qualifications:

1. Hardware supplier: direct factory contract supplier who employs a certified architectural hardware consultant (AHC), available at reasonable times during course of work for project hardware consultation to Owner, Architect and Contractor.
  - a. Responsible for detailing, scheduling and ordering of finish hardware. Detailing implies that the submitted schedule of hardware is correct and complete for the intended function and performance of the openings.
2. Hardware: Free of defects, blemishes and excessive play. Obtain each kind of hardware (latch and locksets, exit devices, hinges and closers) from one manufacturer.
3. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.

4. Fire-Rated Openings: NFPA 80 compliant. Hardware UL10C / California State Fire Marshal Standard 12-7-4 (positive pressure) compliant for given type/size opening and degree of label. Provide proper latching hardware, non-flaming door closers, approved-bearing hinges, and resilient seals. Coordinate with wood door section for required in tumescent seals. Furnish openings complete.
5. Note: scheduled resilient seals may exceed selected door manufacturer's requirements.
6. See 2.6.E for added information regarding resilient and in tumescent seals.
7. Furnish hardware items required to complete the work in accordance with specified performance level and design intent, complying with manufacturers' instructions.

#### 1.6 DELIVERY, STORAGE AND HANDLING:

- A. Delivery: coordinate delivery to appropriate locations (shop or field).
  1. Permanent keys and cores: secured delivery direct to Owner's representative.
- B. Acceptance at Site: Items individually packaged in manufacturers' original containers, complete with proper fasteners and related pieces. Clearly mark packages to indicate contents, locations in hardware schedule and door numbers.
- C. Storage: Provide securely locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, dust, excessive heat and cold, etc.

#### 1.7 PROJECT CONDITIONS AND COORDINATION:

- A. Where exact types of hardware specified are not adaptable to finished shape or size of members requiring hardware, provide suitable types having as nearly as practical the same operation and quality as type specified, subject to Architect's approval.
- B. Coordination: Coordinate hardware with other work. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated, as necessary for proper installation and function, regardless of omissions or conflicts in the information on the Contract Documents. Furnish related trades with the following information:
  1. Location of embedded and attached items to concrete.
  2. Location of wall-mounted hardware, including wall stops.
  3. Location of finish floor materials and floor-mounted hardware.
  4. Locations for conduit and raceways as needed for electrical, electronic and electro-pneumatic hardware items. Fire/life-safety system interfacing. Point-to-point wiring diagrams plus riser diagrams to related trades.
  5. Manufacturer templates to door and frame fabricators.
- C. Check Shop Drawings for doors and entrances to confirm that adequate provisions will be made for proper hardware installation. Do not order hardware until the submittal has been reviewed by the frame and door suppliers for compatibility with their products.

#### 1.8 WARRANTY:

- A. Part of respective manufacturers' regular terms of sale. Provide manufacturers' written warranties:

a.	Locksets:	Three years
b.	Extra Heavy Duty Cylindrical Lock:	Seven Years
c.	Exit Devices:	Three years mechanical One year electrical
d.	Closers:	Ten years mechanical Two years electrical
e.	Hinges:	Two year
f.	Other Hardware	Two years

#### 1.9 COMMISSIONING:

- A. Conduct these tests prior to request for certificate of substantial completion:
1. With installer present, test door hardware operation with climate control system and stairwell pressurization system both at rest and while in full operation.
  2. With installer and electrical contractor present, test hardware interfaced with fire/life-safety system for proper operation and release.

### **PART 2 – PRODUCTS**

#### 2.1 MANUFACTURERS:

Listed acceptable manufacturers: submit for review products with equivalent function and features of scheduled products.

ITEM:	MANUFACTURER:
Hinges	(IVE) Ives
Continuous Hinges	(IVE) Ives
Key System	(SCH) Schlage
Locks	(SCH) Schlage
Exit Devices	(VON) Von Duprin
Closers	(LCN) LCN
Push & Pull Plates	(IVE) Ives
Kickplates	(IVE) Ives
Stops & Holders	(IVE) Ives
Overhead Stops	(GLY) Glynn-Johnson
Thresholds	(NGP) NGP
Seals & Bottoms	(NGP) NGP
Aluminum Door Locks	(ADA) Adams Rite

## 2.2 HINGING METHODS:

- A. Drawings typically depict doors at 90 degrees, doors will actually swing to maximum allowable. Use wide-throw continuous hinges as needed up to 8 inches in width to allow door to stand parallel to wall for true 180-degree opening. Advise architect if 8-inch width is insufficient.
- B. Conform to manufacturer's published hinge selection standard for door dimensions, weight and frequency, and to hinge selection as scheduled. Where manufacturer's standard exceeds the scheduled product, furnish the heavier of the two choices, notify Architect of deviation from scheduled hardware.
- C. Continuous Hinges (at all Exterior Doors):
  - 1. Geared-type aluminum.
    - a. Use wide-throw units where needed for maximum degree of swing, advise architect if commonly available hinges are insufficient.
  - 2. Pinned steel/stainless steel type: continuous stainless steel, 0.25-inch diameter stainless-steel hinge pin.
    - a. Use engineered application-specific wide-throw units as needed to provide maximum swing degree of swing, advise architect if required width exceeds 8 inches.
- D. Non-Removable Pin type:
  - 1. Used at interior doors only.
  - 2. Must be the extra-heavy duty type.

## 2.3 LOCKSETS, LATCHSETS, DEADBOLTS:

- A. Mortise Locksets and Latchsets: as scheduled.
  - 1. Chassis: cold-rolled steel, handing field-changeable without disassembly.
  - 2. Latchbolts: 3/4 inch throw stainless steel anti-friction type.
  - 3. Lever Trim: through-bolted, accessible design, cast lever or solid extruded bar type levers as scheduled. Filled hollow tube design unacceptable.
    - a. Spindles: security design independent breakaway. Breakage of outside lever does not allow access to inside lever's hubworks to gain wrongful entry.
  - 4. Furnish solid cylinder collars with wave springs. Wall of collar to cover rim of mortise cylinder.
  - 5. Thumbturns: accessible design not requiring pinching or twisting motions to operate.
  - 6. Deadbolts: stainless steel 1-inch throw.
  - 7. Electric operation: Manufacturer-installed continuous duty solenoid.
  - 8. Strikes: 16 gage curved steel, bronze or brass with 1 inch deep box construction, lips of sufficient length to clear trim and protect clothing.
  - 9. Scheduled Lock Series and Design: Schlage L series, 06A design.
  - 10. Certifications:
    - a. ANSI A156.13, 1994, Grade 1 Operational, Grade 1 Security.
    - b. ANSI/ASTM F476-84 Grade 31 UL Listed.
- B. Extra Heavy Duty Cylindrical Locks and Latches: as scheduled.
  - 1. Chassis: cylindrical design, corrosion-resistant plated cold-rolled steel, through-bolted.
  - 2. Locking Spindle: stainless steel, integrated spring and spindle design.
  - 3. Latch Retractors: forged steel. Balance of inner parts: corrosion-resistant plated steel, or stainless steel.
  - 4. Latchbolt: solid steel.

5. Backset: 2-3/4" typically, more or less as needed to accommodate frame, door or other hardware.
6. Lever Trim: accessible design, independent operation, spring-cage supported, minimum 2" clearance from lever mid-point to door face.
7. Electric operation: Manufacturer-installed continuous duty solenoid.
8. Strikes: 16 gage curved steel, bronze or brass with 1" deep box construction, lips of sufficient length to clear trim and protect clothing.
9. Lock Series and Design: Schlage ND series, "Rhodes" design.
10. Certifications:
  - a. ANSI A156.2, 1994, Series 4000, Grade 1.
  - b. UL listed for A label and lesser class single doors up to 4ft x 8ft.

## 2.5 SPECIFIED FEATURES:

- A. Non-Fire Rated Devices: cylinder dogging.
- B. Fire-Labeled Devices: UL label indicating "Fire Exit Hardware". Vertical rod devices less bottom rod (LBR) unless otherwise scheduled.

## 2.6 CLOSERS

- A. Surface Closers: LCN 4041 series
- B. Full rack-and-pinion type cylinder with removable non-ferrous cover and cast iron body. Double heat-treated pinion shaft, single piece forged piston, chrome-silicon steel spring.
- C. ISO 2000 certified. Units stamped with date-of-manufacture code.
- D. Independent lab-tested 10,000,000 cycles.
- E. Non-sized, non-handed, and adjustable. Place closer inside building, stairs, and rooms.
- F. Plates, brackets and special templating when needed for interface with particular header, door and wall conditions and neighboring hardware.
- G. Adjustable to open with not more than 5.0lbs pressure to open at exterior doors and 5.0lbs at interior doors. As allowed per California Building Code, Section 1133B.2.5, local authority may increase the allowable pressure for fire doors to achieve positive latching, but not to exceed 15lbs.
- H. Separate adjusting valves for closing speed, latching speed and backcheck, fourth valve for delayed action where scheduled.
- I. Extra-duty arms (EDA) at exterior doors scheduled with parallel arm units.
- J. Exterior door closers: tested to 100 hours of ASTM B117 salt spray test, furnish data on request.
- K. Exterior doors: seasonal adjustments not required for temperatures from degrees F to -30 degrees F, furnish checking fluid data on request.
- L. Non-flaming fluid, will not fuel door or floor covering fires.
- M. Pressure Relief Valves (PRV) not permitted.

## 2.7 Overhead Concealed Closers:

- A. Power transmitted to door separately from hanging means. Closer spindle does not support the door. Cast iron cylinders with hydraulically checked rack and pinion construction and single piece forged pistons. Separate non-critical sweep and latch speed valves.

1. LCN 2030 series: concealable in 1-3/4inch x 4inch tube, single-lever arm & track power transmission, concealed-in-track bumpers where scheduled.

## 2.8 OTHER HARDWARE

- A. Overhead Stops: Non-plastic mechanisms and finished metal end caps. Field-changeable hold-open, friction and stop-only functions.
- B. Kick Plates: Four beveled edges, .050 inches minimum thickness, height and width as scheduled. Sheet-metal screws of bronze or stainless steel to match other hardware.
- C. Door Stops: Provide stops to protect walls, casework or other hardware.
  1. Unless otherwise noted in Hardware Sets, provide wall type with appropriate fasteners. Where wall type cannot be used, provide floor type. If neither can be used, provide overhead type.
  2. Locate overhead stops for maximum possible opening. Consult with Owner for furniture locations. Minimum: 90deg stop / 95deg deadstop. Note degree of opening in submittal.
- D. Seals: Finished to match adjacent frame color. Resilient seal material: polyurethane, polypropylene, nylon brush, silicone rubber or solid high-grade neoprene as scheduled. Do not furnish vinyl seal material. UL label applied to seals on rated doors. Substitute products: certify that the products equal or exceed specified material's thickness and durability.
  1. Proposed substitutions: submit for approval.
  2. Solid neoprene: MIL Spec. R6855-CL III, Grade 40.
  3. Non-corroding fasteners at in-swinging exterior doors.
  4. Fire-rated Doors, Resilient Seals: UL10C / UBC Standard 7-2 compliant. Coordinate with selected door manufacturers' and selected frame manufacturers' requirements. Where rigid housed resilient seals are scheduled in this section and the selected door manufacturer only requires an adhesive-mounted resilient seal, furnish rigid housed seal at minimum, or both the rigid housed seal plus the adhesive applied seal. Adhesive applied seals alone are deemed insufficient for this project where rigid housed seals are scheduled.
  5. Fire-rated Doors, Intumescent Seals: Furnished by selected door manufacturer. Furnish fire-labeled opening assembly complete and in full compliance with UL10C / UBC Standard 7-2. Where required, intumescent seals vary in requirement by door type and door manufacture -- careful coordination required
- E. Thresholds: As scheduled and per details. Comply with CBC Section 1133B.2.4.1. Substitute products: certify that the products equal or exceed specified material's thickness. Proposed substitutions: submit for approval.
  1. Exteriors: Seal perimeter to exclude water and vermin. Use sealant complying with requirements in Division 7 "Thermal and Moisture Protection". Non-ferrous 1/4inch fasteners and lead expansion shield anchors, or Red-Head #SFS-1420 (or approved equivalent) Flat Head Sleeve Anchors (SS/FHSL).
  2. Fire-rated openings, 90min or less duration: use thresholds to interrupt floor covering material under the door where that material has a critical radiant flux value less than 0.22 watts per square centimeter, per NFPA 253. Use threshold unit as scheduled. If none scheduled, request direction from Architect.
  3. Fire-rated openings, 3hour duration: Thresholds, where scheduled, to extend full jamb depth.
  4. Plastic plugs with wood or sheet metal screws are not an acceptable substitute for specified fastening methods.

5. Fasteners: Generally, exposed screws to be Phillips or Robertson drive. Pinned TORX drive at high security areas. Flat head sleeve anchors (FHSL) may be slotted drive. Sheet metal and wood screws: full-thread. Sleeve nuts: full length to prevent door compression.
  - F. Silencers: Interior hollow metal frames, 3 for single doors, 4 for pairs of doors. Omit where adhesive mounted seal occurs. Leave no unfilled/uncovered pre-punched silencer holes.
- 2.9 FINISH:
- A. Generally BHMA 626 Satin Chromium.
    1. Areas using BHMA 626 to have push-plates, pulls and protection plates of BHMA 630, Satin Stainless Steel, unless otherwise noted.
  - B. Door closers: factory powder coated to match other hardware, unless otherwise noted.
  - C. Aluminum items: match predominant adjacent material. Seals to coordinate with frame color.
- 2.10 KEYING REQUIREMENTS:
- A. Key System: Schlage Everest "D" restricted utility-patented keyway, interchangeable core. Utility patent protection to extend at least until 2014. Key blanks available only from factory-direct sources, not available from after-market key blank manufacturers. For estimate use factory GMK charge. Initiate and conduct meeting(s) with Owner and I-R Security & Safety Consultants representatives to determine system keyway(s), keybow styles, structure and degree of geographic exclusivity. Furnish Owner's written approval of the system.
  - B. Keys
    1. New factory registered master key system.
    2. Construction keying: furnish temporary keyed-alike cores. Remove at substantial completion and install permanent cylinders/cores in Owner's presence. Demonstrate that construction key no longer operates.
    3. Furnish 12 construction keys.
    4. Furnish 3 construction control keys.
  - C. Key Cylinders: furnish utility patented, 6-pin solid brass construction.
  - D. Cylinder cores: furnish keyed at factory of lock manufacturer where permanent records are maintained. Locks and cylinders same manufacturer.
  - E. Permanent keys: use secured shipment direct from point of origination to Owner.
    1. For estimate: 3 keys per change combination, 3 master keys per group, 3 grand-master keys, 3 control keys.
    2. For estimate: VKC stamping plus "Do Not Duplicate".
  - F. Bitting List: use secured shipment direct from point of origination to Owner upon completion.
- 2.11 BUILDING ALARM/SECURITY SYSTEM:
- A. All exterior doors shall be tied into the building alarm/security system.
  - B. Use the recessed door position switches.

- C. The contractor shall coordinate with the City's building alarm/security system vender and shall provide all required hardware, connections, conduits, patch/repair, and anything else required for a complete finished installation compatible with the City's alarm systems.

### **PART 3 - EXECUTION**

#### 3.1 ACCEPTABLE INSTALLERS:

- A. Can read and understand manufacturers' templates, suppliers' hardware Schedules and printed installation instructions. Can readily distinguish drywall screws from manufacturers' furnished fasteners. Available to meet with manufacturers' representatives and related trades to discuss installation of hardware.

#### 3.2 PREPARATION:

- A. Ensure that walls and frames are square and plumb before hardware installation. Make corrections before commencing hardware installation.
- B. Locate hardware per SDI-100 and applicable building, fire, life-safety, accessibility, and security codes.
1. Notify Architect of code conflicts before ordering material.
  2. Locate levers, key cylinders, t-turn pieces, touchbars and other operable portions of latching hardware between 30 inches to 44 inches above the finished floor, per CBC Section 1133B.2.5.1.
- C. Where new hardware is to be installed near existing doors/hardware scheduled to remain, match locations of existing hardware.
- D. Overhead stops: before installing, determine proposed locations of furniture items, fixtures, and other items to be protected by the overhead stop's action.
- E. Existing frames and doors to be retrofitted with new hardware:
1. Field-verify conditions and dimensions prior to ordering hardware. Fill existing hardware cut outs not being reused by the new hardware. Remove existing hardware not being reused, return to Owner unless directed otherwise. Remove existing floor closers not scheduled for reuse, fill cavities with concrete and finish smooth
  2. Cut and weld existing steel frames currently prepared with 2- $\frac{3}{4}$ " height strikes. Cut an approx. 8" section from the strike jamb and weld in a reinforced section to accommodate specified hardware's strike.
  3. Patch and weld flush filler pieces into existing door hardware preparations in steel doors and frames, leave surfaces smooth.
  4. Glue in solid wood block fillers to fill cut outs in existing wood doors, sand surfaces smooth. Alternatively, use an approved epoxy-based wood filler product, submit product data for approval.

#### 3.3 INSTALLATION

- A. Install hardware per manufacturer's instructions and recommendations. Do not install surface-mounted items until finishes have been completed on substrate. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate for proper installation and operation. Remove and reinstall or replace work deemed defective by Architect.

1. Gaskets: install jamb-applied gaskets before closers, overhead stops, rim strikes, etc; fasten hardware over and through these seals. Install sweeps across bottoms of doors before astragals, cope sweeps around bottom pivots, trim astragals to tops of sweeps.
  2. When hardware is to be attached to existing metal surface and insufficient reinforcement exists, use RivNuts, NutSerts or similar anchoring device for screws.
  3. Use manufacturers' fasteners furnished with hardware items, or submit Request for Substitution with Architect.
  4. Replace fasteners damaged by power-driven tools.
- B. Locate floor stops no more that 4 inches from walls and not within paths of travel. See paragraph 2.2 regarding hinge widths, door should be well clear of point of wall reveal. Point of door contact no closer to the hinge edge than half the door width. Where situation is questionable or difficult, contact Architect for direction.
- C. Core concrete for exterior door stop anchors. Set anchors in approved non-shrink grout.
- D. Locate overhead stops for minimum 90 degrees and maximum allowable degree of swing.
- E. Drill pilot holes for fasteners in wood doors and/or frames. Centerpunch hole locations before using self-drilling type screws to prevent skating. Replace screws that are not centered in their holes.
- F. Lubricate and adjust existing hardware scheduled to remain. Carefully remove and give to Owner items not scheduled for reuse.
- G. Field verify existing conditions and measurements prior to ordering hardware. Fill existing hardware cut outs not being used by the new hardware. Remove existing hardware not being reused.
- H. Disable or remove existing floor closers where they exist. If disabled cut or remove spindle.
- I. Where existing wall conditions will not allow door to swing using the scheduled hinges, provide wide-throw hinges and if needed extended arms on closers.
- J. Provide proper brackets to accommodate the mounting of closers on doors with flush transoms.

### 3.4 ADJUSTING

- A. Adjust and check for proper operation and function. Replace units, which cannot be adjusted to operate freely and smoothly.
1. Hardware damaged by improper installation or adjustment methods: repair or replace to Owner's satisfaction.
  2. Adjust doors to fully latch with no more than 1 pound of pressure.
  3. Adjust delayed-action closers on fire-rated doors to fully close from fully-opened position in no more than 10 seconds.
  4. Adjust door closers per 1.9 this section.
- B. Inspection: Use hardware supplier's consultant or consultant's agent. Include supplier's report with closeout documents.
- C. Final inspection: Installer to provide letter to Owner that upon completion installer has visited the Project and has accomplished the following:

1. Re-adjust hardware.
2. Evaluate maintenance procedures and recommend changes or additions, and instruct Owner's personnel.
3. Identify items that have deteriorated or failed.
4. Submit written report identifying problems

3.5 DEMONSTRATION:

- A. Demonstrate mechanical hardware and electrical, electronic and pneumatic hardware systems, including adjustment and maintenance procedures.

3.6 PROTECTION/CLEANING:

- A. Cover installed hardware, protect from paint, cleaning agents, weathering, carts/barrows, etc. Remove covering materials and clean hardware just prior to substantial completion.
- B. Clean adjacent wall, frame and door surfaces soiled from installation/reinstallation process.

3.7 SCHEDULE OF FINISH HARDWARE

- A. See door schedule in drawings for minimum hardware requirements.
- B. The contractor shall be responsible to provide all required hardware not specifically listed on the drawings or in these specifications in order to make the door(s) fully functional for their intended use. The contractor shall submit a complete hardware schedule for review to the Architect.

C. Miscellaneous Material:

ADA	Adams Rite
IVE	H. B. Ives
GLY	Glynn-Johnson Hardware
LCN	LCN Closers
NGP	National Guard Products
SCH	Schlage Lock Company
STA	Stanley
VON	Von Duprin

**END OF SECTION 08 71 00**

**SECTION 08 80 00  
GLAZING****PART I - GENERAL**

## 1.1 Scope:

- A. The extent of glass and glazing work is shown on the drawings, sometimes by abbreviations as indicated herein.
- B. The required applications of glass and glazing include the following:
  - 1. Glazing new exterior doors and windows.
  - 2. Glazing new interior doors and windows.

## 1.2 Quality Assurance:

- A. Fire-Resistant Glass.
  - 1. Tested and listed by U.L. for "fire resistance" if indicated.

## 1.3 Submittals:

- A. Manufacturer's Data, Glass.
  - 1. Submit six (6) copies of manufacturer's specifications and installation instructions for each type of glass required. Include test data substantiating that glass complies with specified requirements. Indicate by copy of transmittal that Glazier has received copy of handling and glazing instructions.
- B. Manufacturer's Data, Glazing Materials.
  - 1. Submit six (6) copies of manufacturer's specifications, and installation instructions for each type of glazing sealant and compound, gasket and associated miscellaneous material required. Include manufacturer's published data, or letter of certification, or certified test laboratory report indicating that each material complies with the requirements and is intended generally for the applications shown. Show by transmittal that one (1) copy of each recommendation and instruction has been distributed to the Glazier.
- C. Samples, Glass.
  - 1. Submit six (6) 6" square samples of each type of glass required. Architect's review of samples will be for color, texture and pattern only. Compliance with other requirements is the exclusive responsibility of the Contractor.
  - 2. Safety glazing film samples shall be reviewed in place and approved by Project Team prior to ordering. Installer to be well experienced with installing film onsite, free of debris and air bubbles, minimal seams and minimal gaps between film and glazing.
- D. Samples, Glazing Materials.
  - 1. Submit six (6) 6" long samples of each color required for each type of glazing sealant or gasket exposed to view. Install sample between two (2) strips of material similar to or representative of channel surfaces where sealant or gasket will be used, held apart to represent typical joint widths. Samples will be reviewed by Architect for color and texture only. Compliance with other requirements is the exclusive responsibility of the Contractor.

#### 1.4 Job Conditions:

- A. The glazier must examine the framing and glazing channel surfaces, backing, removable stop design, and the conditions under which the glazing is to be performed, and notify the Contractor in writing of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the glazing until unsatisfactory conditions have been corrected in a manner acceptable to the glazier.
- B. Weather conditions. Do not proceed with installation of liquid sealants under adverse weather conditions, or when temperatures are below or above manufacturer's recommended limitations for installation.

## PART II - PRODUCTS

#### 2.1 Glass:

- A. Exterior Glazing: Match existing glass type/thickness and tint tint.
- B. Interior Glazing: Single ¼" lites, clear. Provide tempered glass where indicated on the plans and required by the CBC.
- C. Translucent Film (where noted): Provide a translucent, view obscuring film at windows indicated on the drawings. Submit samples to architect for review prior to installation.
- D. Spandrel Glass (where noted): Provide spandrel glass at windows indicated on the drawings. Submit samples to architect for review prior to installation.
- E. Tempered Glass (TG). Plate glass FS DD-G0451, Type 1, which has been heat-strengthened by manufacturer's standard process after cutting to final size, to achieve a flexural strength of four (4) times normal glass strength; as indicated on drawings. ¼" clear at exterior, ¼" clear at interior.

#### 2.2 Glazing Sealants/Compounds:

- A. General. Provide exposed glazing materials of color to match aluminum. Color to be selected by Architect from manufacturer's standard colors. Provide hardness of materials as recommended by the manufacturer for the required application and condition of installation in each case. Provide only compounds which are known (proven) to be fully compatible with surfaces contacted.
- B. Silicone Rubber Glazing Sealant (SR-GS). 100% silicon rubber, one-part elastomeric sealant, complying with FS TT-S001543, Class A. Provide acid-type for non-porous channel surfaces, and provide non-acid type for porous channel surfaces (where any of the channel surfaces are porous).

#### 2.3 Miscellaneous Glazing Materials:

- A. Setting blocks. Neoprene, 70-90 durometer hardness, with proven compatibility with sealants used.
- B. Spacers. Neoprene, 40-50 durometer hardness, with proven compatibility with sealants used.
- C. Compressible Filler Rod (CP-FR). Closed-cell or waterproof jacketed rod stock of synthetic rubber or plastic foam, proven to be compatible with sealants used, flexible and resilient, with

5-10 psi compression strength for 25% deflection.

- D. Cleaners, primers and sealers. Type recommended by sealant or gasket manufacturer.

### **PART III - EXECUTION**

#### **3.1 Standards and Performance:**

- A. Installation must withstand normal temperature changes, wind loading, moisture penetration, impact loading (for operating sash and doors), without failure of any kind including loss or breakage of glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of glazing materials and other defects in the work.
- B. Protect glass from edge damage at all times during handling, installation and operation of the building.
- C. Glazing channel dimensions as shown are intended to provide for necessary minimum bite on the glass, minimum edge clearance and adequate sealant thicknesses, with reasonable tolerances. The glazier is responsible for correct glass size for each opening, within the tolerances and necessary dimensions established.
- D. Comply with combined recommendations of glass manufacturer and manufacturer of sealants and other materials used in glazing, except where more stringent requirements are shown or specified, and except where manufacturer's technical representatives direct otherwise.
- E. Comply with "Glazing Manual" by GANA (Glass Association of North America) except as shown and specified otherwise, and except as specifically recommended otherwise by the manufacturers of the glass and glazing materials.
- F. Inspect each piece of glass immediately before installation, and eliminate any which have observable edge damage or face imperfections.
- G. Unify appearance of each series of lights by setting each piece to match others as nearly as possible. Inspect each piece and set with pattern, draw and bow oriented in the same direction as other pieces.
- H. Cut and install colored (tinted) and heat absorbing glass as recommended in "Technical Services Report No. 104" by PPG Industries.
- I. Install polysulfide sealants as recommended by Tremco/Vulkem, except as otherwise recommended by the sealant manufacturer.
- J. Safety glazing film samples shall be reviewed in place and approved by Project Team prior to ordering. Installer to be well experienced with installing film on site, free of debris and air bubbles, minimal seams and minimal gaps between film and glazing.

#### **3.2 Preparation for Glazing:**

- A. Clean the glazing channel or other framing members to receive glass immediately before glazing. Remove coatings which are not firmly bonded to the substrate. Remove lacquer from metal surfaces wherever elastomeric sealants are used.
- B. Apply primer or sealer to joint surfaces wherever recommended by sealant manufacturer.

### 3.3 Glazing:

- A. Install setting blocks of proper size at quarter points of sill rabbet. Set blocks in thin course of the heel-bead compound, if any.
- B. Provide spacers inside and out, and of proper size and spacing, for all glass sizes larger than 50 united inches, except where gaskets are used for glazing. Provide 1/8" minimum bite of spacers on glass and use thickness equal to sealant width, except with sealant tape use thickness slightly less than final compressed thickness of tape.
- C. Voids and Filler Rods.
  - 1. Prevent exudation of sealant or compound by forming voids or installing filler rods in the channel at the heel of jambs and head (do not leave voids in the sill channels) except as otherwise indicated, depending on light size, thickness and type of glass, and complying with manufacturer's recommendations.
- D. Do not attempt to cut, seam, nip or abrade glass which is tempered, heat strengthened, or coated.
- E. Force sealants into channel to eliminate voids and to ensure complete "wetting" or bond of sealant to glass and channel surfaces.
- F. Tool exposed surfaces of glazing liquids and compounds to provide a substantial "wash" away from the glass. Install pressurized tapes and gaskets to protrude slightly out of the channel so as to eliminate dirt and moisture pockets.
- G. Clean and trim excess glazing materials from the glass and stops or frames promptly after installation, and eliminate stains and discolorations.
- H. Where wedge-shaped gaskets are driven into one side of the channel to pressurize the sealant or gasket on the opposite side, provide adequate anchorage to ensure that gasket will not "walk" out when subjected to dynamic movement. Anchor gasket to stop with matching ribs, or by proven adhesives, including embedment of gasket tail in cured heel bead.
  - 1. Gasket Glazing.
    - a. Miter cut and bond ends together at corners where gaskets are used for channel glazing, so that gaskets will not pull away from corners and result in voids or leaks in the glazing system.
  - 2. Safety Glazing Film Installation.
    - a. Safety glazing film samples shall be reviewed in place and approved by Project Team prior to ordering. Installer to be well experienced with installing film on site, free of debris and air bubbles, minimal seams and minimal gaps between film and glazing.

### 3.4 Cure, Protection and Cleaning:

- A. Cure glazing sealants and compounds in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strength and surface durability.
- B. Protect exterior glass from breakage immediately upon installation, by attachment of crossed

streamers to framing held away from glass. Do not apply markers of any type to surfaces of glass.

- C. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during the construction period, including natural causes, accidents and vandalism.
- D. Maintain glass in a reasonably clean condition during construction so that it will not be damaged by corrosive action and will not contribute (by wash-off) to the deterioration of glazing materials and other work.
- E. Wash and polish glass on both faces not more than four days prior to District's acceptance of the work in each area. Comply with glass manufacturer's recommendations.

**END OF SECTION 08 80 00**

**SECTION 09 24 00  
CEMENT PLASTERING****PART 1 - GENERAL**

## 1.1 WORK INCLUDED

- A. Provide new lath, waterproofing, and Portland cement plaster, finish texture as called out on the Drawings.

## 1.2. RELATED WORK

- A. Section 09 91 13 & 09 91 23 - Painting.

## 1.3. PROTECTION

- A. Provide protection of materials and assemblies in place from plastering operations. Drawings are not necessarily intended to assign construction sequence or method, therefore, protection of in-place materials and assemblies may be required in excess of that which can be construed from drawings. Furnish, install, then remove all protection and scaffolding or staging at no additional cost.

## 1.4. SUBMITTALS

- A. Submit samples of color and texture for Architect review in accordance with Section 01 34 00.
- B. Provide 4 foot by 4 foot sample of each plaster system required on project. Once sample installation has been approved, that sample becomes the standard of quality expected for that system throughout the project.
- C. Provide samples of articulated rigid foam cornice material.

## 1.5. QUALITY CONTROL

- A. It is intended that the work of this section follow the guidelines for plaster and stucco work prescribed by the Lath and Plaster Information Bureau in the Lath and Plaster Information Manual, latest edition. In some instances these specifications deviate from those prescribed guidelines with respect to fiber reinforcement and the prohibition of plastic cement.
- B. Guarantee: Provide a two year guarantee against cracks, blisters, pits and discoloration due to defective materials or improper workmanship.

**PART 2 - PRODUCTS**

## 2.1. PLASTER MATERIALS

- A. Cement: ASTM C150, Type I or II, Portland. No plastic cement will be accepted.
- B. Lime: ASTM C 206. dry hydrated type. Lime putty, if proposed, shall weight more than 83 pounds per cubic foot.
- C. Sand: ASTM C144, clean and well graded from coarse to fine.
- D. Water: clean and free from injurious amounts of acid, alkali, and organic matter.

- E. Pre-Mixed Mortar with Waterproofing Additive (to be used in lieu of A through C above): Provide Laticrete International 226 Crete Powder gauged with 8510 Latex Admix.
- F. Plaster reinforcing: Provide Hills Brothers Chemical (714/998-8800) Hi-Fibe P-1510 fibers at 1/5 pound per 100 pounds of cement. As an alternate, provide chopped, alkali resistant glass fibers (1/2 pound per 100 pounds of cement), polyester (1/3 pound per 100 pounds of cement), nylon (1/4 pound per 100 pounds of cement, or polypropylene (1 pound per 100 pounds of cement). Reinforcing shall be used for introduction into scratch and brown coats of exterior 3-coat plaster, scratch coat only for tile and stone base. Do not use reinforcing in veneer plaster systems of less than 3/16 inch overall thickness.
- G. Algaecide: Provide chemical algaecide for introduction into finish coat of plaster where plaster/stucco is to remain un-painted and used on exterior within 4 feet of any landscape planting or irrigation system. Ensure that chemical used for algaecide will not discolor plaster/stucco.
- H. Finish Coat Texture: 20/30 Sand Float.

## 2.2. LATH AND ACCESSORIES

- A. Lath for Portland Cement Plaster:
  - 1. Wood Studs and Blocking: K-Lath Corporation, Aqua K-Lath or Stucco-Rite, Type SFB, standard for 16" support spacing, heavy duty for 24" support spacing.
  - 2. Metal Studs: Flat or Self-furring diamond mesh, galvanized sheets, 3.4 pounds per square yard.
  - 3. Soffits and Ceilings: K-Lath Corporation. Gun Lath, Type F-F B, standard for 16" support spacing, heavy duty for 24" support spacing, except galvanized hi-rib, self-furring lath at exterior where shown.
  - 4. Corner Reinforcement: K-Lath Corporation, Kwik Corner, for exterior angles; Bentrite welded wire mesh, 2" X 2" angle for interior angles.
  - 5. Paper: Meeting FS UU-B-790a, Type 1. Style 2, Grade D, two layers, "6(-)minute" rated water-vapor resistance, Fortifiber Super Jumbo-Tex. or other approved manufacturer.
- B. Accessories: Provide all trim such as reveals, reglets, cornerite, beads, screeds, and prefabricated joints. Refer to Drawings for individual items incorporated into construction.
  - 1. All accessories shall be fabricated or manufactured from aluminum where incorporated in plaster systems located at exterior unconditioned building areas, and interior areas subject to elevated moisture conditions (defined as 70 percent RH on a sustained basis).
- C. Hot-Dip galvanize all fastening devices such as staples, nails, screws, and wire ties. No electro-galvanizing is acceptable.
  - 1. Wire gage: Use 8 gage hot-dip galvanized wire unless heavier gage is required by local building code regulations.
  - 2. In areas which are wet, potentially wet or are expected to have high moisture or humidity, use stainless steel.
- D. Reinforcing Mesh: welded fabric, galvanized steel, for mortar beds which are required by Drawings or manufacturer publications. Size: 1-1/2 in. X 2 in. or 2 in. square mesh, minimum 16 gauge.
- E. Bonding Agent: Provide Plaster-Weld, or other approved, to allow proper bond of plaster to substrate.

- F. Color: Provide integral coloring agent as selected by Architect, manufactured by La Habra, Omega, Highland, or other approved. Integral coloring is to be used where field painting is not required over plaster systems.

### PART 3 - EXECUTION

#### 3.1. SURFACE PREPARATION

- A. Properly prepare surfaces, substrates and previously installed assemblies for acceptance of plaster systems.
- B. Ensure that existing surfaces are clean and free of loose and foreign material. Apply necessary surface treatments such as bonding agents.
- C. Lightly sandblast or acid wash existing surfaces where such treatment is recommended by the Plastering Institute. and where such treatment will not harm other surfaces or assemblies.

#### 3.2. LATHING

- A. General: Apply with long dimension at right angles to the supports. Extend both horizontal and vertical factory laps. On walls, install first course at bottom. and work up. Work from right to left. Stagger all vertical laps.
- B. Wood Framing: Attachments shall securely engage the back wire within the lath and be spaced no more than 6" o.c. on each support.
- C. Vertical Surfaces: Nails must have a minimum penetration of 3/4" into the support unless otherwise required by code. Nails shall be hot-dip galvanized (no electro-galvanized will be accepted). Staples of 14 gauge galvanized wire, 1-1/4" long and 3/4" wide may be used.
- D. Horizontal and Sloping Surfaces: Nails shall be hot dip galvanized (no electro-galvanized) 11 gage. 1-1/2" long. barbed with 7/16" head unless otherwise required by code. All nails must be "driven home". Staples of 14 gage galvanized wire, 1-3/8" long and 3/4" wide may be used.
- E. Other Framing (Horizontal and Vertical Surfaces)
1. Gun. Hi-Rib Lath: Attach with hog rings or 18 gage tie Wire. Attachments must engage one or more wire in the lath and encircle or attach to the flange or face of the support at no more than 6" o.c.
  2. Pyro K-Lath or Stucco Rite: Attach with self tapping screws with Neoprene washers. Attachments must engage one or more wires in the lath and attach to the flange or face of the support at not more than 6" o.c. On vertical surfaces position fastener below and engage horizontal wire in lath.
- F. Metal Trim
1. Where Stucco terminates against dissimilar materials, install casing beads.
  2. Install expansion joints in the stucco and plaster fields as indicated, or. Where not indicated, install joints to create panels no larger than 144 square feet with no dimension exceeding 12 feet, or a length to width ratio of 2 to 1.
  3. Fasten metal trim by wire-tying or nailing depending on the type. style and hack-up collateral material.
  4. When used with metal lath. wire ties must be used. Install trim with attachment only to the edges of abutting sheets of lath. so that the lath is not continuous or tied across the joint.

5. Where expansion joints are placed parallel to framing members, install joints so that none is more than 4" away from a framing member.

### 3.3. NUMBER OF COATS AND THICKNESSE

- A. Veneer/ Skim Coat Stucco: 2 coats, approximately 1/8 inch, or as required to cover substrate texture and provide for texture as selected.
- B. Over Cementitious Substrates: 3 coats. 3/8 inch leveling coat over a properly applied liquid bond agent, a 3/8" brown coat, with a 1/8 inch finish coat in color and texture specified - total minimum thickness of 7/8 inch.
- C. Over Lathed Wood Framing Systems: 3 coats. 7/8 inch thick.
- D. All thickness specified above and shown on Drawings are minimum thicknesses – not "average" thicknesses. If CM or Architect should decide to require that this contractor provide core samples as proof of any Work specified in this section. And any thickness tum out not be the minimums specified or shown. CM or Architect may require removal and replacement of any portion or all of the stucco or plaster plus any subsequently installed/applied finish material. No additional compensation and no additional construction time will be granted.

### 3.4. APPLICATION

- A. Apply scratch coat over metal lath with sufficient pressure so that it is shoved through the metal reinforcement against the backing to form full keys and to embed completely the reinforcement. Apply to an approximate thickness of 3/8" from the face of the backing. Scratch to provide bond for succeeding coat. Cure with water for minimum of 72 hours. This timing may require attendance over weekends and/or holidays, and if so, provide such additional Work at no additional cost to Owner.
- B. Apply brown coat not sooner than 72 hours after the application of the scratch coat. Dampen scratch coat evenly to obtain uniform suction. Apply to an approximate thickness of 3/8". Bring surface to a true, even surface by floating or rodding and leave rough, ready to receive finish coat. Cure with water for minimum of 7 calendar days.
- C. Where indicated over concrete or masonry that is not detailed to receive a metal lath over building paper, apply brown coat directly over concrete or masonry, proportioned as specified above. Dampen surface evenly to obtain uniform suction. Apply to an approximate thickness of 3/8". Bring surface to a true, even surface by floating or rodding, and leave rough and ready to receive finish coat. Cure for 7 days by keeping moist.
  1. Where there are control or expansion type joints in the masonry, ensure that there are joints installed in the plaster/stucco system over the same joint location.
- D. Apply finish coat not sooner than 7 days after the application of the preceding coat. Before applying, dampen the surface of the preceding coat evenly to obtain uniform suction. The thickness of the finish coat shall be sufficient to secure the texture specified, but in no case less than 1/8". Avoid excessive troweling. When applying the finish, plan work so that the entire wall can be completed at one time to eliminate joining marks. If not practical, use a corner, door or window as a breaking point. Texture and color of finish coat shall match approved sample.
- E. Upon completion, ensure that staging and vertical layering of applied plaster/stucco is not visible. It shall not be possible to see any vertical breaks on walls. All plaster work shall be continuous, regardless of wall height, except for prefabricated control joints and reveals.

F. Terminate plaster/stucco systems where indicated on Drawings. If not dimensioned, consult with Architect to locate the termination properly.

1. Over masonry and other cementitious construction systems, terminate plaster/stucco systems at construction/control/expansion joint locations.

### 3.5. JOINTING

A. As work progresses, build in expansion/contraction joints as shown on Drawings. If not detailed on Drawings, place as recommended by Plastering Institute, but gain Written approval from Architect on their exact suggested location prior to installation. In general, place expansion joints using the following guidelines:

1. No area shall be greater than 144 square feet.
2. No dimension shall be greater than 12 feet.
3. No area shall have one dimension greater than twice the perpendicular dimension of the area.

B. It shall be the final responsibility of the installing contractor to install proper types of joints in proper locations as recommended by the Plastering Institute, whether any further direction is given by Architect or not.

1. Contractor assumes all financial responsibility for removal and replacement of lath and plaster systems which develop cracks as a result of not installing expansion/contraction joints.

### 3.6. CURING

A. Keep each coat of plaster damp for at least 72 hours after application. Moistening of each coat shall begin as soon as the plaster has hardened sufficiently so as not to be injured. Apply water in a fine fog spray. Avoid soaking the plaster. Apply only as much water as can be readily absorbed. Protect plaster from uneven and excessive evaporation during hot, dry weather and from strong wind.

### 3.7. PATCHING

A. Plaster containing cracks, blisters, pits or discoloration will not be acceptable. Remove such plaster and replace with plaster conforming to the requirements of these specifications. Patching inherently defective work will be permitted only when approved and such patching shall match existing work in texture and colors. Repair all defects after other trades have finished their work.

**END OF SECTION 09 24 00**

**SECTION 09 29 00  
GYPSUM BOARD****PART 1 - GENERAL**

## 1.1 SCOPE:

- A. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified and as necessary to complete the Contract, including but not limited to these major items:
  - 1. Gypsum drywall construction.
  - 2. Cementitious backer board construction
  - 3. Joint and corner reinforcing, adhesive, tape and finishing.
  - 4. Drywall & backer board accessories.
  - 5. Access panels.

## 1.2 RELATED WORK SPECIFIED ELSEWHERE:

- A. Wood framing for drywall: Section 06 10 00
- B. Metal stud framing for backer board: Section 05 40 00
- C. Insulation. Section: 07 21 00
- D. Furnishing access panels required for access to mechanical and electrical equipment, for installation under this Section.

## 1.3 GENERAL REQUIREMENTS:

- A. Field Conditions. Verify drawing dimensions with actual field conditions. Inspect related work and adjacent surfaces. Report to the Architect all conditions which prevent proper execution of this work.
- B. Codes. Materials and work shall conform to the governing Building Code. In case of conflict between these specifications, the Reference Specifications and the Building Code, the more stringent shall govern.
- C. Reference Specifications. Except as may be modified by these specifications and applicable laws and ordinances at the place of building, install this work to conform to the requirements of "Standard Specifications for Gypsum Wallboard Interior Finishes", as approved by the American National Standards Institute as ANS #A97.1.
- D. Approved Manufacturers. United State Gypsum Co., Blue Diamond Co., National Gypsum Co., or Kaiser Gypsum Co., Inc.
- E. Delivery and Storage. Deliver all materials in unbroken packages bearing manufacturer's brand name and designation. Keep materials dry and protected from the weather. Take care to avoid damage to edges, ends, and surfaces.

## 1.4 FASTENERS:

- A. Space fasteners at 12" O.C. in the field and 8" O.C. staggered along abutting edges, or closer as stated on plans & details. While fasteners are being driven, hold the wallboard in firm contact with the underlying support. Proceed from the central portion of the wallboard toward ends and edges, using power screwdriver recommended by the

wallboard manufacturer to drive screws. Drive home with heads slightly below wallboard surface in a dimple formed by the fastener's head. Take care to avoid breaking the paper face. Place fasteners not closer than 3/8" from ends or edges of wallboard.

#### 1.5 JOINT TREATMENT:

- A. Field Joints. Apply a 3" wide uniform coating of adhesive centered over the joint; center tape over the joint and embed into the adhesive. Allow to dry and sand smooth. Apply two coats of adhesive over the tape, extending each coat slightly beyond the preceding one. Allow each coat to dry and sand smooth. Treat screw dimples in a like manner.
- B. Inside Angles. Treat inside corners and angles as for field joints, except fold the tape in the middle to provide a clean sharp corner, fully embedded.
- C. Outside Angles. Use metal corner beads and accessories standard with the wallboard manufacturer set in and finished with adhesive as for joints.
- D. Intersections with other Materials. Where gypsum abuts concrete and other material, trim edge with U.S.G. No. 401 metal trim.

#### 1.6 MECHANICAL AND ELECTRICAL WORK:

- A. Coordinate with Mechanical and Electrical trades in the location and installation of their work. Provide bridging, bracing and backing to support their work installed in or on drywall construction. Do not close both faces of walls until their installations have been inspected and approved.

#### 1.7 ACCESS PANELS:

- A. Access panels for access to plumbing chases which occur in drywall partitions or furring will be furnished to the job under this section. Locate panels where directed by Architect and install level and square with adjacent construction.

#### 1.8 SUBMITTALS

- A. Submit product shop drawings and data to the architect for review. Refer to specification Section 01 34 00 for additional requirements.

### **PART 2 - MATERIALS**

#### 2.1 GYPSUM WALLBOARD:

- A. Minimum 5/8" high impact resistant thickness tapered edge sheet conforming to ASTM C36; thicknesses indicated. Use Type W/R, conforming to ASTM C630 where noted.
- B. Joint reinforcing tape, adhesive and metal corner reinforcement: Standard products for water resistant gypsum board installations, as recommended by the manufacturer of the gypsum wallboard used in the work.

#### 2.2 FASTENERS:

- A. Stainless steel screws, blued needlepoint nails, or other corrosion resistant fasteners for attachment of wallboard to wood studs.

#### 2.3 ACOUSTICAL SEALANT:

- A. Non-drying, non-hardening, permanently flexible, synthetic rubber-based product - Soundcaulk 101, by Parr, Inc., Los Angeles, California; Tremco Manufacturing Co., Cleveland, Ohio; or other as approved by Architect.

#### 2.4 REINFORCEMENT AT OPENINGS:

- A. Reinforce grillage with 3/4" cold rolled channels wire-tied on top of, and parallel to, main runners.

#### 2.5 ACCESS PANELS:

- A. Milcor, Style DW, for general ceiling access; Style M stainless for plumbing access.

#### 2.6 CORNER BEADS:

- A. Metal, G30 galvanized, square type for all interior applications. No prefinished type corner bead is acceptable. Where special wallboard is called for or used to inhibit mold, mildew, and bacteria growth, provide plastic corner bead.

#### 2.7 EDGE TRIM:

- A. GA201 and GA216 galvanized metal. Where special wallboard is called for or used to inhibit mold, mildew, and bacteria growth, provide plastic corner bead.

#### 2.8 JOINT MATERIALS:

- A. ANSI/ASTM C475 reinforcing tape, joint compound, adhesive, and water. Where special wallboard is called for or used to inhibit mold, mildew, and bacteria growth, provide fiberglass tape and appropriate water resistant and other special products.

#### 2.9 CEMENT BOARD

- A. Cementitious Backer Panel (Durock Brand Cement Board with Edgeguard)
  1. Basis of Design: Subject to compliance with project requirements, the design is based on the following: USG Corporation, LLC, "USG Durock Cement Board".
  2. Classification: Cementitious Backer Units: ANSI A118.9, ASTM A108.11 and ASTM C 1325 provide with manufacturer's standard edges.
    - a. Thickness: 5/8 inch (15.9 mm).
    - b. Board Length: As required. Contractor to verify with field conditions.
    - c. Board Width: As required. Contractor to verify with field conditions.
    - d. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.
  3. Minimum bending radius: 6 feet (1830 mm).
  4. Fastener Requirements: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and application.
    - a. Screws for Fastening Gypsum Sheathing to Cold-Formed Metal Framing: DUROCK Brand Steel or USG Sheathing SF steel drill screws (minimum 1-1/4 inch) with corrosion-resistant coating.
    - b. Wood Screws: DUROCK Brand Wood or USG Sheathing WF screws (minimum 1-1/4 inch with corrosion-resistant coating).
    - c. Nails: 11-gauge hot-dipped galvanized roofing nails (minimum 1-1/2 inch diameter head).
  5. Installation Requirements:

- a. For steel framing less than 0.0329 inch thick, attach sheathing to comply with ASTM C 1002.
- b. For steel framing from 0.033 to 0.112 inch thick, attach sheathing to comply with ASTM C 954.
- c. Joining: Use latex-fortified mortar or Type 1 organic adhesive and alkali-resistant, fiberglass mesh joint tape (USG Durock™ Brand Tile Backer Tape).
- d. Waterproofing: Use USG Durock™ Brand Liquid Waterproofing Membrane. Install per manufacturer's specifications.

### **PART 3 - EXECUTION**

#### **3.1 GYPSUM WALL BOARD APPLICATION:**

- A. Cut gypsum wallboard by scoring and breaking or by sawing, working from the face side. Sand cut edges and ends where necessary to obtain neat joining when wallboard is erected. Score cutouts or small openings in wallboard in outline before knocking out or cut out with a saw; do not punch. Neatly scribe wallboard meeting projecting surfaces. Stagger joints in the board with abutting ends occurring over a support. To minimize end joints, use wallboard sheets of maximum practical lengths. Arrange joints on opposite sides of partition to occur on different studs. Apply with long dimension across supports, except where fire rating is required, apply long dimension vertically with joints located over stud edges.

#### **3.2 CEMENTITIOUS BACKER BOARD APPLICATION:**

- A. Install cement board with ends and edges closely abutted, but not forced together. Stagger end joints in successive courses.
- B. For wall application, fasten USG Durock® Brand Cement Board with EdgeGuard panels to framing with specified fasteners. Drive fasteners into field of panels first, working toward ends and edges. Hold panels in firm contact with framing while driving fasteners. Space fasteners maximum 8 in. (203 mm) o.c. for walls, 6 in. (152 mm) o.c. for ceilings, with perimeter fasteners at least 3/8 in. (10 mm) and less than 5/8 in. (16 mm) from ends and edges. Drive screws so bottoms of heads are flush with panel surface to ensure firm panel contact with framing. Do not overdrive fasteners. Approved fasteners include: USG Durock™ Brand Tile Backer Screws for steel framing (or equivalent), 1-1/4 in. (32 mm) and 1-5/8 in. (41 mm) for 14- to 20-gauge steel framing; USG Durock™ Brand Tile Backer Screws for wood framing (or equivalent), 1-1/4 in. (32 mm), 1-5/8 in. (41 mm) and 2-1/4 in. (57 mm) for wood framing. Nails (1-1/2 in. [38 mm] hot-dipped galvanized roofing nails). Prefill joints with tile-setting mortar or adhesive and then immediately embed USG Durock™ Brand Tile Backer Tape and level joints.
- C. Cement board should be cut to size with a knife and straight edge. A power saw should be used only if it is equipped with a dust-collection device. Installer should wear NIOSH/MSHA approved dust mask.
- D. Waterproofing: Use USG Durock™ Brand Liquid Waterproofing Membrane. Install per manufacturer's specifications.

**END OF SECTION 09 29 00**

**SECTION 09 30 00  
TILING****PART 1 - GENERAL**

## 1.1 SCOPE:

- A. The extent of tile work is shown on drawings and in schedules.

## 1.2 QUALITY ASSURANCES:

- A. Provide tile equal to or exceeding Standard Grade requirements of ANSI A 137.1.
- B. When using setting and grouting materials manufactured under TCA license, provide such identification together with formula on each container.
- C. Provide materials obtained from only one source for each type and color of tile.
- D. Proprietary Materials. Handle, store, mix and apply proprietary setting and grouting materials in compliance with manufacturer's instructions.

## 1.3 SUBMITTALS:

- A. Manufacturer's Data. Submit six (6) copies of manufacturer's specifications and installation instructions for all materials required, except bulk materials. Include certifications and other data as may be required to show compliance with these specifications. Indicate by transmittal that a copy of each instruction has been distributed to the installer.
- B. Samples. Submit six (6) samples of each type, class and color of tile required. Architect's review will be for color, pattern and texture only. Compliance with all other requirements is the exclusive responsibility of the Contractor.

## 1.4 DELIVERY AND STORAGE:

- A. Deliver materials and store on site in original containers with seals unbroken and labels intact until time of use.

**PART 2 - MATERIALS**

## 2.01 FLOOR TILE:

- A. Provide tile by Daltilo or approved equal.
  - 1. Public Restrooms: 2x2 Keystones Mosaics Tile
  - 2. Staff/Break Room areas (including associated Janitor's Room, and storage areas: 6x6 Quarry Paver Tiles
- B. Refer to the finish schedule on the architectural plans for locations, size, and recommended colors, etc. Final tile size and color selection shall be made by City staff from the manufacturer's full range of colors.
- C. All tile shall be slip resistant to comply with CBC and ADA requirements.

- D. Provide corner tiles at all corners, other typical trim tiles, and other special tiles typically provided.

## 2.1 COVED TILE BASE:

- A. Provide tile by Daltile or approved equal.
  - 1. Public Restrooms: 2x2 Keystone Mosaic Tiles
  - 2. Staff/Break Room areas (including associated Janitor's Room and storage areas: 6x6 Quarry Paver Tiles
- B. Refer to the finish schedule on the architectural plans for locations, size, and recommended colors, etc. Final tile size and color selection shall be made by City staff from the manufacturer's full range of colors.
- C. All tile shall be slip resistant to comply with CBC and ADA requirements.
- D. Coved tile base shall have "min. 3/8" cove.
- E. Provide corner tiles at all corners, other typical trim tiles, and other special tiles typically provided.

## 2.2 WALL TILE:

- A. Provide tile by Daltile or approved equal.
  - 1. All Restrooms: 4x4 Semi-Gloss Wall Tiles as noted in the Finish Schedule on the drawings.
  - 2. All Restrooms: 2x2 Keystone Mosaics Blend Accent Wall Tiles. See interior elevations
- B. Refer to the finish schedule on the architectural plans for locations, size, and recommended colors, etc. Final tile size and color selection shall be made by City staff from the manufacturer's full range of colors.
- C. All tile shall be slip resistant to comply with CBC and ADA requirements.
- D. Provide corner tiles at all corners, other typical trim tiles, and other special tiles typically provided.

## 2.3 EPOXY MORTAR AND GROUT MATERIALS:

- A. Comply with ANSI A 108.6 and A 118.3 for materials and installation specification.

## 2.4 GROUT:

- A. Provide colored grout matching tile in color and one shade darker. Verify with City staff.

**PART 3 - EXECUTION****3.1 INSPECTION:**

- A. Installer must examine the areas and conditions under which tile work is to be installed. Notify the Contractor in writing of conditions detrimental to the proper and timely completion of this work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

**3.2 INSTALLATION:**

- A. The contractor shall provide all required floor preparation for a complete installation including all required substrate sealer, water proofing, floating/leveling and anything else required for a complete installation.
- B. Comply with ANSI standard installation specifications A 108.1 and Tile Council of America "Handbook for Ceramic Tile Installation", except as otherwise shown or specified. Maintain minimum temperature limits and installation practices as recommended by mortar and grout materials manufacturers.
- C. Extend tile work into recesses and under equipment and fixture to form a complete covering without interruptions, except as otherwise shown. Terminate work neatly at obstructions, edges and corners without disruption of pattern or joint alignments.
- D. Comply with manufacturer's instructions for mixing and installation of proprietary materials.
- E. Neutralize and seal substrates in accordance with mortar or adhesive manufacturer's instructions, as required.
- F. Setting: Tile installation to be by the Portland Cement Mortar Methods for horizontal and vertical surfaces per specifications F 111-98 and W231-98, respectively, as shown in the "Handbook for Ceramic Tile Installation".
- G. Floating: All floor tile needs to be floated to achieve slopes to floor drains. All tile floors and walls in showers shall be waterproofed and floated. Refer to the Tile Council of America Handbook for Ceramic Tile Installation and other industry standards for appropriate conditions and requirements.
- H. Waterproofing: All tile floors and walls in restrooms, janitor's rooms, and catering kitchen areas shall be waterproofed. Provide an approved liquid applied or sheet shower pan waterproof membrane at all tile shower floors and walls. Refer to the Tile Council of America Handbook for Ceramic Tile Installation and other industry standards for appropriate conditions and requirements.

**3.3 JOINTING PATTERN:**

- A. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise shown.

**3.4 PLACEMENT:**

- A. Comply with applicable requirements of ANSI A 108.1 for installation of Portland cement mortar set tile. Use commercial cement grout for grouting tile wall joints, unless otherwise shown.

**3.5 CLEANING:**

- A. Upon completion of placement and grouting, clean tile installations as recommended by TCA and manufacturers of proprietary materials.
- B. Tile may be cleaned with acid solutions only when permitted by the tile and grout manufacturer's printed instructions, but not sooner than ten (10) days after installation. Protect metal surfaces, cast iron and vitreous plumbing fixtures from effects of acid cleaning. Flush the surface with clean water before and after cleaning.

**3.6 FINISHED TILE WORK:**

- A. Leave finished installation clean and free of cracked, chipped, broken, unbonded, or otherwise defective tile work.

**3.7 PROTECTION:**

- A. Protect installed tile work with Kraft paper or other heavy covering during the construction period to prevent damage and wear.

**END OF SECTION 09 30 00**

**SECTION 09 50 00  
ACOUSTIC CEILING SYSTEMS**

**I. GENERAL**

**A. Scope:**

The extent of each type of acoustic ceiling is shown on the drawings and in schedules, sometimes by abbreviations. The type of acoustic ceiling required is acoustic panels in exposed or concealed grid suspension systems.

**B. Quality Assurance:**

Subcontract the installation of suspended acoustic ceiling materials to the installer of the ceiling suspension systems for single responsibility. Coordinate layout of acoustic ceilings with other work which penetrates or is supported by ceiling suspension systems.

**C. Submittals:**

**Manufacturer's Data.** Submit six (6) copies of manufacturer's specifications and installation instruction for each acoustic ceiling system component required. Include reports and other data as may be required to show compliance with these specifications. Indicate by transmittal form that a copy of each instruction has been distributed to the installer.

**Shop Drawings.** Submit shop drawing details and reflected ceiling plans of acoustic ceiling systems specified in this section. Show location of acoustic units, exposed grid members (if any), and other items of work which are to be coordinated with the acoustic ceiling system. Show framing and support details for work supported by acoustic ceiling suspension systems. Certify compliance with ASTM C 635 (including structural classification) and other specified requirements, for each type of suspension system.

**Samples.** Architect's review will be for color and texture only. Compliance with all other requirements is the exclusive responsibility of the Contractor. Submit samples for the following:

**Exposed Grids:** Submit three (3) 12" long samples of each type of exposed runner.

**Concealed Grids:** Submit three (3) 12" long samples of each type of concealed runner and spline.

**Moldings:** Submit three (3) 12" long samples of each type required.

**Acoustic Units:** Submit three (3) sets of 12" square samples for each different acoustic unit required. Each set of samples shall show the full range of color and texture to be expected in the completed work.

**Maintenance Instructions.** Submit manufacturer's recommendations for cleaning and refinishing each type of acoustic unit used in the work. Include precautions against materials and methods which may be detrimental to finishes and acoustic efficiency.

Replacement Materials. When work is completed, deliver stock of replacement material to City for each type of acoustic unit used in the work. Furnish full size units, matching installed materials, packaged and marked for identification. Furnish not less than 1% of the total amount of each type of acoustic unit installed.

**D. Product Delivery, Storage and Handling:**

Deliver acoustic ceiling materials to the job site in original, unopened packages, bearing manufacturer's name and label identifying each type of acoustic unit. Comply with acoustic manufacturer's recommendations for storage of units to be used in the work.

**II. PRODUCTS**

**A. Suspension System Materials and Components:**

Refer to the finish Schedule in the drawings. Match existing suspension systems to remain.

Hangers. As recommended by manufacturer to comply with the specified structural classification (ASTM C 635).

Wire Hangers. If recommended, not less than 12 ga. (0.106" diameter), galvanized, soft annealed, mild steel wire. Where hanger wires cannot be directly wire-tied to structural or intermediate framing members, provide attachment devices designed for the type of construction used in the work and with a carrying capacity of not less than five (5) times the design loads involved.

Protective Coatings and Finishes. Manufacturer's standard coatings and finishes for normal use environments (ASTM C 635), except as otherwise indicated.

Manufacturers. Provide suspension systems for acoustic ceilings as produced by one of the following: Armstrong, Chicago Metallic; Donn Products; Flangeklamp.

**B. Exposed Grid Suspension Systems (Match existing system to remain):**

Where shown or scheduled, provide direct hung suspension complying with the ASTM C 635 intermediate-duty, minimum load-carrying capability for main runners.

Main and Cross Runners. Except as otherwise shown or specified, provide main and cross runners of steel, color as listed on the plans. Grid to be Armstrong SS Prelude Plus XL Environmental Tee System.

Moldings. Angle type, except where rabbeted acoustic panels are shown or specified, provide recessed "shadow" type moldings. Finish to match main and cross runners.

**C. Acoustic Unit Materials:**

Performance. Comply with the following requirements:

Flame Spread Rating: 25 or less (ASTM E 84).

Other Performance Requirements: As published in the Acoustical and Insulating Materials Assn. (AIMA) "Performance Data Bulletin" for the specified products.

Finish. Manufacturer's standard factory-applied finish, color as listed on plans unless otherwise shown.

Manufacturers. Products specified on the drawings are provided by Armstrong. Or Equal products to comply with the requirements include the following:

Armstrong; Celotex; Johns-Manville; National Gypsum; Owens-Corning Fiberglas; U.S. Gypsum.

Acoustic Panels. Where acoustic lay-in panels are shown or scheduled, provide panels complying with the general requirements for acoustic ceiling unit materials. Panels shall be the Cortega Second Look II.

**D. Reuse of Existing T-bar Grid System Where Indicated on Drawings**

Refer to the construction drawings for all locations where the existing T-bar Grid System is to be reused or modified for reuse. Repair existing systems as required and refinish exposed face to match new T-bar grid system.

**III. EXECUTION**

**A. Inspection:**

The installer must examine the conditions under which acoustic ceiling work is to be performed, and notify the Contractor in writing of any unsatisfactory conditions. Do not proceed with the acoustic ceiling work until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

**B. Coordination:**

Prior to start of acoustic ceiling work, consult other trades and Contractors involved to determine areas of potential interference. Do not start installation of suspension systems until interferences have been resolved.

**C. Installation of Suspension Systems:**

Hangers. Space not more than 6" from each end and not more than 4'-0" o.c. between ends of members to be supported. Provide additional hangers for support of fixtures and other items to be supported by the ceiling suspension system, as required to prevent eccentric deflection or rotation of supporting runners. Install seismic bracing as indicated and required.

Moldings. Provide where ceilings meet walls, partitions and other vertical elements. Miter cut inside and outside corners.

Exposed and Concealed Grid Systems. Support main runners directly from hangers; do not bear on walls or partitions. Space main runners to support acoustic panels and other work resting in or on the ceiling, as required to comply with specified performance requirements. Interlock cross-runners with either main runners or with cross-runners structurally classified as main runners.

Install angle type moldings with exposed leg in same plane as bottom flange of runners, or below runner in concealed spline system.

If direct hung suspension systems are used, support main runners directly from hangers. Space main runners and cross components to support acoustic tile and other work resting in, or on, ceilings. Install lateral stabilizing components in accordance with manufacturer's recommendations.

**D. Installation of Acoustic Ceiling Units:**

General. Do not install acoustic units until installation areas meet the following requirements: exterior openings have been closed and roofs are weathertight; mechanical, electrical and other work above ceilings have been completed; wet work has been installed; temperature and relative humidity have reached levels which comply with acoustic material manufacturer's recommendations for the units to be used in the work and are acceptable to the installer.

Install materials in accordance with manufacturer's printed instructions and other recommendations, applicable to the work.

Balance border areas to avoid units of less than 1/2 unit width wherever possible. Wherever ceiling area is a multiple of full size acoustic units used in the work, balance alignment to be square and true and install only full size units for entire ceiling, including borders.

**E. Installation of Acoustic Tiles in Suspension Systems:**

Install progressively by inserting the edge of tile into bottom flange of main runners. Provide cross-runners as required by spacing of main runners, and type and size of tile used in the work. Install cross-runners at right angles to main runners inserting flanges into joints of tile. Place flat metal splines in joints not occupied by main or cross-runners.

Align joints in adjacent tile courses to form uniform straight joints parallel to room axis in both directions, unless otherwise shown.

Fit adjoining tile to form flush tight joints. Scribe and cut for accurate fit at borders and around work which penetrates ceiling.

Hold tile filed in compression by inserting spring steel spacers between tile and moldings at 12" o.c.

Fabricate access units from special suspension system access members and same acoustic tile units used in remainder of ceiling. Modify edges of tile as required to allow for removal of access units.

**F. Clean-up and Protection:**

Clean surfaces of acoustic units and exposed suspension systems (if any); comply with manufacturer's instructions. Remove and replace units and members which are damaged or cannot be cleaned.

The installer shall advise the Contractor of proper procedures required for protection of acoustic ceilings from damage or deterioration until acceptance of the work.

END OF SPECIFICATION SECTION

**Section 09 64 33  
Laminated Wood Flooring**

**PART 1 GENERAL****1.1 RELATED DOCUMENTS**

- A. Section: 02 41 00 - Demolition
- B. Section: 03 30 00 - Cast-in-place Concrete
- C. Section: 06 10 00 - Rough Carpentry

**1.2 SUMMARY**

- A. Nydree Acrylic Infused Engineered Hardwood Flooring with standard Pedestrian™ 2.0 UV-cured Urethane w/Ceramic particles. (Matte).
- B. Maintenance materials.
- C. Non-infused, stained to match accessories including: Flush Bullnose Stair Nosing, Flush Square Stair Nosing, Stair Tread (Bullnose or Square), Stair Riser, T-Molding, Type A Reducer Strip, Type B Reducer Strip, Type C Flat Strip, 4" Base Molding and ¼" Quarter Round.
- D. Scope of work includes the following:
  - 1. All demolition of the existing gymnasium hardwood flooring, trim, accessories, plywood sub-floor (two layers), waterproof membrane, padding, & anything else related to the existing gymnasium flooring.
  - 2. All required floor preparation to the existing concrete slab including drying of existing concrete, any crack repair, patching, leveling, moisture remediation, sealing, and anything else required to accept the new sub-floor & finish flooring per manufacturer's requirements.
  - 3. In floor system including new hardwood floor, trims, wall base, transitions, accessories, connections, hardware, new plywood sub-floor (two layers), padding, waterproof membrane, court floor striping, and anything else required by the hardwood flooring manufacturer for complete finished installation

**1.3 ACTION SUBMITTALS**

- A. Submit product data in accordance with Section (01 30 00) (01 33 00), including manufacturer's installation and maintenance instructions.
- B. Sustainable Design Submittals:
  - 1. Nydree Flooring is FloorScore® Indoor Air Quality Certified. Reg#: SCS-FS-02349.
  - 2. Nydree's wood flooring uses ULEF resins and is compliant with CARB Phase 2, the most recent and stringent CARB regulations. No urea-formaldehyde is used in the manufacturer of Nydree Flooring.
  - 3. SB1587, the recommended adhesive for all Nydree Flooring products, contains no solvents or isocyanates. Volatile Organic Compounds (VOC's) is 0 grams/liter, as calculated per SCAQMD 1168.
  - 4. Product Data: ASTM E648 – Test Method for Critical Radiant Flux (Radiant Panel) of Floor.
- C. Shop Drawings: Show floor pattern layout.
- D. Submit three representative samples of Nydree acrylic infused flooring [Width x 9"] in the final color(s) or custom color(s), and species, as selected by the owner or their representative.
- E. For Initial color selection use Nydree Product Spec Sheets that show the color range to be expected.
- F. Mock-up material for verification: Provide material necessary to show the full color range within the flooring selected.

**1.4 MAINTENANCE MATERIALS SUBMITTALS**

- A. A minimum of 100 square feet of flooring material (attic stock) shall be set aside in case future repairs are needed.

**1.5 QUALITY ASSURANCE**

- A. Installer: Shall be experienced in the wood and/or vinyl tile flooring industry and shall have a minimum of five (5) years experience in the installation of similar products.
- B. Verify with the owner or their representative that the flooring is the correct species, color, width, grain, finish (gloss level) and quality (fit) prior to installation. If there is any doubt, do not install the flooring. Contact Nydree Flooring immediately.

**1.6 STORAGE, DELIVERY, AND HANDLING**

- A. Cartons of wood should be stored in dry, well ventilated storage areas or warehouses. Never store cartons of flooring outdoors. The idea storage environment should be maintained at 30-55% relative humidity and 60-80°F (15-26°C). Do not store cartons of flooring directly on warehouse floors.
- B. Deliver the flooring to a preferred 60-80°F (15-26°C), 30-55% relative humidity job site in unopened cartons. Protect flooring from exposure to moisture.
- C. Cartons of Nydree Flooring will arrive to the job site wrapped in a polyethylene bag and typically shrink-wrapped to maintain the flooring at its most desirable installation moisture content. If material needs to be inspected prior to flooring installation, carefully remove the shrink-wrap and lift off polybag. After inspecting, put polybag back over pallet of flooring and secure with tape until installation. **DO NOT REMOVE NYDREE ENGINEERED FLOORING FROM THE POLYBAG UNTIL THE DAY OF INSTALLATION. (THE POLYBAG IS DIRECTLY BENEATH THE SHRINK WRAP).** Flooring that has not been used within a day should be returned to the polybag until ready for installation. No acclimation time is necessary or desired when installing Nydree Flooring. Temperature of material and adhesives should be acclimated to 60-80°F (15-26°C).

**1.7 FIELD CONDITIONS**

- A. Heating and natural ventilation/exhaust systems shall be operational (2 week minimum prior to installation). Permanent lighting shall be installed and operational prior to installation.
- B. Maintain room temperature between 60°F (15°C) minimum and 80°F (26°C). The ideal relative humidity for Nydree Flooring installation is between 30% and 55%, prior, during and after the installation. Keep in mind that if the relative humidity drops below 30% for extended periods, the flooring could shrink causing surface splits and gaps. The contractor shall provide temporary heating/cooling and humidity control units, if required, to maintain the above requirements prior to, during, and after installation until the project is complete/turned over to the City.
- C. Do not install flooring until all other significant construction work is complete. Moisture producing activities such as drywall, concrete, masonry, painting and grouting must be complete and cured.

**1.8 WARRANTY**

- A. Nydree Flooring offers a Limited Lifetime Infused Wear Surface Warranty and Limited Lifetime Structural Defect Warranty. The Pedestrian finish offers a Limited Wear Through Warranty (15 years for commercial applications, 50 years for residential applications).
- B. Use only Nydree SB1587 moisture retarding adhesive. SB1587 offers an Adhesive Bond Limited Lifetime Warranty as well as a 10 year Concrete Subfloor Moisture Protection Limited Warranty.
- C. While alternate maintenance materials can be used with Nydree Flooring, we strongly recommend the use of Bona Professional Hardwood Floor Cleaner.
- D. Please contact Nydree Flooring for a complete copy of the warranties above or visit the website at [www.nydreeflooring.com](http://www.nydreeflooring.com).

**PART 2 PRODUCTS****2.1 PERFORMANCE REQUIREMENTS**

- A. **FloorScore®**: Nydree Flooring is FloorScore® Indoor Air Quality Certified. Reg#: SCS-FS-02349.
- B. **Composite Wood Products**: Nydree's laminated wood flooring uses ULEF resins and is compliant with CARB Phase 2 regulations. Nydree flooring does not utilize any urea formaldehyde resins. The 1/10" (2.54mm) acrylic infused wear layer is laminated to the multi-ply plywood platform using a non-formaldehyde adhesive.
- C. **Fire Ratings**: Maple has a Class I rating when tested in accordance with ASTM E-648. All other species are Class II when tested in accordance with ASTM E-648.

**2.2 FACTORY-FINISHED WOOD FLOORING**

- A. **Laminated Flooring:** Provide Nydree Engineered Acrylic Infused Hardwood Flooring.  
**Basis of Design Product:** Specified is "Nydree Engineered Acrylic Infused Hardwood Flooring" as manufactured by Nydree Flooring, LLC. Items specified are to establish a standard of quality for design, function, materials, and appearance.
1. **Species and Color:**  
Maple [Natural].
  2. **Size:**
    - a. **Width:** 2 2/3" (67.6mm)
    - b. **Thickness:** Nominal Thickness: 7/16", Actual Thickness: 0.430" (10.9mm).
    - c. **Length:** Random 12 inches (305mm) to 47 inches (1194mm).
  3. **Edge Style:** Micro-bevel.
  4. **Finish:** Standard Factory-applied Pedestrian 2.0 urethane containing ceramic particles (15 gloss matte). Texture products are 5-10 gloss.

**2.3 ACCESSORY MATERIALS:**

- A. **Wood Flooring Adhesive / Moisture Retarder.**
1. Installation shall use Nydree Flooring SB1587 Adhesive. VOC content is 0 grams/liter. (As calculated per SCAQMD 1168)
- B. **Non-Infused Reducers and Transition Strips:** Non-infused and stained to match the species/color of the laminated flooring.  
 Type A Flush Reducer (wood to vinyl)  
 Type B Bi-Level Reducer (wood to carpet)  
 Type C Flat Strip (wood to wood)  
 T-Molding  
 Length: 78" Fixed Length Piece.
- C. **Non-Infused Accessories:** Non-infused, and stained to match the species/color of the laminated flooring.  
 4" Square Wall Base  
 3/4" Quarter Round  
 Length: 78" Fixed Length Piece.

**PART 3 EXECUTION****3.1 EXAMINATION**

- A. Concrete Subfloors
1. The concrete slab is existing to remain. Contractor shall verify the existing slab is dry and complies with the manufacturer's moisture content requirement for installation and, if required, provide any remediation, sealing, or other slab preparation to comply with the manufacturer's requirements.
  2. Verify that the concrete is clean, sound, free from contaminates and dry regardless of concrete age, history or grade level. Slab concrete moisture test results determine the application rate of the SB1587 adhesive.

Calcium Chloride results up to 15 lbs./1000 sf/24 hrs and in-situ Relative Humidity results up to 87%. SB1587 is applied with the standard 1/4" x 1/4" x 7/16" V-Notch trowel at a rate that does not exceed 55 square feet per gallon.

Calcium Chloride results up to 18 lbs./1000 sf/24 hrs and in-situ Relative Humidity results up to 95%. SB1587 is applied with a 5/16" x 5/16" x 7/16" V-Notch trowel with Moisture Plus spacers at a rate that does not exceed 35 square feet per gallon. Any result greater than 18 lbs. or 95% in-situ Relative Humidity is considered standing water.

The protocol for Calcium Chloride testing (ASTM F1869) and in-situ relative humidity testing (ASTM F2170) must be followed precisely for warranty consideration. If both tests are performed, the in-situ RH test is always the qualifying standard. If there is concern over any excessive future subfloor moisture, always use the 5/16" x 5/16" x 7/16" V-Notch trowel with Moisture Plus spacers application rate.

B. Other Subfloors

1. A subfloor of two layers of plywood shall be installed (to match existing subfloor removed). See details on plans. Consult installation instruction guidelines.

C. All Subfloors

1. Verify that the substrate is clean, sound and free of wax, dirt, dust, mold, mildew, loose material, grease, oil, coatings, paint, rust, asphalt cutback, old adhesives (carpet), weak powdery concrete or gypsum, adhesive removers, efflorescence and other surface contaminants that will interfere with the bonding of the adhesive. Scouring using 3 ½ (20 grit) open coat sandpaper can remove most of these materials.
2. Verify that the substrate is flat to within 3/16" in 10 ft. (5mm per 3m). The substrate must be smooth, free from cracks, holes, voids, ridges, projections and other defects impairing performance or appearance.
3. Provide 1/4" (6.4mm) expansion spacing at all vertical obstructions when flooring run is less than 25 feet (7.6m). 1/2" (12.7mm) expansion spacing at all vertical obstructions when flooring run is >25 to 50 feet (7.6 to 15.2m). For runs >50 feet (15.2m) in either the length or width direction allow 1" (25.4mm) expansion spacing at all vertical obstructions. Keep in mind that these expansion spacing recommendations are provided solely to help prevent catastrophic flooring failure in the event of flooding or long periods of relative humidity beyond 55%. If it is expected that the relative humidity in the installation environment never exceeds 55% RH, the correct application of SB1587 is used based on concrete moisture test results and there is never any wet mopping of the flooring, then an expansion spacing of more than ½" at all vertical obstructions is not necessary.
4. Coordinate work with that of other trades prior to installation so that no discrepancies may exist with installation of doors, frames, saddles, floor drains or any materials that would interfere in any other way.
5. Notify Architect of moisture test results and any unsatisfactory conditions. Do not begin installation until unsatisfactory conditions have been corrected. Beginning of installation means substrate and job site conditions have been accepted as suitable.

### 3.2 PREPARATION-CONCRETE SUBFLOORS

- A. If a sealer, curing compound, bond breaker, densifier/hardener, prior adhesive or other surface coating has been applied, it must be completely "ground" off by diamond grinding, shot blasting or scarifying. Whenever possible, grind a concrete subfloor to tolerance rather than fill. Sweep and vacuum substrate after scouring or grinding. Concrete substrates should NOT be glassy smooth and reflective. Concrete should have a minimum surface profile of ICRI CSPI-3, similar to that of broom finished concrete.
- B. Use Portland cement-based filler to patch saw-cut control joints (score marks in concrete), cold/construction seams(concrete), cracks, holes, voids, low spots, depressions, grooves, indentations and defects of small areas. Fill level with the surrounding surface. Do not fill or bridge concrete slab expansion joints. These joints must be carried through the flooring surface using an expansion joint covering system. **DO NOT skim coat large areas with extremely thin layers of patching compound.** Sand and/or scour patched areas smooth after material is fully cured according to manufacturer's instructions. Use only quality materials and Portland cement-based patching products. Suggested patching products include: Ardex Feather Finish<sup>®</sup>, Ardex SD-P<sup>®</sup>, UltraFinish<sup>™</sup> Pro and Bostik Webcrete<sup>®</sup> 95.
- B. If self-leveling underlayments are used, they must dry sufficiently (run moisture test) and dry hard (not dusty/powdery). Self-leveling underlayments must have a compressive strength equal to or greater than 2000 psi.. Gypsum-based self-leveling underlayments must be dry, "above-grade" installations where the gypsum has dried hard (not dusty/powdery), and the Gypsum has a compressive strength equal to or greater than 2000 psi.. Nydree Flooring can not be responsible for the strength, adhesion, or general performance of underlayments as proper compounding and preparation of subsurface are

the responsibility of the installer.

Suggested products include:

Concrete up to 15 lbs. Calcium Chloride /87% insitu-RH use Ardex K 15<sup>®</sup>, and Bostik SL-150<sup>™</sup>.

Concrete greater than 15 lbs. Calcium Chloride/87% insitu-RH use Ardex K-60<sup>™</sup>.

### 3.3 DIRECT BOND INSTALLATION METHOD

NOTE: A direct-bond (flooring is glued to subfloor) is the preferred installation method. Complete installation instructions are included in each carton of Nydree Flooring.

#### A. SB1587 Direct Bond Installation Method.

1. Follow manufacturer's installation instructions.
2. Depending on concrete slab moisture content use the appropriate V-notched trowel. Spread adhesive either using the standard 1/4" x 1/4" x 7/16" V-notched trowel, held at a 90 degree angle (15 lbs. or less, 87% in-situ RH or less) or the 5/16" x 5/16" x 7/16" V-notched trowel with Moisture Plus spacers (up to 18 lbs. or up to 95% in-situ RH). 100% of the substrate must be covered with SB1587 to protect against damage from subfloor moisture. Install flooring immediately into the "wet" adhesive. Adhesive open time is 40 to 60 minutes depending on relative humidity, but it is best to install the flooring immediately into the "wet" adhesive. Do not let adhesive dry to the touch. Occasionally lift a piece of flooring to assure vapor retarding adhesive is achieving at least 85% transfer between the substrate and flooring. If not, use the larger 5/16" x 5/16" x 7/16" V-notched trowel with Moisture Plus spacers or patch/level the uneven subfloor. Spread adhesive only over surface that can be finished within cure time of adhesive.
3. Install flooring per manufacturer's instructions.
4. Prior to cure, clean and SB1587 from the surface of the flooring with a clean, non-abrasive, microfiber cloth. Odorless mineral spirits can be used to facilitate clean-up. If there is any cured adhesive left on the flooring surface use a clean, non-abrasive, microfiber cloth and stiff plastic putty knife. Be careful not to damage the flooring finish.
5. Install trim, molding and transition strips per manufacturer's installation instructions.

### 3.4 PROTECTION

- #### A. Protect finished floor from abuse by other trades using heavy kraft paper, FortiBoard<sup>™</sup> Floor Protector Paper, or equivalent. Make sure the floor has been cleaned thoroughly (swept, vacuumed and dust mopped) prior to protecting, so that the flooring surface will not be scratched by debris. Avoid covering the installation with protective paper or equivalent for at least 24 hours. Keep traffic out of spaces and areas where flooring is being installed until adhesive has set. Light foot traffic after 10-12 hours. Normal traffic after 24 hours.

### 3.5 CLEANING

- #### A. Nydree Flooring Sealed with Pedestrian 2.0 Urethane: Prior to turning the floor over to the owner, It shall be thoroughly cleaned by sweeping, vacuuming or dust mopping to remove debris, followed by cleaning with Bona Professional Hardwood Floor Cleaner.

**END OF SECTION 09 64 33**

**SECTION 09 65 00  
RESILIENT FLOORING & BASE**

**PART I – GENERAL**

1.1 WORK INCLUDED

- A. 12" Square Vinyl Cement Tile
- B. Luxury Vinyl Plank Tile
- C. 4" Rubber Coved Base
- D. Flooring and accessories as shown on the drawings and schedules and as indicated by the requirements of this section.
- D. Related Documents: Drawings and General Provisions of the Contract (including General and Supplementary Conditions and Division 1 sections) apply to the work of this section

1.2 RELATED WORK

- A. 09 29 00 - Gypsum Wallboard Systems.
- B. Other Division 9 sections for floor finishes related to this section but not the work of this section
- C. Division 3 Concrete; not the work of this section
- D. Division 6 Wood and Plastics; not the work of this section
- E. Division 7 Thermal and Moisture Protection; not the work of this section

1.3 REFERENCE STANDARDS

- A. Armstrong Flooring Technical Manuals
  - 1. Armstrong Flooring Guaranteed Installation Systems manual, F-5061
  - 2. Armstrong Flooring Maintenance Recommendations and Procedures, manual, F-8663
- B. ASTM International:
  - 1. ASTM E 648 Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source
  - 2. ASTM E 662 Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials
  - 3. ASTM F 710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
  - 4. ASTM F 1066 Standard Specification for Vinyl Composition Tile
  - 5. ASTM F 1482, Standard Guide to Wood Underlayment Products Available for Use Under Resilient Flooring
  - 6. ASTM F 1861 Standard Specification for Resilient Wall Base
  - 7. ASTM F 1869 Standard Test Method for Measuring Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride

8. ASTM F 2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes
- C. National Fire Protection Association (NFPA):
1. NFPA 253 Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source
  2. NFPA 258 Standard Test Method for Measuring the Smoke Generated by Solid Materials
- D. All exposed materials provided under this section of specifications shall have a flame spread rating of 25 or less and a smoke development rating of 450 or less when tested in accordance with ASTM E84. Provide evidence of such prior to ordering such products or materials.

#### 1.4 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide flooring which has been manufactured, fabricated and installed to performance criteria certified by manufacturer without defects, damage, or failure.
- B. Administrative Requirements
1. Pre-installation Meeting: Conduct an on-site pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements. Comply with Division 1 Project Management and Coordination (Project Meetings) Section.
  2. Pre-installation Testing: Conduct pre-installation testing as follows: [Specify testing (i.e. moisture tests, bond test, pH test, etc)]
- C.
- D. Test Installations/ Mock-ups: Install at the project site a job mock-up using acceptable products and manufacturer approved installation methods, including concrete substrate testing. Obtain Owner's and Consultant's acceptance of finish color, texture and pattern, and workmanship standards.
1. Mock-Up Size: 4'-0"x4'-0"
  2. Maintenance: Maintain mock-up during construction for workmanship comparison; remove and legally dispose of mock-up when no longer required.
  3. Incorporation: Mock-up may be incorporated into the final construction with Owner's approval.
- E. Sequencing and Scheduling
1. Install flooring and accessories after the other finishing operations, including painting, have been completed. Close spaces to traffic during the installation of the flooring.
  2. Do not install flooring over concrete slabs until they are sufficiently dry to achieve a bond with the adhesive, in accordance with the manufacturer's recommended bond, moisture tests and pH test.

#### 1.5 SUBMITTALS

- A. Submit shop drawings, seaming plan, coving details, and manufacturer's technical data, installation and maintenance instructions (latest edition of Armstrong Flooring Guaranteed Installation Systems manual, F-5061) for flooring and accessories.

- B. Submit the manufacturer's standard samples showing the required colors for flooring and applicable accessories.
- C. Submit Safety Data Sheets (SDS) available for adhesives, moisture mitigation systems, primers, patching/leveling compounds, floor finishes (polishes) and cleaning agents and Material Information Sheets for flooring products.
- D. If required, submit the manufacturer's certification that the flooring has been tested by an independent laboratory and complies with the required fire tests.
- E. Closeout Submittals: Submit the following:
  - 1. Operation and Maintenance Data: Operation and maintenance data for installed products in accordance with Division 1 Closeout Submittals (Maintenance Data and Operation Data) Section. Include methods for maintaining installed products, and precautions against cleaning materials and methods detrimental to finishes and performance.
  - 2. Warranty: Warranty documents specified herein

#### 1.6 QUALITY ASSURANCE

- A. Single-Source Responsibility: provide types of flooring and accessories supplied by one manufacturer, including moisture mitigation systems, primers, leveling and patching compounds, and adhesives.
- B. Select an installer who is experienced and competent in the installation of Armstrong resilient vinyl composition tile flooring and the use of Armstrong Flooring subfloor preparation products.
  - 1. Engage installers certified as Armstrong Commercial Flooring Certified Installers
  - 2. Confirm installer's certification by requesting their credentials
- C. Fire Performance Characteristics: Provide resilient vinyl composition tile flooring with the following fire performance characteristics as determined by testing material in accordance with ASTM test methods indicated below by a certified testing laboratory or other testing agency acceptable to authorities having jurisdiction:
  - 1. ASTM E 648 Critical Radiant Flux of 0.45 watts per sq. cm. or greater, Class I
  - 2. ASTM E 662 (Smoke Generation) Maximum Specific Optical Density of 450 or less
  - 3. CAN/ULC-S102.2 – Flame Spread Rating and Smoke Developed – Results as tested.

#### 1.7 PROJECT CONDITIONS

- A. Maintain a minimum temperature in the spaces to receive the flooring and accessories of 65°F (18°C) and a maximum temperature of [100°F (38°C)][85°F (29°C)] for at least 48 hours before, during, and for not less than 48 hours after installation. Thereafter, maintain a minimum temperature of 55°F (13°C) in areas where work is completed. Protect all materials from the direct flow of heat from hot-air registers, radiators, or other heating fixtures and appliances. Refer to the Armstrong Flooring Guaranteed Installations Systems manual, F-5061 for a complete guide on project conditions.

#### 1.8 LIMITED WARRANTY

- A. Resilient Flooring: Submit a written warranty executed by the manufacturer, agreeing to repair or replace resilient flooring that fails within the warranty period.

- B. Limited Warranty Period: 5 years
- C. Limited Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.
- D. For the Limited Warranty to be valid, this product is required to be installed using the appropriate Armstrong Flooring Guaranteed Installation System. Product installed not using the specific instructions from the Guaranteed Installation System will void the warranty.

#### 1.9 MAINTENANCE

- A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials from same production run as products installed. Packaged with protective covering for storage and identified with appropriate labels.
  - 1. Quantity: Furnish quantity of flooring units equal to 1% of amount installed (minimum of 100 square feet).
  - 2. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra material.

### PART II – PRODUCTS

#### 2.1 MANUFACTURER

- A. Resilient tile flooring, wall base, adhesives and subfloor preparation products and accessories:

Armstrong Flooring Inc., 2500 Columbia Avenue, Lancaster, PA 17604,  
[www.armstrongflooring.com/commercial](http://www.armstrongflooring.com/commercial)

- 1. Manufacturer must have a headquarters in the United States of America

#### 2.2 PRODUCT SUBSTITUTION

- A. Substitutions: "Or Equal" or "Approved Equal" products allowed per Specification Section 01 60 00.

#### 2.3 RESILIENT TILE FLOORING MATERIALS

- A. Storage Rooms & similar areas: Provide Vinyl Composition Tile: Standard Excelon® Imperial® Texture Tile Flooring manufactured by Armstrong Flooring, Inc.
  - 1. Description: Tile composed of polyvinyl chloride resin, plasticizers, fillers, stabilizers and pigments with colors and texture dispersed uniformly throughout its entire thickness.
  - 2. Vinyl composition tile shall conform to the requirements of ASTM F 1066, "Standard Specification Vinyl Composition Floor Tile", Class 2, through-pattern
  - 3. Pattern and Color: To match existing floor tile. To be verified by the contractor in the field
  - 4. Size: 12 in. x 12 in. (305 mm x 305 mm)
  - 5. Thickness: 1/8"/0.125 in. (3.2mm)

- B. Unify Luxury Flooring at all public areas where scheduled on drawings: Provide Coalesce™ Luxury Flooring manufactured by Armstrong Flooring Inc.
1. Description: A layered construction consisting of a tough, clear, rigid vinyl wear layer protecting a high-fidelity print layer on a solid vinyl backing. Protected by a diamond-infused UV-cured polyurethane finish, the wear surface is embossed with different textures to enhance each of the printed visuals. Colors are insoluble in water and resistant to cleaning agents and light.
  2. Reference specification - ASTM F 1700, "Standard Specification for Solid Vinyl Tile", Class III, Type B – Embossed Surface. Meets requirements for size, squareness, thickness, thickness of wear layer, residual indentation, resistance to chemicals, resistance to light and resistance to heat.
  3. Pattern and Color: in [%COLOR%] [color selected from the range currently available from Armstrong Flooring Inc.].
  4. Size: [18 in. x 36 in. (457 mm x 914 mm)] [6 in. x 36 in. (152 mm x 914 mm)] [18 in. x 18 in. (457 mm x 457 mm)].
  5. Wear layer thickness: 0.020 in. (0.5 mm).
  6. Thickness: 0.100 in. (2.5 mm).

#### 2.4 WALL BASE MATERIALS

- A. For top set wall base: To match existing material & profile. To be verified by the contractor in the field.
- B. Color: To match existing. To be verified in the field by the contractor.

#### 2.5 ADHESIVES

- A. For Tile Installation System, Full Spread: Provide Armstrong S-515 Floor Tile Adhesive under the tile and Armstrong S-725 Wall Base Adhesive at the wall base as recommended by the flooring manufacturer.
- B. For Tile High-Moisture Installation Warranty, Full Spread: Provide Armstrong S-515 Floor Tile Adhesive under the tile and Armstrong S-725 Wall Base Adhesive at the wall base as recommended by the flooring manufacturer.
- C. Provide Armstrong S-995 Flooring Adhesive under the flooring and Armstrong S-725 Wall Base Adhesive at the wall base as recommended by the flooring manufacturer.

#### 2.6 ACCESSORIES

- A. For patching, smoothing, and leveling monolithic subfloors (concrete, terrazzo, quarry tile, ceramic tile, and certain metals), provide one or more of the following:
1. Armstrong S-184 Fast-Setting Cement-Based Patch and Underlayment
  2. Armstrong S-194 Cement-Based Patch, Underlayment and Embossing Leveler / S-195 Underlayment Additive
  3. Armstrong S-453 Level Strong™ cement based self-leveling compound
  4. Armstrong S-456 Patch Strong™ flexible patching and smoothing compound.
- B. For priming porous substrates to aid in adhesive bond strength and reducing subfloor porosity, provide S-454 Prime Strong™ acrylic primer for porous substrates. For non-porous substrates, provide S-455 Prime Strong™ acrylic primer for non-porous substrates.
- C. For creating a moisture barrier, provide S-452 Seal Strong™ two part moisture mitigation system.

- D. For sealing joints between the top of wall base or integral cove cap and irregular wall surfaces such as masonry, provide plastic filler applied according to the manufacturer's recommendations.
- E. Provide transition/reducing strips tapered to meet abutting materials.
- F. Provide threshold of thickness and width as shown on the drawings.
- G. Provide resilient edge strips of width shown on the drawings, of equal gauge to the flooring, homogeneous vinyl or rubber composition, tapered or bullnose edge, with color to match or contrast with the flooring, or as selected by the Architect from standard colors available.
- H. Provide metal edge strips of width shown on the drawings and of required thickness to protect exposed edges of the flooring. Provide units of maximum available length to minimize the number of joints. Use butt-type metal edge strips for concealed anchorage, or overlap-type metal edge strips for exposed anchorage. Unless otherwise shown, provide strips made of extruded aluminum with a mill finish.

### **PART III – EXECUTION**

#### **3.1 SITE AND SUBSTRATE CONDITIONS**

- A. Ensure that wall surfaces are smooth, and reasonably flat And level to ensure proper adhesion to substrates.
- B. Ensure that areas to receive resilient base are well lit during applications.

#### **3.2 TESTING FOR CONCRETE MOISTURE CONDITIONS**

- A. Concrete shall be fully cured and dry. Concrete shall have low permeability.
- B. Conduct the following test on concrete to receive VCT floor products: ASTM F1869. Results shall show no more than 3 pounds of water per L000 square feet in 4 hours. This result shall be provided regardless if floor product manufacturer accepts more than 3 pounds of water.
- C. The contractor shall be responsible for all floor substrate preparation including patching, grinding, floating, and sealing all floor areas to receive VCT flooring to obtain the optimum installation conditions required by the flooring manufacturer's specifications.

#### **3.3 MANUFACTURER'S INSTRUCTIONS**

- A. Compliance: Comply with manufacturer's product data, including technical bulletins, product catalog, installation instructions, and product carton instructions for installation and maintenance procedures as needed.

#### **3.4 EXAMINATION**

- A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions (i.e. moisture tests, bond test, pH test, etc.).
- B. Visually inspect flooring materials, adhesives and accessories prior to installation. Flooring material with visual defects shall not be installed and shall not be considered as a legitimate claim.

- C. Examine subfloors prior to installation to determine that surfaces are smooth and free from cracks, holes, ridges, and other defects that might prevent adhesive bond or impair durability or appearance of the flooring material.
- D. Inspect subfloors prior to installation to determine that surfaces are free from curing, sealing, parting and hardening compounds; residual adhesives; adhesive removers; and other foreign materials that might prevent adhesive bond. Visually inspect for evidence of moisture, alkaline salts, carbonation, dusting, mold, or mildew.
- E. Report conditions contrary to contract requirements that would prevent a proper installation. Do not proceed with the installation until unsatisfactory conditions have been corrected.
- F. Failure to call attention to defects or imperfections will be construed as acceptance and approval of the subfloor. Installation indicates acceptance of substrates with regard to conditions existing at the time of installation.

### 3.5 PREPARATION

- A. Subfloor Preparation: Smooth concrete surfaces, removing rough areas, projections, ridges, and bumps, and filling low spots, control or construction joints, and other defects with Armstrong Flooring S-184 Fast-Setting Cement-Based Patch and Underlayment, S-194 Cement-Based Patch, Underlayment and Embossing Leveler / S-195 Underlayment Additive, S-453 Level Strong™ cement based self-leveling compound, S-456 Patch Strong™ flexible patching and smoothing compound, S-454 Prime Strong™ acrylic primer for porous substrates, and/or S-455 Prime Strong™ acrylic primer for non-porous substrates as recommended by the flooring manufacturer. Refer to Armstrong Flooring Guaranteed Installation Systems manual, F-5061 and ASTM F 710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring for additional information on subfloor preparation.
- B. Subfloor Preparation Moisture Mitigation: Smooth concrete surfaces, removing rough areas, projections, ridges, and bumps, and filling low spots, control or construction joints, mitigate moisture and other defects with Armstrong Flooring S-184 Fast-Setting Cement-Based Patch and Underlayment, S-194 Cement-Based Patch, Underlayment and Embossing Leveler / S-195 Underlayment Additive, S-453 Level Strong™ cement based self-leveling compound, S-456 Patch Strong™ flexible patching and smoothing compound, S-452 Seal Strong™ two part moisture mitigation system, S-454 Prime Strong™ acrylic primer for porous substrates, S-455 Prime Strong™ acrylic primer for non-porous substrates as recommended by the flooring manufacturer. Refer to Armstrong Flooring Guaranteed Installation Systems manual, F-5061 and ASTM F 710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring for additional information on subfloor preparation.
- C. Subfloor Cleaning: The surface shall be free of dust, solvents, varnish, paint, wax, oil, grease, sealers, release agents, curing compounds, residual adhesive, adhesive removers and other foreign materials that might affect the adhesion of resilient flooring to the concrete or cause a discoloration of the flooring from below. Remove residual adhesives as recommended by the flooring manufacturer. Remove curing and hardening compounds not compatible with the adhesives used, as indicated by a bond test or by the compound manufacturer's recommendations for flooring. Avoid organic solvents. Spray paints, permanent markers and other indelible ink markers must not be used to write on the back of the flooring material or used to mark the concrete slab as they could bleed through, telegraphing up to the surface and permanently staining the flooring material. If these contaminants are present on the substrate they must be mechanically removed prior to the installation of the flooring material.. Refer to the Armstrong Flooring Guaranteed Installation Systems manual, F-5061 and ASTM F 710 Standard Practice for

Preparing Concrete Floors to Receive Resilient Flooring for additional information on subfloor preparation.

- D. For Tile Installation System, Full Spread when using S-700 or S-750 adhesive, perform subfloor moisture testing in accordance with ASTM F 2170, "Standard Test Method for Determining Relative Humidity in Concrete Slabs Using *in-situ* Probes" or ASTM F 1869, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride and Bond Tests as described in the Armstrong Flooring Guaranteed Installation Systems manual, F-5061, to determine if surfaces are dry; free of curing and hardening compounds, old adhesive, and other coatings; and ready to receive flooring. Relative humidity shall not exceed 80%. MVER shall not exceed 5 lbs./1000 sq. ft./24 hrs. On installations where both the Percent Relative Humidity and the Moisture Vapor Emission Rate tests are conducted, results for both tests shall comply with the allowable limits listed above. Do not proceed with flooring installation until results of moisture tests are acceptable. All test results shall be documented and retained.
- E. For Tile High-Moisture Installation Warranty when using S-515 Adhesive, perform subfloor moisture testing in accordance with ASTM F 2170, "Standard Test Method for Determining Relative Humidity in Concrete Slabs Using *in-situ* Probes" or ASTM F 1869, "Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride" and Bond Tests as described in the Armstrong Flooring Guaranteed Installation Systems manual, F-5061, to determine if surfaces are dry; free of curing and hardening compounds, old adhesive, and other coatings; and ready to receive flooring. [Relative humidity shall not exceed 95%. MVER shall not exceed 7 lbs./1000 sq. ft./24 hrs. On installations where both the Percent Relative Humidity and the Moisture Vapor Emission Rate tests are conducted, results for both tests shall comply with the allowable limits listed above. Do not proceed with flooring installation until results of moisture tests are acceptable. All test results shall be documented and retained.
- F. For Tile High-Moisture Installation Warranty when using S-525 Adhesive, perform subfloor moisture testing in accordance with ASTM F 2170, "Standard Test Method for Determining Relative Humidity in Concrete Slabs Using *in-situ* Probes" or ASTM F 1869, "Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride" and Bond Tests as described in the Armstrong Flooring Guaranteed Installation Systems manual, F-5061, to determine if surfaces are dry; free of curing and hardening compounds, old adhesive, and other coatings; and ready to receive flooring. [Relative humidity shall not exceed 90%. MVER shall not exceed 7 lbs./1000 sq. ft./24 hrs. On installations where both the Percent Relative Humidity and the Moisture Vapor Emission Rate tests are conducted, results for both tests shall comply with the allowable limits listed above. Do not proceed with flooring installation until results of moisture tests are acceptable. All test results shall be documented and retained.
- G. Concrete pH Testing: Perform pH tests on concrete floors regardless of their age or grade level. All test results shall be documented and retained.

### 3.6 INSTALLATION OF FLOORING

- A. Install flooring in strict accordance with the latest edition of Armstrong Flooring Guaranteed Installation Systems manual, F-5061. Failure to comply may result in voiding the manufacturer's warranty listed in Section 1.08.
- B. Install flooring wall to wall before the installation of floor-set cabinets, casework, furniture, equipment, movable partitions, etc. Extend flooring into toe spaces, door recesses, closets, and similar openings as shown on the drawings.

- C. If required, install flooring on pan-type floor access covers. Maintain continuity of color and pattern within pieces of flooring installed on these covers. Adhere flooring to the subfloor around covers and to covers.
- D. Scribe, cut, and fit to permanent fixtures, columns, walls, partitions, pipes, outlets, and built-in furniture and cabinets.
- E. Install flooring with adhesives, tools, and procedures in strict accordance with the manufacturer's written instructions. Observe the recommended adhesive trowel notching, open times, and working times.

### 3.7 INSTALLATION OF ACCESSORIES

- A. Apply top set wall base to walls, columns, casework, and other permanent fixtures in areas where top-set base is required. Install base in lengths as long as practical, with inside corners fabricated from base materials that are mitered or coped. Tightly bond base to vertical substrate with continuous contact at horizontal and vertical surfaces.
- B. Fill voids with plastic filler along the top edge of the resilient wall base or integral cove cap on masonry surfaces or other similar irregular substrates.
- C. Place resilient edge strips tightly butted to flooring, and secure with adhesive recommended by the edge strip manufacturer. Install edge strips at edges of flooring that would otherwise be exposed.
- D. Apply butt-type or overlap metal edge strips where shown on the drawings, before flooring installation. Secure units to the substrate, complying with the edge strip manufacturer's recommendations.

### 3.8 CLEANING.

- A. Perform initial and on-going maintenance according to the latest edition of the maintenance recommendations for Standard Excelon Imperial Texture.
- B. Remove excess adhesive from surfaces without damage to flooring
- C. Contiguous surfaces and materials.
  - 1. Clean surfaces in accordance with manufacturers printed recommendations.
- D. Leave replacement materials equaling approximately 3 percent of base material installed, and one full gallon of adhesive.

### 3.9 PROTECTION

- A. Protect installed flooring as recommended by the flooring manufacturer against damage from rolling loads, other trades, or the placement of fixtures and furnishings. (See Finishing The Job in the latest edition of Armstrong Flooring Guaranteed Installation Systems manual, F-5061.)

**END OF SECTION 09 65 00**

**SECTION 09 77 00  
FIBERGLASS REINFORCED PLASTIC PANELS**

**PART 1- GENERAL**

1.1 SECTION INCLUDES:

- A. Fiberglass reinforced polyester panel system for adhesive mounting.
- B. Moldings, adhesive, and joint sealants.

1.2 RELATED SECTIONS:

- A. Gypsum Drywall (see drawings)
- B. Section 09 91 13 & 09 91 23 - Painting

1.3 REFERENCES:

- A. ANSI/AHA A135.5 - Prefinished Hardboard Paneling.
- B. ASTM D 256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
- C. ASTM D 523 - Standard Test Method for Specular Gloss.
- D. ASTM D 570 - Standard Test Method for Water Absorption of Plastics.
- E. ASTM D 638 - Standard Test Method for Tensile Properties of Plastics.
- F. ASTM D 696 - Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30 degrees C and 30 degrees C With a Vitreous Silica Dilatometer.
- G. ASTM D 790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- H. ASTM D 792 - Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
- I. ASTM D 968 - Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive.
- J. ASTM D 1037 - Standard Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials.
- K. ASTM D 1308 - Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes.
- L. ASTM D 2197 - Standard Test Methods for Adhesion of Organic Coatings by Scrape Adhesion.
- M. ASTM D 2486 - Standard Test Method for Scrub Resistance of Wall Paints.
- N. ASTM D 2583 - Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.

- O. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

#### 1.4 SUBMITTALS:

- A. Submit 6 sets of the following:
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - Preparation instructions and recommendations.
  - Storage and handling requirements and recommendations.
  - Installation methods.
  
  - Selection Samples: For each finish specified, six complete sets of color chips representing manufacturer's full range of available colors and patterns.
- C. Maintenance Instructions: Deliver to Owner.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

Store products in manufacturer's unopened packaging until ready for installation.

Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

#### 1.6 PROJECT CONDITIONS

Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

### **PART 2 - PRODUCTS**

#### 2.1 MANUFACTURERS:

- A. Acceptable Manufacturer: Marlite; 202 Harger Street, Dover, OH 44622. ASD.  
Tel: (330) 343-6621. Fax: (330) 343-7296.  
Email: [info@marlite.com](mailto:info@marlite.com)  
[www.marlite.com](http://www.marlite.com)
- B. Substitutions: or approved equal.
- C. Requests for substitutions will be considered in accordance with provision of Section 01 60 00.

#### 2.2 APPLICATIONS

Provide plastic paneling in Plumbing Chase behind Janitor's Sink as shown on the plans & finish schedule.

#### 2.3 PANEL SYSTEM

Plastic Panel System: Factory finished panels, trim, sealant, and accessories.

Panels: Marlite FRP Panels; fiberglass reinforced polyester, USDA approved for incidental food contact.

1. Thickness: 3/32 inch (2.4 mm), nominal.

2. Width: 48 inches (1220 mm).
3. Height: 108 inches (2743 mm) (where indicated on plans)
4. Height: 120 inches (3048 mm).(where indicated on plans)
5. Surface Burning Characteristics: Flame spread index of 200 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E 84 (Class C/III).
6. Flexural Strength: 17,000 psi (117 MPa), when tested in accordance with ASTM D 790.
7. Flexural Modulus: 600,000 psi (4137 MPa), when tested in accordance with ASTM D 790.
8. Tensile Strength: 8,000 psi (55 MPa), when tested in accordance with ASTM D 638.
9. Tensile Modulus: 9,430 psi (65 MPa), when tested in accordance with ASTM D638.
10. Barcol Hardness: 40, when tested in accordance with ASTM D 2583.
11. Impact Resistance: 7 ft-lb/in (1225 N/m), when tested in accordance with ASTM D 256, Izod method.
12. Coefficient of Thermal Expansion: 0.0000157 in/in/degree F (0.0000283 mm/mm/degree C), measured in accordance with ASTM D 696.
13. Water Absorption: 0.17 percent, when tested in accordance with ASTM D 570.
14. Specific Gravity: 1.53, when tested in accordance with ASTM D 792.
15. Surface Texture: High-gloss, smooth.
16. Color: White

Panel Trim: Extruded PVC, in manufacturer's standard colors. Outside corners, inside corners, edge trim, and division molding.

Base Molding: Design that simplifies installation and helps seal wall panel system, with factory made corners and splices

Sealant: Marlite Silicone Sealant; gunnable silicone rubber.  
1. Color: to be selected by Architect to match panel color

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

Do not begin installation until substrates have been properly prepared.

If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

#### 3.2 PREPARATION

Take panels out of cartons and allow to acclimatize to room conditions for at least 48 hours prior to installation.

Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

Clean surfaces thoroughly prior to installation.

Protect existing surfaces from damage due to installation.

#### 3.3 INSTALLATION

Install in accordance with manufacturer's instructions.

Use the adhesives recommended by the panel manufacturer unless prohibited by local regulations; obtain manufacturer's approval of alternative adhesives.

Install continuous bead of silicone sealant in each joint and trim groove and between trim and adjacent construction, maintaining 1/8 inch (3 mm) expansion space.

Avoid contamination of panel faces with adhesives, solvents, or cleaners; clean as necessary and replace if not possible to repair to original condition.

**END OF SECTION 09 77 00**

**SECTION 09 91 13**  
**EXTERIOR PAINTING**

**PART 1 - GENERAL**

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes surface preparation and the application of paint systems on exterior substrates listed in part, 3.6 Exterior Painting Schedule.
- B. Related Requirements:
1. Section 051200 "Structural Steel Framing" for shop priming of metal substrates with primers specified in this Section.
  2. Section 099123 "Interior Painting" for surface preparation and the application of paint systems on interior substrates.

1.3 DEFINITIONS

- A. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
- B. Gloss Level 2: Not more than 10 units at 60 degrees and 35 units at 85 degrees, according to ASTM D 523
- C. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- D. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
- E. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
- F. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.
- G. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.
- H. EG: Ethylene Glycol. Ethylene glycol is listed as a hazardous air pollutant (HAP) by the U.S. EPA.
- I. Blocking: Two painted surfaces sticking together such as a painted door sticking to a painted jamb.
- J. RAVOC: Reactivity adjusted VOC 'Reactivity' means the ability of a VOC to promote ozone formation.
- K. PDCA: Painting & Decorating Contractors of America [www.pdca.org](http://www.pdca.org)
- L. SSPC: Scopes of SSPC Surface Preparation Standards and Specifications.

[www.sspc.org](http://www.sspc.org).

- M. Green Wise: Green Wise products are tested in an ISO accredited laboratory to meet environmentally determined performance standards established by Coatings Research Group, Inc.
- N. Dunn-Edwards Conformance Chart: [DE CONFORMANCE TABLE](#)

#### 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
- B. Samples for Initial Selection: For each type of topcoat product.
- C. Samples for Verification: For each type of paint system and each color and gloss of topcoat.
  - 1. Submit Samples on rigid backing, no smaller than 7 inches by 10 inches (177.8 mm by 254 mm) or larger than 8.5 inches by 11 inches (215.9 mm by 279.4 mm).
  - 2. Label each Sample for project, architect, general contractor, painting contractor, paint color name and number, paint brand name, "P" number if applicable, and application area.
- D. Product List: For each product indicated, include the following:
  - 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
  - 2. VOC content.

#### 1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Paint: Provide not less than 1 gal. (3.8 L) of each material and color applied.

#### 1.6 QUALITY ASSURANCE

- A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
  - 1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
    - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
    - b. Other Items: Architect will designate items or areas required.
  - 2. Final approval of color selections will be based on mockups.
    - a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.
  - 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
  - 4. Subject to compliance with requirements, approved mockups may become

part of the completed Work if undisturbed at time of Substantial Completion.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 degrees F (7 degrees C) or more than 120 degrees F (49 degrees C).
  - 1. Maintain containers in clean condition, free of foreign materials and residue.
  - 2. Remove rags and waste from storage areas daily.

#### 1.8 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 90 degrees F (10 and 32 degrees C).
- B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; or at temperatures less than 5 degrees F (3 degrees C) above the dew point; or to damp or wet surfaces.
- C. Painting contractor should follow proper painting practices and exercise judgment based on his or her experience and project specific conditions as to when to proceed.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Basis-of-Design Product: Provide products listed from Dunn-Edwards Corporation
  - 1. Contact: Kim Hampton Architectural Services Representative,  
Cell: 949-576-8835,  
email: kim.hampton@dunnedwards.com

#### 2.2 PAINT, GENERAL

- A. Material Compatibility:
  - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
  - 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- B. VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction.
- C. Colorants: The use of colorants containing hazardous chemicals, such as ethylene glycol, is prohibited.
- D. Colors: To be selected by City staff from full product color range
  - 1. Indicate a percentage of the surface area that will be painted with deep tones.

### 2.3 SOURCE QUALITY CONTROL

- A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:
1. Owner may engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
  2. Testing agency will perform tests for compliance with product requirements.
  3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will comply with requirements to use compatible products and systems as described in Paragraph 2.2.A. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
1. Concrete: 12 percent.
  2. Masonry (Clay and CMU): 12 percent.
  3. Wood: 15 percent.
  4. Portland Cement Plaster: 12 percent.
  5. Gypsum Board: 12 percent.
- C. Portland Cement Plaster Substrates: Verify that plaster is fully cured, including pH testing to determine that alkalinity is within limits established by the manufacturer.
- D. Exterior Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- E. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- F. Proceed with coating application only after unsatisfactory conditions have been corrected.
1. Application of coating indicates acceptance of surfaces and conditions.

### 3.2 PREPARATION

- A. Comply with manufacturer's written instructions.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and

painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
1. Remove incompatible primers and re-prime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
- F. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.
- G. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer.
- H. Shop Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop primed surfaces.
- I. Galvanized Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- J. Aluminum Substrates: Remove loose surface oxidation.
- K. Wood Substrates:
1. Scrape and clean knots. Before applying primer, apply coat of knot sealer recommended in writing by topcoat manufacturer for exterior use in paint system indicated.
  2. Sand surfaces that will be exposed to view and dust off.
  3. Prime edges, ends, faces, undersides, and backsides of wood.
  4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

### 3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions.
1. Use applicators and techniques suited for paint and substrate indicated.
  2. The number of coats scheduled is the minimum number of coats required. Additional coat(s) shall be applied at no additional cost to the Owner, to completely hide base material, provide uniform color, and to produce satisfactory finish results.
  3. Apply coatings without thinning except as specifically required by label directions or required by these specifications. In such cases, thinning shall be the minimum reduction permitted.
  4. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with

- prime coat only.
  - 5. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
  - 6. Paint entire exposed surface of window frames and sashes.
  - 7. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
  - 8. Priming may not be required on items delivered with prime or shop coats, unless otherwise specified. Touch up prime coats applied by others as required ensuring an even primed surface before applying finish coat.
- B. Tint each undercoat to a lighter shade of the finish coat (not to exceed 2 ounces of colorant) to facilitate identification of each coat if multiple coats of same material are to be applied.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- E. Block Fillers: Provide block fill as scheduled to conform to the following: PDCA Standard P12-05.
- 1. Level 3 - Premium fill: One or multiple coats of high-performance block filler manufactured to be applied at a high dry film build. Block filler shall be back rolled to eliminate voids and reduce the majority of the masonry profile depth.
- F. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
- 1. Paint the following work where exposed to view:
    - a. Equipment, including panelboards and switch gear.
    - b. Uninsulated metal piping.
    - c. Uninsulated plastic piping.
    - d. Pipe hangers and supports.
    - e. Metal conduit.
    - f. Plastic conduit.
    - g. Tanks that do not have factory-applied final finishes.
    - h. Other items as directed by the Architect.

### 3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
- 1. Contractor shall touch up and restore painted surfaces damaged by testing.
  - 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

### 3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

### 3.6 EXTERIOR PAINTING SCHEDULE

- A. Concrete Substrates, Non-Traffic Surfaces:
  - 1. Premium Latex System:
    - a. Prime Coat: Primer, alkali resistant, waterbased, interior/exterior, Dunn-Edwards, Eff-Stop Select [ESSL00](#).
    - b. Intermediate Coat: Latex, exterior, matching topcoat.
    - c. Topcoat: Latex, exterior, flat, Dunn-Edwards, Spartashield [SSHL10](#) 100% acrylic, (Gloss Level 1).
- B. Clay-Masonry, CMU (without block filler) Substrates:
  - 1. Premium Latex System:
    - a. Prime Coat: Primer, alkali resistant, waterbased, interior/exterior Dunn-Edwards, Eff-Stop Select [ESSL00](#).
    - b. Intermediate Coat: Latex, exterior, matching topcoat.
    - c. Topcoat: Latex, exterior, flat, Dunn-Edwards, Spartashield [SSHL10](#) 100% acrylic, (Gloss Level 1).
- C. CMU Substrates:
  - 1. Premium Latex System:
    - a. Prime Coat: Block filler, latex, interior/exterior, Dunn-Edwards, Smooth BLOCFIL Select [SBSL00](#).
    - b. Intermediate Coat: Latex, exterior, matching topcoat.
    - c. Topcoat: Latex, exterior flat, Dunn-Edwards, Spartashield [SSHL10](#) 100% acrylic, (Gloss Level 1).
- D. Steel Substrates:
  - 1. Waterborne Urethane Alkyd Enamel System:
    - a. Prime Coat: Primer, rust inhibitive, waterborne alkyd, interior/exterior, Dunn-Edwards, Enduraprime Rust Preventative Primer [ENPRO0](#).
    - b. Intermediate Coat: Waterborne urethane alkyd, interior/exterior matching topcoat.
    - c. Topcoat: Waterborne urethane alkyd, interior/exterior, semi-gloss, Dunn-Edwards, Aristoshield [ASHL50](#), (Gloss Level 5)

- E. Galvanized Metal Substrates:
1. Waterborne Urethane Alkyd Enamel over a Latex Primer System:
    - a. Prime Coat: Primer, waterbased, interior/exterior, Dunn-Edwards Ultrashield Galvanized Metal Primer [ULGM00](#).
    - b. Intermediate Coat: Waterborne urethane alkyd, interior/exterior, matching topcoat.
    - c. Topcoat: Waterborne urethane alkyd, interior/exterior, semi-gloss, Dunn-Edwards Aristoshield [ASHL50](#), (Gloss Level 5)
- F. Aluminum Substrates:
1. Waterborne Urethane Alkyd Enamel over a Latex Primer System:
    - a. Prime Coat: Primer, waterbased, interior/exterior, Dunn-Edwards, Ultrashield Galvanized Metal Primer [ULGM00](#).
    - b. Intermediate Coat: Waterborne urethane alkyd, interior/exterior, matching topcoat.
    - c. Topcoat: Waterborne urethane alkyd, interior/exterior, semi-gloss, Dunn-Edwards, Aristoshield [ASHL50](#), (Gloss Level 5)
- G. Wood Substrates:
1. Premium Latex System:
    - a. Prime Coat: Primer, waterbased, exterior, Dunn-Edwards, EZ-Prime Premium [EZPR00](#).
    - b. Intermediate Coat: Latex, exterior, matching topcoat.
    - c. Topcoat: Latex, exterior, flat, Dunn-Edwards, Spartashield [SSHL10](#) 100% acrylic, (Gloss Level 1).
- H. Portland Cement Plaster (Stucco) Substrates:
1. Ultra-Premium Acrylic Elastomeric System (at all locations to receive a smooth trowel plaster finish):
    - a. Prime Coat: Primer, alkali resistant, waterbased, interior/exterior, Dunn-Edwards, Eff-Stop Select [ESSL00](#).
    - b. Intermediate Coat: Acrylic, exterior, matching topcoat.
    - c. Topcoat: Acrylic, exterior, flat, Dunn-Edwards, Enduralastic 10 [EDLX10](#) 100% acrylic, (Gloss Level 1).
    - d. Final Topcoat: Topcoat: Latex, exterior, flat, Dunn-Edwards, Evershield [EVSH10](#) 100% acrylic, (Gloss Level 1).
  2. Premium Latex over Alkali Resistant Primer System (at locations NOT requiring an elastomeric paint finish):
    - a. Prime Coat: Primer, alkali resistant, waterbased, interior/exterior, Dunn-Edwards, Eff-Stop Select [ESSL00](#).
    - b. Intermediate Coat: Latex, exterior, matching topcoat.
    - c. Topcoat: Latex, exterior, flat, Dunn-Edwards, Spartashield [SSHL10](#) 100% acrylic, (Gloss Level 1).

**END OF SECTION 09 91 13**

**SECTION 09 91 23  
INTERIOR PAINTING****PART 1 - GENERAL**

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. Section includes surface preparation and the application of paint systems on the following interior substrates listed in 3.6 Interior Painting Schedule.
- B. Related Requirements:
1. Section 051200 "Structural Steel Framing" for shop priming of metal substrates with primers specified in this Section.
  2. Section 099113 "Exterior Painting" for surface preparation and the application of paint systems on exterior substrates.

## 1.3 DEFINITIONS

- A. Gloss Level 1: Not more than 5 units at 60 degrees and 1 to 2 units at 85 degrees.
- B. Gloss Level 2: 5 to 9 units at 60 degrees and 10 to 15 units at 85 degrees.
- C. Gloss Level 3: 10 to 15 units at 60 degrees and 15 to 30 units at 85 degrees.
- D. Gloss Level 4: 20 to 35 units at 60 degrees and 35 to 50 units at 85 degrees.
- E. Gloss Level 5: 40 to 50 units at 60 degrees.
- F. Gloss Level 6: 70 to 80 units at 60 degrees
- G. Gloss Level 7: More than 80 units at 60 degrees.
- H. Blocking: Two painted surfaces sticking together such as a painted door sticking to a painted jamb.
- I. Mildew Resistant: Certified products are specially formulated with microbicidal additives that resist mold, mildew, and algae growth on the paint film and inhibit growth of bacterial odors.
- J. CHPS: Collaborative for High Performance Schools. A national movement to improve student performance and the entire educational experience by building the best possible schools. [www.chps.net](http://www.chps.net).
- K. EG: Ethylene Glycol. Ethylene glycol is listed as a hazardous air pollutant (HAP) by the U.S. EPA.
- L. PDCA: Painting & Decorating Contractors of America [www.pdca.org](http://www.pdca.org) .
- M. RAVOC: Reactivity adjusted VOC. "Reactivity" means the ability of a VOC to promote ozone formation
- N. SSPC: The Society for Protective Coatings publishes Scopes of SSPC Surface Preparation Standards and Specifications [www.sspc.org](http://www.sspc.org) .
- O. Dunn-Edwards Conformance Chart: D-E CONFORMANCE TABLE

#### 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
- B. LEED v.4 Requirements: Interior paints and coatings must pass CDPH Standard Method V1.1 (also called section 01350) emissions testing; and they must comply with the VOC content limits of the California ARB 2007 Suggested Control Measure for Architectural Coatings.
- C. Samples for Initial Selection: For each type of topcoat product.
- D. Samples for Verification: For each type of paint system and in each color and gloss of topcoat.
  - 1. Submit Samples on rigid backing, no smaller than 7 inches X 10 inches (177 mm X 254 mm) or larger than 8.5 inches X 11 inches (216 mm X 280 mm).
  - 2. Label each Sample for project, architect, general contractor, painting contractor, paint color name and number, paint brand name, "P" number if applicable, and application area.
- E. Product List: For each product indicated, include the following:
  - 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
  - 2. VOC content.

#### 1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Paint: Provide not less than 1 gal. (3.8L) of each material and color applied.

#### 1.6 QUALITY ASSURANCE

- A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
  - 1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
    - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
    - b. Other Items: Architect will designate items or areas required.
  - 2. Final approval of color selections will be based on mockups.
    - a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.
  - 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
  - 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

**1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
  - 1. Maintain containers in clean condition, free of foreign materials and residue.
  - 2. Remove rags and waste from storage areas daily.

**1.8 FIELD CONDITIONS**

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 90 degrees F (10 and 32 degrees C).
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 degrees F (3 degrees C) above the dew point; or to damp or wet surfaces.
- C. Painting contractor should follow proper painting practices and exercise judgment based on his or her experience and project specific conditions as to when to proceed.

**PART 2 - PRODUCTS****2.1 MANUFACTURERS**

- A. Basis-of-Design Product: Provide products listed from the Dunn-Edwards Corporation.
  - 1. Contact: Kim Hampton Architectural Services Representative, Cell: 949-576-8835, email: [kim.hampton@dunnedwards.com](mailto:kim.hampton@dunnedwards.com)

**2.2 PAINT, GENERAL**

- A. Material Compatibility:
  - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
  - 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- B. VOC Content: Provide material that comply with VOC limits of authorities having jurisdiction.
- C. Colorants: The use of colorants containing hazardous chemicals, such as ethylene glycol, is prohibited and zero VOC colorants should be used whenever possible.
- D. Colors: As selected by City staff from full product color range.
  - 1. Indicate a percentage of surface area which will be painted with deep tones.

**2.3 SOURCE QUALITY CONTROL**

- A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:
  - 1. Owner may engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
  - 2. Testing agency will perform tests for compliance with product requirements.
  - 3. Owner may direct Contractor to stop applying coatings if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces

painted with rejected materials. Contractor will comply with requirements to use compatible products and systems as described in Article 2.2. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
  - 1. Concrete: 12 percent.
  - 2. Masonry (Clay and CMU): 12 percent.
  - 3. Wood: 15 percent.
  - 4. Gypsum Board: 12 percent.
  - 5. Plaster: 12 percent.
- C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- D. Plaster Substrates: Verify that plaster is fully cured, including pH testing to determine that alkalinity is within limits established by the manufacturer.
- E. Spray-Textured Ceiling Substrates: Verify that surfaces are dry.
- F. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- G. Proceed with coating application only after unsatisfactory conditions have been corrected.
  - 1. Application of coating indicates acceptance of surfaces and conditions.

#### **3.2 PREPARATION**

- A. Comply with manufacturer's written instructions.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
  - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
  - 1. Remove incompatible primers and re-prime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions, including pH testing to determine that alkalinity is within limits established by the manufacturer.

- E. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceed that permitted in manufacturer's written instructions.
- F. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer.
- G. Shop Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop primed surfaces.
- H. Galvanized Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- I. Aluminum Substrates: Remove loose surface oxidation.
- J. Wood Substrates:
  - 1. Scrape and clean knots and apply coat of knot sealer before applying primer.
  - 2. Sand surfaces that will be exposed to view and dust off.
  - 3. Prime edges, ends, faces, undersides, and backsides of wood.
  - 4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.
- K. Cotton or Canvas Insulation Covering Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

### 3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions.  
Use applicators and techniques suited for paint and substrate indicated
  - 1. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
  - 2. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
  - 3. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
  - 4. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. Tint each undercoat to a lighter shade of the finish coat (not to exceed 2 ounces of colorant) to facilitate identification of each coat if multiple coats of same material are to be applied.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- E. Block Fillers: Provide block fill as scheduled to conform to the following PDCA Standard P12-05:

1. Level 3 - Premium Fill: One or multiple coats of high-performance block filler manufactured to be applied at a high dry film build. Block filler shall be back rolled to eliminate voids and reduce the majority of the masonry profile depth.
- F. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
1. Paint the following work where exposed in equipment rooms:
    - a. Equipment, including panelboards and switch gear.
    - b. Uninsulated metal piping.
    - c. Uninsulated plastic piping.
    - d. Pipe hangers and supports.
    - e. Metal conduit.
    - f. Plastic conduit.
    - g. Tanks that do not have factory-applied final finishes.
    - h. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
    - i. Other items as directed by the architect.
  2. Paint the following work where exposed in occupied spaces:
    - a. Equipment, including panelboards.
    - b. Uninsulated metal piping.
    - c. Uninsulated plastic piping.
    - d. Pipe hangers and supports.
    - e. Metal conduit.
    - f. Plastic conduit.
    - g. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
    - h. Other items as directed by the Architect.
  3. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

### 3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
1. Contractor shall touch up and restore painted surfaces damaged by testing.
  2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

### 3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

## 3.6 INTERIOR PAINTING SCHEDULE

- A. Steel Substrates:
1. Waterborne Urethane Alkyd Enamel System:
    - a. Prime Coat: Primer, alkyd, anti-corrosive, for metal, Dunn-Edwards, Enduraprime Rust Preventative Primer ENPR00.
    - b. Intermediate Coat: Waterborne urethane alkyd matching topcoat.
    - c. Topcoat: Waterborne urethane alkyd, interior/exterior, semi-gloss, Dunn-Edwards, Aristoshield ASHL50, (Gloss Level 5)
- B. Galvanized Metal Substrates:
1. Waterborne Urethane Alkyd Enamel over a Latex Primer System:
    - a. Prime Coat: Primer, waterbased, Dunn-Edwards, Ultrashield Galvanized Metal Primer ULGM00.
    - b. Intermediate Coat: Waterborne urethane alkyd matching topcoat.
    - c. Topcoat: Waterborne urethane alkyd, interior/exterior, semi-gloss, Dunn-Edwards, Aristoshield ASHL50, (Gloss Level 5).
- C. Aluminum (Not Anodized or Otherwise Coated) Substrates:
1. Waterborne Urethane Alkyd Enamel over a Latex Primer System:
    - a. Prime Coat: Primer, waterbased, Dunn-Edwards, Ultrashield Galvanized Metal Primer ULGM00.
    - b. Intermediate Coat: Waterborne urethane alkyd matching topcoat.
    - c. Topcoat: Waterborne urethane alkyd, interior/exterior, semi-gloss, Dunn-Edwards, Aristoshield ASHL50, (Gloss Level 5)
- D. Wood Substrates:
1. Premium Low Odor/VOC Latex System:
    - a. Prime Coat: Primer, latex, for interior wood, Dunn-Edwards, Decoprime DCPR00.
    - b. Intermediate Coat: Latex, interior, matching topcoat.
    - c. Topcoat: Latex, interior, semi-gloss, Dunn-Edwards, Spartawall SWLL50, (Gloss Level 5)."Institutional Low-Odor/VOC Latex System" Subparagraph below corresponds to MPI INT 6.1Q, MPI INT 6.2L, MPI INT 6.3V, and MPI INT 6.4T.
  2. Waterborne Low Oder/VOC Stain System: Stage/Platform Floor and Interior Doors.
    - a. Stain Coat: Old Masters Penetrating Stain
    - b. Clear Coat: Old Masters Masters Armor Interior Water-Based Satin 721 Clear Finish, or
    - c. Clear Coat: Old Masters Masters Armor Interior Water-Based Semi-Gloss 722 Clear Finish
    - d. Clear Coat Additive: Old Masters Masters Armor Part B Hardener
- E. Gypsum Board Substrates: All walls and ceilings Eggshell Finish, except Bathrooms and Kitchen Semi-Gloss all walls and ceiling
1. Premium Low Odor/VOC Latex System:
    - a. Prime Coat: Primer sealer, latex, interior, Dunn-Edwards, Vinylastic Select VNSL00.
    - b. Intermediate Coat: Latex, interior, matching topcoat.
    - c. Topcoat: Latex, interior, eggshell, Dunn-Edwards, Spartawall SWLL30, (Gloss Level 3).

- Or
  - d. Topcoat: Latex, interior, semi-gloss, Dunn-Edwards, Spartawall [SWLL50](#), (Gloss Level 5).
2. Pre-Catalyzed Waterbased Epoxy: Bathrooms and Kitchen all walls and ceilings.
- a. Prime Coat: Primer sealer, latex, interior, Dunn-Edwards, Vinylastic Premium VNPR00.
  - b. Intermediate Coat: Pre-catalyzed waterbased epoxy matching topcoat.
  - c. Topcoat: Waterbased epoxy, interior, semi-gloss, Dunn-Edwards, Enduracat [ENPX50](#), (Gloss Level 5).
- F. Plaster Substrates:
1. Premium Low Odor/VOC Latex System:
- a. Prime Coat: Primer, alkali resistant, water based, Dunn-Edwards, Eff-Stop Select [ESSL00](#).
  - b. Intermediate Coat: Latex, interior, matching topcoat.
  - c. Topcoat: Latex, interior, eggshell, Dunn-Edwards, Spartawall [SWLL30](#) (Gloss Level 3).
- Or
- d. Topcoat: Latex, interior, semi-gloss, Dunn-Edwards, Spartawall [SWLL50](#) (Gloss Level 5).

**END OF SECTION 09 91 23**

**SECTION 10 21 00  
TOILET PARTITONS****PART 1 - GENERAL**

## 1.1 SECTION INCLUDES

- A. Solid plastic toilet compartments including the following:
  - 1. Toilet Compartment Partitions, Doors, Pilasters, and all required hardware

## 1.2 RELATED SECTIONS

- A. Section 05 50 00 - Metal Fabrications.
- B. Section 06 10 00 - Rough Carpentry.

## 1.3 REFERENCES

- A. ASTM A 666 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
- B. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- C. National Fire Protection Association (NFPA) 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.
- D. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- E. United States EPA (Environmental Protection Agency) Registration - Bactericidal Surfaces Registered with the U.S. EPA to Legally Make Claims that these Materials Kill Infectious Bacteria.

## 1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- C. Shop Drawings: Provide layout drawings and installation details with location and type of hardware required.
- D. Verification Samples: For each finish product specified, two samples representing actual product, color, and patterns.
- E. Sustainable Design Submittals:
  - 1. Recycled Content: Certify percentages of post-consumer and pre-consumer recycled content.
  - 2. Regional Materials: Certify distance between manufacturer and Project.

## 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A company regularly engaged in manufacture of products specified in this section, and whose products have been in satisfactory use under similar service conditions for not less than 5 years.
- B. Installer Qualifications: A company regularly engaged in installation of products specified in this Section, with a minimum of 5 years experience.
- C. Materials: Doors, panels and pilasters, constructed from high density polyethylene (HDPE) resins. Partitions to be fabricated from polymer resins compounded under high pressure, forming a single component which is waterproof, nonabsorbent and has a self-lubricating surface that resists marks from pens, pencils, markers and other writing instruments. Cover all plastic components with a protective plastic masking.
- D. Performance Requirements:
  - 1. Fire Resistance: Partition materials shall comply with the following requirements, when tested in accordance with ASTM E 84:
    - a. Class A flame spread/smoke developed rating.
    - b. Class B flame spread/smoke developed rating.
  - 2. Material Fire Ratings:
    - a. National Fire Protection Association (NFPA) 286: Pass.
    - b. International Code Council (ICC): Class B.
  - 3. Antimicrobial Touch Surfaces: Hardware touch surfaces shall be manufactured from substrates that are registered with the U.S. EPA to kill specific bacteria tested according to U.S. EPA protocols.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.

## 1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

## 1.8 WARRANTY

- A. Manufacturer guarantees its plastic against breakage, corrosion, and delamination under normal conditions for 25 years from the date of receipt by the customer. If materials are found to be defective during that period for reasons listed above, the materials will be replaced free of charge. Labor not included in warranty.

## **PART 2 PRODUCTS**

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Scranton Products, which is located at: 801 E. Corey St.; Scranton, PA 18505; ASD Toll Free Tel: 800-445-5148; Fax: 855-376-6161; Email:[request info \(info@scrantonproducts.com\)](mailto:request_info(info@scrantonproducts.com)); Web:<https://www.scrantonproducts.com>
  - 1. Fabricator: Santana Toilet Partitions.
  - 2. Fabricator: Comtec Toilet Partitions.
  - 3. Fabricator: Capitol Toilet Partitions
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

## 2.2 MATERIAL

- A. Plastic Panels: High density polyethylene (HDPE) suitable for exposed applications, waterproof, non-absorbent, and graffiti-resistant textured surface
  - 1. Recycled Content; Post Industrial: 100 percent.
- B. Zinc Aluminum Magnesium and Copper Alloy (Zamac): ASTM B 86.
- C. Stainless Steel Castings: ASTM A167, Type 304.
- D. Aluminum: ASTM 6463-T5 alloy.

## 2.3 SOLID PLASTIC TOILET COMPARTMENT PANELS, PILASTERS & DOORS

- A. Basis of Design: Hiny Hiders Toilet Partitions as manufactured by and supplied by Scranton Products.
  - 1. Style: Floor-to-ceiling Mounted toilet compartment partitions, pilasters & doors.
- B. Doors and Pilasters: 1 inch (25 mm) thick with all edges rounded to a radius. Mount doors and dividing panels based on height of specified system.
  - 1. Door and Panel Height: 66 inches (1676 mm).
  - 2. Panel Edge: Standard.
  - 3. Pilasters: 82 inches (2083 mm) high and fastened to floor.
- C. Door/Pilaster Color: Warm series.
  - 1. Mocha - Orange Peel. (Verify with City staff).
- D. Pilaster Shoes: 3 inches (76 mm), 20 gauge stainless steel. Secured to pilasters with a stainless steel tamper resistant Torx head sex bolt.
- E. Headrail: Heavy-duty extruded 6463-T5 alloy aluminum with anti-grip design. Finish to be clear anodized. Fastened to headrail brackets with stainless steel tamper resistant Torx head sex bolt, and fastened at the top of the pilaster with stainless steel tamper resistant Torx head screws.
  - 1. Headrail Brackets: 20 gauge stainless steel with satin finish. Secured to the wall with stainless steel tamper resistant Torx head screws.
- F. Wall Brackets:
  - 1. Stainless Steel Brackets: Stainless steel type 304.
  - 2. Brackets are fastened to pilasters with stainless steel tamper resistant Torx head screws and fastened to the panels with stainless steel tamper resistant Torx head sex bolts.
  - 3. Bracket Type: Continuous 54 inches (1372 mm) stainless steel.
- G. Door Hardware:
  - 1. Continuous Stainless Steel Spring Loaded Hinge:
    - a. Hinges: 54 inches (1372 mm).
  - 2. Door Strike/Keeper: Heavy-duty extruded aluminum 6436-T5 alloy with a bright dip anodized finish. Secured to pilasters with stainless steel tamper resistant Torx head sex bolts. Bumper shall be made of extruded black vinyl.
    - a. Style: 6 inches (152 mm) aluminum.
  - 3. Latch Mechanism: Stainless Steel Slide Bolt Latch and Housing: Heavy-duty stainless steel type 304. The latch and housing to have a bright finish. The slide

- bolt and button to have a black anodized finish.
- 4. Doors supplied with one coat hook/bumper and door pull made of chrome plated Zamak.
- 5. Equip outswing handicapped doors with second door pull and door stop.

### **PART 3 - EXECUTION**

#### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

#### 3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Examine areas to receive toilet partitions, screens, and shower compartments for correct height and spacing of anchorage/blocking and plumbing fixtures that affect installation of partitions. Report discrepancies to the architect.

#### 3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install partitions rigid, straight, plumb, and level manor, with plastic laid out as shown on shop drawings.
- C. Clearance at vertical edges of doors shall be uniform top to bottom and shall not exceed 3/8 inch (9.5 mm).
- D. No evidence of cutting, drilling, and/or patching shall be visible on the finished work.
- E. Finished surfaces shall be cleaned after installation and be left free of imperfections.

#### 3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

**END OF SECTION 10 21 00**

## **SECTION 10 22 26 OPERABLE PARTITIONS**

### **Part 1 – General**

#### **1.1 Description**

##### **A. General:**

1. Furnish and install operable partitions and suspension system. Provide all labor, materials, tools, equipment, and services for operable walls in accordance with provisions of contract documents.

#### **1.2 Related work by others**

- A. Preparation of opening will be by General Contractor. Any deviation of site conditions contrary to approved shop drawings must be called to the attention of the architect.
- B. All header, blocking, support structures, jambs, track enclosures, surrounding insulation, and sound baffles as required in 1.4 Quality Assurance.
- C. Pre-punching of support structure in accordance with approved shop drawings.
- D. Paint or otherwise finishing all trim and other materials adjoining head and jamb of operable partitions.

#### **1.3 Submittals**

- A. Complete shop drawings are to be provided prior to fabrication indicating construction and installation details. Shop drawings must be submitted within 60 days after receipt of signed contract.

#### **1.4 Quality Assurance**

- A. Installation shall be performed by an installer certified by the manufacturer.
- B. Preparation of the opening shall conform to the criteria set forth by ASTM E557 Standard Practice for Architectural Application and Installation of Operable Partitions.

#### **1.5 Product delivery, storage, and handling**

- A. Proper storage of partitions before installation, and continued protection during and after installation will be the responsibility of the General Contractor.

#### **1.6 Warranty**

- A. Partition panels shall be guaranteed for a period of five years with all mechanical parts including track and carriers guaranteed for a period of ten years. This guarantee is against defects in material or workmanship of manufacturer's product, excluding abuse.

### **Part 2 – Products**

#### **2.1 Manufacturers**

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
  1. Moderco Inc.

## 2.2 Operation

- A. Excel 732 manually operated, top supported paired panels.
- B. Initial seal (select one):
  - 1. Bulb seal.
- C. Final closure (select one):
  - 1. Telescopic closure panel equipped with a telescopic jamb mounted to a rack and pinion mechanism and extended with a lever handle.
  - 2. Hinged closure panel (up to 12'-0" [3658mm] height).
    - a. Same construction and face finish as partition panels.
    - b. Standard hardware:
      - (i). Flush pulls and roller latch.
    - c. Hardware:
      - (i). Deadbolt lock.

## 2.2 Panel construction

- A. Nominal 3 3/8" [85mm] thick panels, up to 48 1/2" [1230mm] width. Framing members to be 16 ga. c-shaped steel channels welded together at the corners with double channels at the top of the panel. Trolley pipe welded to 1 1/2" X 1 1/2" X 3/32" [38mm X 38mm X 2.5mm] steel tube mechanically fastened to double channels. Panel faces to be welded to panel frame.
- B. Acoustical rating:
  - 1. 48 STC.
- C. Panel face construction (select one):
  - 1. Roll-formed galvanized steel skins laminated to 1/2" [13mm] gypsum board and welded to panel frame. Steel thickness based on STC rating.
- D. Hinges:
  - 1. Discreet low profile steel hinges fastened to panel frame.
- E. Vertical trims (select one):
  - 1. Trimless vertical edges.
- F. Panel weight:
  - 1. 48 STC: 37 kg/m<sup>2</sup> [7.5 lbs/pi<sup>2</sup>]

## 2.4 Panel finishes

- A. Face finish shall be (select as required):
  - 1. Factory applied Class A reinforced vinyl wallcovering with woven backing, weighing 21 oz/lin.yard [545 g/lin.m]. Color selected from manufacturer's standard color selector.
- B. Panel frame finish shall be (select one):
  - 1. Clear anodized.

## 2.5 Sound seals

- A. Vertical seals:
  - 1. Deep nesting aluminum and pvc tongue and groove interlocking astragal in each panel edge.

**B. Horizontal seals:**

1. Type FA: 1" [25mm] fixed pvc top sweeps and automatically operated bottom seals. Bottom seals automatically drop as panel are positioned without use of a tool. Bottom seals retract automatically when panel is pulled away from wall or adjacent panel. The last panel (or last pair of panels) will have fixed bottom sweeps.
  - a. FA-2: 2" [51mm] floor clearance with 1 1/2" [38mm] operating range.

**2.6 Suspension system****A. Track and trolleys (select one):**

1. #45-T aluminum track: 6063-T6 aluminum alloy extrusion with integral soffit trim supported by pairs of 3/8" [10mm] dia. threaded rods connected to structural support, with or without optional hanger brackets.
  - a. #45 trolley: Each trolley shall have four precision ground ball bearing wheels with nylon tires.
  - b. Usage: For panels up to 15'-3" [4648mm] height.
  - c. Articulated trolley body will keep all wheels on track rolling surfaces at all times.
  - d. Each panel to be supported by one trolley.

**B. Track finish (select applicable):**

1. Aluminum track finish shall be (select one):
  - a. Clear satin anodized.

**2.7 Optional features****A. Pocket door (select as required):**

1. Acoustical pocket door of same construction and same finish as partition panels.

**Part 3 – Execution****3.1 Installation**

- A. The complete installation of the operable wall system shall be by an authorized factory-trained installer and be in strict accordance with the approved shop drawings and manufacturer's installation instructions.

**3.2 Cleaning**

- A. All track and panel surfaces shall be wiped clean and free of handprints, grease, and soil.
- B. Packing and other installation debris shall be removed from the job site.

**3.3 Training**

- A. Installer shall demonstrate proper operation and maintenance procedures to owner's representative.
- B. Operating handle and owner's manuals shall be provided to owner's representative.\

**END OF SECTION 10 22 26**

**SECTION 10 28 00  
TOILET, BATH, & LAUNDRY ACCESSORIES**

**PART 1 - GENERAL**

1.1 SCOPE:

- A. Provide toilet accessories as shown on drawings and herein specified. Locate units as shown on drawings.

1.2 SUBMITTALS:

- A. Six (6) copies of manufacturer's data and installation instructions.
- B. Provide samples of units when requested by Architect. Acceptable samples will be returned and may be used in the work.

**PART 2 - PRODUCTS**

2.1 MANUFACTURER:

- A. Provide approved toilet accessories as manufactured by the following:
- B. Bobrick Washroom Equip., Inc., Aslin Industries, and Fastaire Hand Dryers Inc (as noted in the restroom accessory schedule on the plans) as a standard of quality and design. Others may be submitted for approval by the City staff based on these standards.

2.2 MATERIALS:

- A. Provide units fabricated of materials and finishes as follows:
  - 1. Stainless Steel: AISI Type 302/304, with No. 4 polished finish, unless otherwise indicated.

2.3 STEEL MOUNTING DEVICES:

- A. Hot-dip galvanized after fabrication, ASTM A386.

2.4 TOILET TISSUE DISPENSER:

- A. Provide one toilet tissue dispenser for each toilet unit, model number & location as indicated on drawings.

2.5 STAINLESS STEEL GRAB BARS:

- A. Provide stainless steel grab bars where indicated on the drawings. The grab bars shall be 48" long (minimum) when mounted at the side of the water closet and 36" long (minimum) when mounted on the wall behind the water closet (model number & location as indicated on drawings).
- B. Mounting. Concealed, with manufacturer's standard flanges welded to grab bar and anchorages for type of installation.
- C. Non-Slip Gripping Surface. Peened, manufacturer's standard, where used in wet areas.
  - 1. Size. 1 1/2" O.D., wall thickness 0.049" (minimum).
  - 2. Offset. 1 1/2".

2.6 SOAP DISPENSERS:

- A. Provide the model number, size and location indicated on drawings.

- 2.7 WALL MIRROR UNITS:
- A. Provide the model number, size and location indicated on drawings.
- 2.8 PAPER TOWEL DISPENSER:
- A. Provide at each restroom, model number & location as indicated on drawings.
- 2.9 TOILET SEAT COVER DISPENSER:
- A. Provide the model number, size and location indicated on drawings.
- 2.10 MOP & BROOM HOLDER:
- A. Bobrick B-223x36" or equal product
- B. Mount on wall adjacent to mop sink per manufacturers recommendations.
- 2.11 BABY CHANGING STATION
- A. Provide the model number, size and location indicated on drawings.
- 2.12 SANITARY NAPKIN RECEPTACLE
- A. Provide the model number, size and location indicated on drawings.
- 2.13 OTHER ACCESSORIES:
- A. Refer to the Restroom Accessories Schedule on the drawings. Install per manufacturer's recommendations.

### **PART 3 - INSTALLATION**

- 3.1 Use concealed fastenings wherever possible.
- 3.2 Provide anchors, bolts and other necessary fasteners, and attach units securely to walls and partitions in locations as shown or directed. Comply with manufacturer's instructions for each type of substrate construction.
- 3.3 Install concealed mounting devices and fasteners fabricated of the same material as the accessories or of galvanized steel.
- 3.4 Install exposed mounting devices and fasteners finish to match the accessories.
- 3.5 Provide theft-resistant fasteners for all accessory mountings.

**END OF SECTION 10 28 00**

**SECTION 10 40 00  
IDENTIFYING DEVICES**

**PART 1 - GENERAL**

1.1 SECTION INCLUDES

- A. Supply and install Accessible Signage.
- B. Supply and installed Raised Aluminum Building Signage

1.2 RELATED SECTIONS

- A. Masonry: Section 04 20 00

1.3 SUBMITTALS

- A. Per Division 1 of the project specifications, submit information for each sign type including correct symbols and Braille

1.5 PRODUCT HANDLING

- A. Use all means necessary to protect signs before, during and after installation. In event of damage, immediately make necessary repairs and replacements.

**PART 2 - PRODUCTS**

2.1 EXTERIOR ACCESS SIGNAGE

- A. Refer to architectural details and State of California Title 24 signage requirements. All Signs shall be fabricated of aluminum as manufactured by Master Building Specialties, Inc., Chino, California, (800) 908-8372, or approved equal.

2.2 EXTERIOR & INTERIOR RESTROOM SIGNAGE

- A. Provide acrylic signage for door-mounted signs per signage details on plans and complying with California Title 24 accessibility requirements including raised text, symbols, and corresponding Braille. Signage colors shall be white on blue. Signage shall be glue-applied or attached with finish screws. Double-sided tape is not acceptable.

**PART 3 - EXECUTION**

3.1 INSTALLATION

- A. Exterior recessed precast concrete restroom signs: Install per details on the plans.
- B. Exterior Door Mounted Restroom & Wall Mounted Access Signage: Shall be securely anchored to walls using tamper-proof mounting hardware.

**END OF SECTION 10 40 00**

**SECTION 10 82 00  
LOUVERS, GRILLES & SCREENS**

**PART 1 - GENERAL**

1.1 SCOPE:

- A. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified, and as necessary to complete the contract, including but not limited to these major items:

1. Walls Louvers, factory fabricated and finished.

1.2 RELATED WORK ELSEWHERE:

- A. Sheet Metal, Section 07 60 00.

1.3 GENERAL REQUIREMENTS:

- A. Field Conditions. Verify drawing dimensions with actual field conditions. Inspect related work and adjacent surfaces. Report to the Architect all conditions which prevent proper execution of this work.

1.4 SUBMITTALS:

- A. Manufacturer's Data.

1. Submit six (6) copies of manufacturer's specifications, roughing-in diagrams, and installation instructions for each type and size of shutters. Include manufacturer's data, operating instructions and maintenance data. Indicate by transmittal form that installer has received a copy of diagrams and installation instructions.

- B. Shop Drawings.

1. Submit six sets of shop drawings for special components and installations which are not fully dimensioned or detailed on manufacturer's data sheets.

1.5 INSERTS AND ANCHORAGES:

- A. Furnish inserts and anchoring devices which must be set in masonry wall for the installation of the units. Provide setting drawings, templates, instructions and directions for installation of anchorage devices. Coordinate delivery with other work to avoid delay.

1.6 MANUFACTURER:

- A. Provide louvers and vents as manufactured by the Airlite Company or approved equal.

1.7 DELIVERY AND STORAGE:

- A. Deliver materials and store on site in original containers in accordance with Division 1 of the specifications.

**PART 2 - MATERIALS**

## 2.1 LOUVERS:

- A. Louvers shall be architectural blade Louver Type K604 with visible vertical mullions (where shown on drawings) Louvers shall be 4.5-inches (114 mm) deep and assembled entirely from extruded aluminum components. Blades and frames shall be 0.081-inch (2 mm) thick extruded aluminum, alloy 6063-T5. Blades shall be stationary, horizontal and spaced 4.5-inches (112 mm) on center.
- B. Welded Assembly: Join stationary blade, head and jamb frames with fillet welds concealed from view. Louver blades shall be joined to each jamb frame with a minimum of two 0.5-inch (13 mm) long fillet welds produced. Frames shall be joined at each corner with a minimum of two 0.5-inch (13mm) long fillet welds.
- C. Louvers shall be furnished with bird screen, insect screen, supports, installation hardware and finishes as specified and as required for a complete installation.
- D. Provide louvers and bird/bug screen assembly, sizes per plans.
- E. All louvers shall be factory finished after assembly with an alkyd baked enamel finish color as indicated on plans. Submit color samples for review.

## 2.2 FASTENERS:

- A. As specified by the manufacturer for installation in a CMU wall opening (minimum stainless steel machine bolts and screws, 1/4" diameter and length as required).

## 2.3 SEALANT:

- A. As specified in Section 07 92 00.

**PART 3 - EXECUTION**

## 3.1 INSPECTION:

- A. Inspect openings and adjacent surfaces. Report, in writing, to the Architect all conditions which prevent proper execution of this work.

## 3.2 INSTALLATION:

- A. Install in openings prepared by other trades. Secure in manner recommended by louver manufacturer.
- B. Clean Up and Repair:

Replace any damaged work and materials. Perform final cleaning of all surfaces, strictly in accordance with manufacturer's instructions. Use no abrasives.

**END OF SECTION 10 82 00**

**SECTION 22 00 00****PLUMBING****PART I- GENERAL****1.01 SCOPE OF WORK:**

- A. Furnish all labor, materials, equipment and services required to complete the installation of the work of this section as shown and specified on the drawings and described herein, including all incidental equipment and work to make it complete, satisfactory and ready for operation. The work shall include, but not be limited to, the following:
  - 1. Soil, waste and vent piping system, including connection to service main;  
Domestic cold water system to fixtures, including connection to service from main.  
Contractor shall pay all costs for service connection and meter;  
Plumbing fixtures, traps, trim, hose bibbs, accessories, etc., including installation and connections;  
Excavation and backfill required for plumbing and piping system;  
Final inspection adjustment and testing of all systems.

**1.02 WORK NOT INCLUDED IN THIS SECTION:**

- A. Finish painting of materials and equipment.

**1.03 DRAWINGS OF OTHER SECTIONS:**

- A. The Contractor shall inspect the drawings of other sections to familiarize itself with items of architectural, structural, mechanical, and electrical work which may affect this installation.

**1.04 INTENT:**

- A. The drawings accompanying this specification indicate in diagrammatic form the arrangements desired for the principal items of equipment and piping and shall be followed as closely as possible. Proper judgment shall be exercised in the installation of this work to secure a neat arrangement of equipment and piping and to overcome local interference of structure and other trades.
- B. The drawings and specifications are intended to complement each other so that any work exhibited in either, whether in the other or not, is to be furnished according to the true intent and meaning as if shown or required by both the drawings and specifications.
- C. In the event of conflict between the drawings and specifications, the better or more expensive method shown on the drawings or described by the specifications shall be furnished.

**1.05 ORDINANCES AND REGULATIONS:**

- A. Materials, apparatus and equipment for the system shall comply with and shall be installed in accordance with all the requirements of all legally constituted public authorities having jurisdiction, including all Local Ordinances, and all Safety Orders of the State Industrial Accident Commission. Attention is specifically directed to all requirements of the State Department of Public Health.

**1.06 COOPERATION WITH OTHER TRADES:**

- A. The Contractor shall consult with and work harmoniously with all other contractors so that the work as a whole may progress in the most expeditious manner and without conflict or delay.

**1.07 PERMITS AND INSPECTIONS:**

- A. Apply and pay for all permits, fees, assessments and complimentary drawings as may be required for the installation or construction of this work, required by any legally constituted public authorities having jurisdiction. Arrange and pay for all inspections or examinations so required and deliver certificates of all inspections to the Engineer.

**1.08 MEASUREMENTS:**

- A. All dimensions of the work of other trades which require verification shall be verified from shop drawings of such work or from actual measurements at the building, whichever in the judgment of the Contractor shall be responsible for the correctness of such measurements and all work shall be properly assembled and connected to the work of other trades. The Contractor shall verify all quantities of materials and equipment.

**1.09 SHOP DRAWINGS:**

- A. The Contractor shall furnish for approval before proceeding with the work, six (6) copies of shop drawings and catalog plate showing in detail the sizes, sections and dimensions of the equipment and fixtures and the methods of connecting or attaching work.
- B. Shop drawing items shall be identified by the symbol number on the fixture schedule on the drawings. Submittals shall be bound into six identical brochures and all items shall be submitted at one time.

**1.10 RECORD DRAWINGS:**

- A. The Contractor shall maintain in the field office one (1) set of blueline prints which shall form a part of this work. All items of installation which differ in any way from the work shown on the contract drawings shall be neatly recorded in red ink on the prints immediately after the work is installed. Upon completion of the work and as a condition precedent to the issuance of a certificate of completion, the prints shall be delivered to the Engineer for approval. Upon approval, the prints shall be retained by the Engineer for record, and final payment will be authorized.

**1.11 GUARANTEES:**

- A. The Contractor shall guarantee the complete and perfect operation of the entire system and that all apparatus will perform in accordance with the detailed drawings and specifications. The guarantee shall include the cost of all labor, parts and materials.

**1.12 CLEANING:**

- A. All equipment, piping and exposed surfaces shall be left smooth and clean, and all chromium plated or polished brass work shall be polished. During the progress of the work, the premises shall be kept free from debris and waste material resulting from the work of this section. Upon completion, all surplus material and debris shall be removed from the site.

**1.13 CLOSING-IN OF UNINSPECTED WORK:**

- A. Contractor shall not allow or cause any of the work to be covered up or enclosed until it has been inspected, tested and approved by the Engineer. Should any of this work be covered up or enclosed before such inspection and test, Contractor shall, at his own expense, uncover the work and after it has been inspected, tested and approved, make all repairs with such materials as may be necessary to restore all his work and that of other trades to its original and proper condition.

**1.14 CUTTING AND PATCHING:**

- A. The Contractor shall do all cutting and patching and shall provide all openings complete with sleeves and supports which may be required for the installation of the work under this section of the Specifications. Patching shall be of the same materials, workmanship and finish as, and shall accurately match, all surrounding construction. The Engineer shall be notified of all such cutting and patching, and shall give instructions as to exact procedure. All cutting or patching shall be done under the Engineer's direction. Where pipes are to pass through or interfere with any structural member, or where notching, boring, or cutting of the structure is necessary, the work shall be done as directed by the Engineer.
- B. Furnish information to the other trades on size and location of openings which are required in concrete walls, slabs, etc., for conduit, piping, and equipment at the proper time.

**1.15 BUILDING FOOTING CLEARANCES:**

- A. Unless otherwise shown on plans, pipes shall not run through footings. They shall cross below footings or through sleeves above footings. Those running parallel to footings shall have the minimum clearances indicated on the drawings and/or required by Code.

**1.16 EXCAVATION, TRENCHING AND BACKFILL:**

- A. All excavating, trenching and backfilling shall be done in conformity with "Excavating and Grading" section of the Specifications. Piping shall be installed promptly after excavation in order to keep the trenches open as short a time as possible.
- B. Any damage resulting from the Contractor's operations shall be repaired by it at its own expense.

**1.17 TESTING AND ADJUSTING:**

- A. Each piece of equipment and all of the systems shall be adjusted to insure proper functioning of all controls, elimination of noise and vibration, and be left in first-class operating condition.
- B. Contractor shall perform all tests in the presence of the Engineer's representative.
- C. Should any piece of apparatus, any work or materials fail in any of these tests, it shall immediately be removed and replaced by perfect material at the Contractor's expense. The portion of the work replaced shall again be tested by the Contractor at its own expense in the presence of the Engineer's representative.
- D. The Engineer shall be notified seventy-two (72) hours in advance when piping is ready for testing. All pipes shall be tested in accordance with all local, city and state ordinances, and the tests operated in the presence of local inspector.
- E. All equipment which would be subject to damage at the test pressure shall be isolated from the system and no test shall be made against a service valve or meter.

**1.18 TESTS:**

- A. Water systems: Hydrostatically at 125 pounds pressure.
- B. Sanitary sewer system including vent piping to above the roof line: With water by filling the piping to the top of the highest point, but at not less than five (5) pounds pressure.
- C. All tests, except as otherwise noted, shall be maintained without leaks or pressure loss for not less than four (4) hours, with allowance for temperature change.

**PART II- PRODUCTS****2.01 PIPING:**

- A. Soil, Waste, Vent and Sewer. Exterior sewer (from 5' outside of buildings): see utility plans.
- B. Interior soil and waste (buildings and within 5'): see pipe schedule and specifications on plans.
- C. Vents: see pipe schedule and specification on plans.
- D. Domestic Water: see pipe schedule and specifications on plans.
- E. Interior (buildings and within 5'): see pipe schedule & specifications on plans
- F. Fixture Connections: See Plumbing Specifications on drawings. Unions shall be installed on connections to all equipment, on the downstream side of all shut-off valves, and on all building entrances.
- G. Unions: See Plumbing Specifications on drawings. Unions shall be installed on connections to all equipment, on the downstream side of all shut-off valves, and on all building entrances.

**2.02 VALVES AND ACCESSORIES:**

- A. See Plumbing Specifications on drawings.

**2.03 CLEANOUTS:**

- A. Provide and install cleanouts per plumbing code and where indicated on drawings and at all bends, angles, upper terminals in all soil and waste lines. All shall have X.H.C.I. body and extra heavy bronze plugs. All flush with floor shall have adjustable watertight covers; verify location with Engineer prior to installation. Where waterproofing membrane is encountered, body shall have integral anchoring flange and heavy clamping collar. All shall be of size and type indicated on drawings.
- B. See Plumbing Specifications on drawings.

**2.04 PIPE ESCUTCHEONS:**

- A. See Plumbing Specifications on drawings.

**2.05 FLASHING:**

- A. See Plumbing Specifications on drawings.

**2.06 HANGERS AND SUPPORTS:**

- A. See Plumbing Specifications on drawings.

**2.07 PLUMBING FIXTURES:**

- A. Provide fixtures as scheduled on the drawings.
- B. Before placing orders for the fixtures, the Contractor shall submit to the Engineer for approval, a complete list and cuts of all fixtures which Contractor intends to furnish, showing plate numbers and sizes in accord with Section 1.60.
- C. Each individual fixture supply shall be provided with stop valves located in pipe space; deliver loose keys to the County. No rubber packing or composition seal shall be installed. All supplies shall be metal to metal I.P.S. solid supplies only. Sink and lavatory supplies shall be as specified on fixture schedule.
- D. All fixtures and trim shall be vandal-proof.
- E. Provide all required accessories, fittings, equipment, and anything else required for a complete and functioning installation.

**PART III- EXECUTION****3.01 SEWER DRAINAGE ARRANGEMENT:**

- A. Soil and waste lines from all fixtures shall be run of sizes as indicated or specified, if not indicated or specified as per requirements of Plumbing Ordinances.
- B. All bends and turns shall be made with fittings of long radius; connections from branches to main lines shall be made with 45 and 1/8 bend fittings wherever possible. All piping in drainage system shall have fall of 1/4" to foot where possible, unless noted otherwise on drawings. Provide concrete thrust blocks at each change of direction for site sewer system.

**3.02 MAKING-UP PIPE:**

- A. All pipe shall be carefully cleaned and all scale, sand, dirt, etc., removed before installation. The ends of all threaded pipes shall be reamed out full size with long taper reamer so as to be partially bell mouthed and perfectly smooth.
- B. All threads on pipe shall be cut clean and smooth so that no more than two (2) threads are left exposed on the pipe when the joint is made up.
- C. All supply lines shall be laid to drain and kept straight without sags, dips or pockets.
- D. Dielectric couplings or unions shall be employed wherever dissimilar metals unite.
- E. All C.P. brass pipe shall be made up with friction clamps and friction wrenches.
- F. Provide and install P.D.I. approved water hammer arrester sized per P.D.I. standards as shown on drawings.

- G. No bushings shall be allowed; reducing fittings shall be used.
- H. Each individual fixture, unless otherwise indicated, shall be provided with a loose key valve on each supply. Provide all valves required for drainage and control. All valves on main branch lines shall have heavy brass tags stamped with letters at least 1/4" high stating part of system each valve controls.

### **3.03 FIXTURES AND EQUIPMENT BACKING:**

- A. Proper backing shall be installed for fixtures and equipment at time rough-in is done.
- B. Fixture supports shall be bolted complete through block walls with 1/8" x 4" steel plate on back side of wall and bolts through steel plate. (Water closets excepted.)

### **3.04 ROUGHING-IN WORK AND FIXTURE SETTING:**

- A. Rough-in work shall proceed as soon as building condition is ready to receive it, and shall be completed and tested before the piping is covered up.
- B. All water headers to fixtures shall be clamped to building structure and isolated from same.
- C. Fixtures shall be set as soon as building is ready to allow fixture setting. Care shall be taken to protect fixtures, finished floors and walls from all damage. Floors and walls marred or damaged by plumber shall be repaired at plumber's expense. All spaces between fixtures and wall shall be grouted with white plastic caulking compound.

### **3.05 SLEEVES:**

- A. All piping passing through concrete walls, trenches or floors shall be provided with 18# gauge galvanized iron sleeves and the voids filled with asphalt or mastic. Sleeve shall extend 4" above floors and 1/8" beyond walls. Cover all exposed sleeves with C.P. escutcheon plates.  
NOTE: No polyethylene pipe sleeves will be allowed.

### **3.06 FINAL ADJUSTMENTS:**

- A. Plumbing Contractor shall be responsible to make all final adjustments for water Pressure, valve setting and shall adjust all equipment in full accord with manufacturer's specifications and recommendations.

### **3.07 TESTING AND DISINFECTING WATER MAINS**

- A. All piping systems and fixtures shall be tested in accordance with the Uniform Plumbing Code latest adopted edition Chapter 3, Section 318.
- B. Completely disinfect all domestic line pipes before placing in service, in accordance with "Procedures for Disinfecting Water Mains, AWWA C-601" and the State of California Health Code.
- C. Prior to chlorination and after testing, thoroughly flush all new or repaired water mains and service connections.

- D. After flushing, drain out as much water as possible. Slowly fill the pipe with a chlorine water solution. The treated water shall be retained in the pipe long enough to destroy all non-spore forming bacteria. After the required time, the chlorine residual at the pipe extremities, and at other representative points, shall be at least 25 ppm. Chlorine may be applied by a water solution of chlorine gas or calcium hypochlorite. Commercial products known as "HTS", "Per Chloron", and "Pittchlor" have 70% calcium hypochlorite and shall be applied as follows:
1. Add the powder to lukewarm water and stir for several minutes; add to each pound of calcium hypochlorite powder one pound 58% soda ash and stir for several minutes; add water to make 10 gallons, stir and allow to settle until clear. Inject or pump the solution into the pipe, using one pound of calcium hypochlorite for every 2,000 gallons of water in the pipe.

END OF SECTION

**SECTION 23 00 00**  
**HEATING, VENTILATION AND AIR CONDITIONING**

**I. GENERAL**

Work under this section includes all labor, equipment, material, services, transportation, etc. required for and reasonably incidental to the complete and satisfactory installation of all of the HVAC Systems as indicated on the Mechanical Drawings, Mechanical Specifications on the drawings sheet, or specified herein.

**A. Work included in this section:**

1. Ceiling Mounted Heaters
2. Exhaust Fans
3. Grilles, Registers and Diffusers.
4. Ductwork and Accessories.
5. Duct Insulation.
6. All other equipment & materials as indicated on the drawings
7. Test and Balance.
8. Submittals and Shop Drawings.
9. Record Drawings.
10. Operation and Maintenance Manuals.
11. Guarantee.

**B. GENERAL REQUIREMENTS**

1. This section of the specification shall be considered as a part of the entire specification and all applicable portions of General Conditions, Special Conditions, and Division 1 shall apply.
2. Erection: The Contractor shall furnish the services of an experienced superintendent, who shall be constantly in charge of the erection of the work, together with all necessary journeymen, helpers, and laborers required to properly unload, erect, connect, adjust, start of operate and test the work involved.

**C. REFERENCES**

1. AABC - National Standards for Field Measurement and Instrumentation, Total System Balance.
2. AMCA 210 - Laboratory Methods of Testing Fans for Rating Purposes.
3. AMCA 300 - Test code for sound rating air-moving devices.
4. ANSI/NFPA 90A - Installation of Air Conditioning and Ventilation System.
5. ARI 270 - Sound rating of Outdoor Unitary Equipment.
6. ASHRAE 52-76 - Method of Testing Air Cleaning Devices Used in General Ventilation for Removing Particulate Matter.
7. ASTM A90 - Weight of Coating on Zinc - Coated (Galvanized) Iron or Steel Articles.
8. ASTM A120 - Black and Galvanized Steel Pipe.
9. ASTM B88 - Seamless Copper Water Tube.
10. ASTM C518 - Steady State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
11. ASTM C553 - Mineral Fiber Blanket and Felt Insulation.
12. ASTM C612 - Mineral Fiber Block and Board Thermal Insulation.
13. ASTM E84 - Surface Burning Characteristics of Building Materials.
14. ASTM E96 - Water vapor Transmission of Materials.
15. NFPA 90B - Installation of Warm Air Heating and Air Conditioning Systems.
16. NFPA 255 - Surface Burning Characteristics of Building Materials.

17. SMACNA - Low Pressure Duct Construction Standards.
18. UL 181 - Factory Made Air Ducts and Connectors.
19. UL 723 - Surface Burning Characteristics of Building Materials.
20. California Mechanical Code - Latest Edition.

#### **D. SUBMITTALS AND SHOP DRAWINGS**

1. Contractor agrees that shop drawings submittals processed by the Owner do not become Contract Documents and are not Change Orders; that the purpose of the shop drawing review is to establish a reporting procedure and is intended for the Contractor's convenience in organizing his work and to permit the Owner to monitor the Contractor's progress and understanding of the design. The process of review of the Contractor's submittals is not of testing the Owner's perception.
2. If deviations, discrepancies or conflicts between shop drawings submittals and the Contract Documents are discovered either prior to or after the shop drawing submittals are processed by the Owner, the Contractor agrees that the Contract Documents shall control and shall be followed.
3. Materials and Equipment: As soon as possible and within 35 days after award of the contract, and before their purchase, the Contractor shall submit to the Owner seven bound booklets for approval containing a complete list of materials, specialties and equipment he is to furnish for the installation. Literature shall be standard manufacturer's catalog cuts and items to be installed shall be clearly indicated. All submittals shall be made at one time.
4. Each item shall be identified by manufacturer, brand and trade name, number, size, rating and whatever other data is necessary to properly identify and check the materials and equipment. The words: "as specified" will not be considered sufficient identification. Drawings shall be 1/4" scale.
5. Accessories, controls, finish, etc., not submitted or identified with the submitted equipment shall be furnished and installed as specified.
6. Shop drawings shall be approved only to extent of information indicated. Approval of an item of equipment shall not be construed to mean approval for components for that item for which Contractor has provided no information.
7. Approval of shop drawings shall not relieve Contractor of responsibility for providing all controls, wiring, components, etc. which are shown or specified, or all additional controls, wiring, components, etc. required to provide complete and correctly operating mechanical systems.
8. Submit product data for the following manufactured products, assemblies, personnel and testing agencies required for this project:
  - a. Diffusers, Registers and Grilles.
  - b. Louvers.
  - c. Ductwork and Accessories.
  - d. Insulation Materials.
  - e. Detailed procedures, agenda, sample report forms, and copy of AABC National Project Performance Guarantee.
9. Prepare and furnish fully coordinated shop drawings showing ductwork and piping on separate drawings. The drawings shall be minimum 1/4" = 1'-0" scale and shall show dimensioning of piping and ductwork from gridlines, bottom of elevation marks for ductwork and piping and fittings, valves, dampers, devices, etc. with labels. In addition,

coordinate with related work and reference on the same drawings major plumbing piping, structural steel, fire protection piping, conduit runs and cable trays. Review and sign these drawings to verify coordination of related equipment. Conflicts, which occur shall be brought to the attention of the owner prior to issuance of the drawings.

10. Contractor shall provide detailed shop drawings min. 45 days prior to installation for a complete functional system indicating all equipment, ductwork routing, and etc. including changes in elevation, direction, sway bracing, and etc. Contractor shall indicate all roof curb locations and sizes.

#### **E. SUBSTITUTIONS**

1. Should the Contractor desire to substitute any material, equipment or other items for those specified, he shall submit a complete list, including detailed equipment layouts and performance characteristics within 35 calendar days after the scheduled Start of Construction. Said data shall be submitted in 7 copies, assembled in individual brochures.
2. The entire cost of all changes of any type due to substitution for materials specified shall be born by the Contractor at no extra cost to the Owner. Unsolicited and voluntary deducts, on the part of the Contractor for substituting unapproved systems and/or equipment, shall not be considered for the purpose of awarding the Contract.
3. The contractor shall submit the amount of cost credit to the Contract in the event the proposed substitution is accepted.
4. In all cases where substitutions are proposed after bids are received, the Contractor shall bear the cost of evaluation on the basis of 2-1/2 times technical salaries of engineering personnel involved.

#### **F. AVAILABILITY OF SPECIFIED EQUIPMENT**

1. Verify prior to bidding that all specified equipment is available and can be obtained in time for installation during orderly and timely progress of the work. In the event that specified items will not be so available, notify the Owner prior to receipt of bids.
2. Costs of delays because of non-availability of specified items, when such delays could have been avoided by proper investigation on the part of the Contractor, will be back-charged as necessary and shall not be born by the Owner.

#### **G. RECORD DRAWINGS**

1. The contractor shall arrange and pay for one set of white prints of the HVAC drawings, which he shall alter in red to show all changes made to the original layout. These drawings shall be kept current.
2. The contractor shall deliver these completed to the Owner when the job is finished and accepted prior to final payment.

#### **H. OPERATION AND MAINTENANCE DATA**

1. Submit two sets prior to final inspection, bound in 8-1/2 x 11 inch text pages, binders with durable plastic covers. Prepare binder covers with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", and title of project. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.

Contents: Prepare a Table of Contents with each Product or system description identified.

- a. Part 1: Directory listing names, addresses, and telephone numbers of Owner, Contractor, Subcontractors, and major equipment suppliers.
  - b. Part 2: Operation and maintenance instructions, arranged by system. Identify the following:
    1. Significant design criteria.
    2. List of equipment.
    3. Parts list for each component.
    4. Operating instructions.
    5. Maintenance instructions for equipment and systems.
    6. Maintenance instructions for special finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.
2. Submit one copy of completed volumes in final form 15 days prior to final inspection. This copy will be returned after final inspection, with Owner comments. Revise content of documents as required prior to final submittal. Submit final volumes (revised) within ten days after final inspection.

#### **I. GUARANTEES**

1. The Contractor, in accepting this contract, binds himself to replace or repair at his own expense any defect in workmanship or material which may appear within a period of one year from the date of the final acceptance of the building, and to pay for all resulting damage which shall appear within the said period; provided always that the Contractor shall not be liable for anything attributable to acts of the agents of the Owner, or for ordinary wear. Also, given date of work performed by the Contractor be accepted as complete, he shall agree to correct any deficiencies or omissions in respect to the plans or specifications which may appear in the afore-mentioned twenty-four month period.  
The Contractor guarantees that all piping as provided in this specification will be free from all obstructions, and that all piping will be tight and drip free.  
All refrigerant compressors shall carry a five-year manufacturer's warranty.

#### **J. LOCAL CONDITIONS**

1. The Contractor and trade submitting tenders on this work shall visit and will be deemed to have visited the site to ensure that they are familiar with all conditions relating to the work. Failure to visit the site will in no way relieve the successful Contractor of the necessity of furnishing any material or performing any work that may be required to complete the work in accordance with the drawings and specifications without additional cost to the Owner.

#### **K. RULES, REGULATIONS AND CODES**

1. All work and materials shall be in full accordance with the latest California Mechanical Code, California Plumbing Code, California Building Code and local rules and regulations, State Fire Marshal regulations, the safety orders of the Division of Industrial Safety; the National Electric Code; the standards of the National Fire Protection Association; American Gas Association; Occupation and Safety Act; American National Standards Institute; American Society of Mechanical Engineers; American Society for Testing and Materials; Installation Standards published by the International Association of Plumbing And Mechanical officials (IAPMO) and other applicable laws, codes, or regulations. Nothing in these specifications shall be construed to permit work not conforming to these codes.

2. Electrical Work: Motors, electrical apparatus and wiring specified in this section shall conform to the National Electrical Manufacturer's Standards and the National Electric Code and bear the Underwriter's label of approval.
3. The Contractor shall furnish, without extra charge, any additional material and labor when and where required to comply with these rules and regulations, though the work be not mentioned in these Specifications or shown on the Drawings. When these Specifications or Drawings call for or describe materials or construction of a better quality or larger sizes than required by the above mentioned rules and regulations, the provisions of these specifications and accompanying drawings shall take precedence.

**L. FEES AND PERMITS**

1. The Contractor must obtain all permits, licenses, inspections, etc., which are required by any legally constituted authority. Coordinate exact requirements with the City prior to bid.
2. All City of Fullerton permit fees will be paid for by the City.

**M. COORDINATION**

1. Following the general arrangement indicated on the Drawings as closely as possible, the Contractor shall coordinate with the architectural, structural, plumbing, electrical and all other trades prior to installation of the materials and equipment to verify adequate space available for installation of the work shown. The Owner shall be immediately notified if an area of conflict occurs between trades.
2. The Contractor shall bear all costs incurred for work that must be relocated due to conflicts between trades.
3. The Mechanical Contractor shall coordinate all requirements for all points of connection with the General Contractor and other trades prior to bid.

**N. DRAWINGS**

1. The work shall be installed as indicated on Drawings, however, changes to accommodate installation of this work with other work, or in order to meet Architectural or structural conditions, shall be made without additional cost to the Owner.
2. For the purpose of clarity and legibility, the Drawings are essentially diagrammatic to the extent that many offsets, bonds, unions, special fittings and exact locations are not indicated. The Contractor shall make use of all data in all of the Contract Documents, and shall verify this information at the site.

**O. INSPECTION**

1. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.
2. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

**P. DELIVERY, STORAGE AND PROTECTION OF PROPERTY**

1. Place orders for all equipment in time to prevent any delay in construction schedule or completion of project. If any materials or equipment are not ordered in time, additional charges made by equipment manufacturers to complete their equipment in time to

meet construction schedule, together with any special handling charges, shall be borne by the contractor.

2. Materials shall be delivered in ample quantities from time to time as may be necessary for the uninterrupted progress of the work. They shall be stored as to cause the least obstruction to the premises and distributed so as to prevent overloading to any portion of the structure.
3. The Contractor shall provide temporary storage and shop areas that are required at the site for the safe and proper storage of materials, tools, and other items used in the performance of this work. These areas shall be constructed only in approved locations and shall not interfere with the work of any other Contractor.
4. All work, equipment and materials shall be protected at all times. The Contractor shall make good all damage caused either directly or indirectly by his own workmen. The Contractor shall also protect his own work from damage. He shall close all pipe and duct openings with caps or plugs during installation. He shall protect all of his equipment and materials against dirt, water, chemical, and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

**Q. DAMAGE BY LEAKS, ETC.**

1. The Contractor shall be responsible for all damage to any part of the premises or work of other Contractors, caused by leaks or breaks in the piping or equipment furnished and/or installed under this section, during the construction and guarantee period.

**R. ACCESS TO EQUIPMENT FOR MAINTENANCE**

1. Install all equipment, piping, etc. to permit access for normal maintenance. Maintain easy access to filters, motors, etc. Install all such equipment and accessories to facilitate maintenance. Perform any relocation of pipes, etc. required to permit access at request of Owner at no additional cost to Owner.
2. Furnish and install access doors or panels in walls, floors, and ceilings to permit access to equipment, dampers, and all other items requiring service. Coordinate location of access doors with other trades as required.
3. Size access panels to allow inspection and removal of all items served. Use Milcor style as required for material in which door is installed. Where door is installed in fire rated construction, provide door bearing UL label required for condition.

**II. PRODUCTS**

**2.1 GENERAL**

1. Refer to the equipment schedules and specifications on the mechanical plans.
2. All materials and equipment shall be new and of the best of their respective grades, free from all defects and of the make, brand or quality herein specified or as accepted by the Owner.
3. All materials and equipment shall be identified by manufacturer's name or nameplate data. Unidentified material or equipment shall be removed from the site.
4. Equipment specified by manufacturer's number shall include all accessories, controls, etc., listed in the catalog as standard with the equipment. Optional or additional accessories shall be furnished as specified.

5. Where no specific make of material or equipment is mentioned, any first class product of a reputable manufacturer may be used, provided it conforms to the requirements of the system and meets with the approval of the Owner.
6. Equipment and materials damaged during transportation, installation and operation shall be considered as "totally damaged" and shall be replaced with new. Any variance from this clause shall be made only with written approval of the Owner.

## **2.2 Roof Top Packaged Heat Pump Units**

1. Existing to remain. See Mechanical Plans for additional information.

## **2.3 Split System Heat Pump Units:**

1. Existing to remain. See Mechanical Plans for additional information.

## **2.4 Ceiling Mounted Heater Units:**

1. Manufacturers:
  - a. As listed on the Mechanical Plans and Schedules
  - b. Or Equal.
2. Refer to the equipment schedules, general notes, and specifications included in the Mechanical Drawings

## **2.5 Roof Mounted Exhaust Fans.**

1. Manufacturers:
  - c. As listed on the Mechanical Plans and Schedules
  - d. Or Equal.
2. Refer to the equipment schedules, general notes, and specifications included in the Mechanical Drawings.

## **2.6 Ceiling Mounted Exhaust Fans.**

1. Manufacturers:
  - e. As listed on the Mechanical Plans and Schedules
  - f. Or Equal.
2. Refer to the equipment schedules, general notes, and specifications included in the Mechanical Drawings.

## **2.7 Diffusers, Supply Registers, Return Registers, and Exhaust Grilles**

Refer to the Mechanical Drawings including the Mechanical Specifications on sheet M-0.6

## **2.8 DUCTWORK AND ACCESSORIES**

General: Refer to the Mechanical Drawings including the Mechanical Specifications on sheet M-0.6

Volume Control Dampers: Refer to the Mechanical Drawings including the Mechanical Specifications on sheet M-0.6.

Duct Test Holes:

- (1) Cut or drill temporary test holes in ducts as required. Cap with neat patches, neoprene plugs, threaded plugs, or threaded or twist-on metal caps.

Diffusers, Supply Registers, Return Registers, and Exhaust Grilles:

- (1) Refer to the Mechanical Drawings including the Mechanical Specifications on sheet M-0.6

## 2.9 INSULATION

General:

- (1) All insulation shall have composite (insulation, jacket or facing, and adhesive used to adhere the facing or jacket to the insulation) fire smoke hazard ratings as tested by procedure ASTM E84, NFPA 255 and UL 723 not exceeding:
  - Flame Spread: 25
  - Smoke Developed: 50
- (2) All products or their shipping cartons shall bear a label indicating that flame and smoke ratings do not exceed above requirements. Any treatment of jackets or facings to impart flame and smoke safety shall meet the above requirements.
- (3) The Contractor shall certify that all products used have met the above criteria.
- (4) The insulation values shown are a minimum. If the requirements of Title 24 exceed these values, the amount of and/or type must be increased to meet the Title 24 requirements.

Duct Insulation:

- (1) Fiberglass Duct Wrap:
  - a. Insulation: ASTM C553; flexible, noncombustible blanket.
    - 'K' value: ASTM C518, 0.48 at 75 degrees F.
    - Maximum service temperature: 250 degrees F.
    - Density: 0.75 lb/ ft<sup>3</sup>.
  - a. Vapor Barrier Jacket:
    - Kraft paper reinforced with glass fiber yarn and bonded to aluminized film vinyl.
    - Moisture vapor transmission: ASTM E96; 0.5 perm.
    - Secure with pressure sensitive tape.
  - a. Vapor Barrier Tape: Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.
  - b. Tile Wire: Annealed steel, 16 gage.
- (2) Glass Fiber Duct Liner, Flexible:
  - a. Insulation: ASTM C553; flexible, noncombustible blanket.
    - 'K' value: ASTM C518, 0.24 at 75 degrees F.

- Maximum service temperature: 250 degrees F.
  - Density: 1.5 to 3.0 lb/ft<sup>3</sup>.
  - Maximum VeloOwner on Coated Air Side: 4,000 ft/min.
- b. Adhesive: Waterproof (fire-retardant) type.
- c. Liner Fasteners: Galvanized steel, self-adhesive pad.
- (3) Glass Fiber Duct Liner, Rigid:
- a. Insulation: ASTM C612; semi-rigid, noncombustible.
- 'K' value: ASTM C518, 0.24 at 75 degrees F.
  - Maximum service temperature: 250 degrees F.
  - Density: 1.5 to 3.0 lb/cu ft.
  - Maximum VeloOwner on Coated Air Side: 4,000.
- b. Adhesive: Waterproof (fire-retardant) type.

### III. EXECUTION

#### 3.1 GENERAL

Refer to the Mechanical Drawings, including the Mechanical Specifications on sheet M-0.6. Install all equipment in locations indicated on the Drawings. Contractor will be responsible to verify with the Owner, if suitability is doubted. Contractor shall notify the Owner before installation into any apparent improper locations of interference with other work such as electrical outlets, windows, cabinetwork or other features.

#### 3.2 INSTALLATION

Ductwork and Accessories:

- (1) Provide openings in ductwork where required to accommodate thermometers and controllers. Provide pilot tube openings where required for testing of systems, complete with metal cap with spring device or screw to ensure against air leakage. Where openings are provided in insulated ductwork, install insulation material inside a metal ring.
- (2) Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.
- (3) Install accessories in accordance with manufacturer's instructions and to meet the provisions of "Seismic Restraint Manual: Guidelines for Mechanical Systems," latest edition.
- (4) Provide balancing dampers at points on low-pressure supply, return, and exhaust systems where branches are taken from larger ducts as required for air balancing. Use splitter dampers only where indicated.
- (5) Provide flexible connections immediately adjacent to equipment in ducts associated with fans and motorized equipment.
- (6) Provide duct access doors for inspection and cleaning before and after filters, coils, fans, automatic dampers, at fire dampers, and elsewhere as indicated. Provide minimum 8 x 8 inch size for hand access, 18 x 18 inch size for shoulder access, and as indicated.
- (7) Provide duct test holes where indicated and required for testing and balancing purposes.

- (8) Check location of outlets and inlets and make necessary adjustments in position to conform to Architectural features, symmetry, and lighting arrangement.
- (9) Install diffusers to ductwork with airtight connection.
- (10) Provide balancing dampers on duct take-off to diffusers and registers, regardless of whether dampers are specified as part of the diffuser, or register assembly.
- (11) Paint ductwork visible behind air outlets and inlets matte black.

Insulation:

- (1) Duct Insulation:
  - a. Unless specifically indicated on the drawings the Contractor may line or wrap ductwork to meet insulation requirements.
  - b. Fiberglass ductwrap:
    1. Secure insulation with vapor barrier with wires and seal jacket joints with vapor barrier adhesive or tape to match jacket.
    2. Secure insulation without vapor barrier with staples, tape, or wires.
    3. Install without sag on underside of ductwork. Use adhesive or mechanical fasteners where necessary to prevent sagging. Lift ductwork off trapeze hangers and insert spacers.
    4. Seal vapor barrier penetrations by mechanical fasteners with vapor barrier adhesive.
    5. Stop and point insulation around access doors and damper operators to allow operation without disturbing wrapping.
  - c. Duct (and Plenum) liner Application:
    1. Install as indicated (sound lining) on the drawings.
    2. Adhere insulation with adhesive for 100 percent coverage. Secure insulation with mechanical liner fasteners. Refer to SMACNA Standards for spacing. Seal and smooth joints. Seal liner surface penetrations with adhesive.
  - d. Duct dimensions indicated are net inside dimensions required for airflow. Increase duct size to allow for insulation thickness.

### 3.3 AIR SYSTEM TEST AND BALANCE

Perform all tests to the entire satisfaction of the Owner. Air balancing contractor shall notify Owner one week prior to scheduling air balance at the site.

Regulating and Adjusting Air Systems:

- (1) The Contractor shall have an experienced independent testing company certified member of the Associated Air Balance Council (A.A.B.C.) specializing in air conditioning system testing completely balance the air systems so that the volume of air indicated on the drawings is being delivered to the outlets. He shall adjust and re-adjust this part of the work until the operation complies with the requirements of the drawings and specifications.
- (2) Testing Procedure: Procedures shall conform to A.A.B.C. standards. Provide reports in sort cover, letter size, 3-ring binder manuals, complete with index page and indexing tabs, with cover identification at front and side. Include set of reduced drawings with air outlets and equipment identified to correspond with data sheets, and indicating thermostat locations.

- (3) The following test data shall be taken and submitted in tabulated form to the Architect for each system:
- a. Test and adjust all supply, return & exhaust blower RPM to design requirements.
  - b. Test and record all motor full load amperes.
  - c. Test and record system static pressures, suction and discharge.
  - d. Test and adjust system for design re-circulated air, CFM.
  - e. Test and adjust system for design CFM outside air.
  - f. Adjust all supply, return and exhaust outlets to within 5% of design CFM.

END OF SECTION 23 00 00

**SECTION 26 00 00  
ELECTRICAL****PART 1 – GENERAL****1.1 GENERAL REQUIREMENTS.****A. Scope of Work:**

1. Furnish all labor, materials, equipment, transportation and service required to install complete and put in operation the work of this section as shown on the drawings and in accordance with these specifications. Refer to the Electrical Drawings and Electrical Specification on the drawings.
2. The work of this section shall include, but not be limited to, the following principal items:
  - a) Temporary service.
  - b) Complete system for power and lighting as shown on the drawings.
  - c) Branch circuit panelboards.
  - d) Lighting control system.
  - e) Wiring devices.
  - f) Conduit and conductors.
  - g) Dry type transformer.
  - h) Lighting fixtures and lamps.
  - i) Telephone conduit system.
  - j) Grounding system.
  - k) Tests.
  - l) Guarantee.

**1.2 Work Not Included in this Section:**

- A. Owner furnished equipment.

**1.3 Ordinances and Regulations:**

- A. All work under this division shall comply with the most rigid requirements of the latest editions of the California Electrical Code; the California Administrative Code; Title 24, State Building Standard; Part 3, Basic Electrical Regulations; and all local codes.
- B. In any instance where the Contractor shall violate any ordinance or rule, he shall immediately correct the installation, and shall be responsible for any damage and expense arising there from.
- C. Nothing in these specifications shall relieve the Contractor from full compliance with the applicable portions of any of the above regulations having jurisdiction pertaining to work being installed under this section.

**1.4 Standards:**

- A. Construction and testing of equipment shall comply with the latest applicable standards of the following:

American National Standards Institute (ANSI)  
Institute of Electrical and Electronic Engineers (IEEE)  
National Electrical Manufacturer's Association (NEMA)

Underwriter's Laboratories, Incorporated (UL)  
American Society for Testing and Materials (ASTM)  
Insulated Power Cable Engineer Association (IPCEA)  
Illuminating Engineering Society (IES)  
National Fire Protection Association (NFPA)  
National Electrical Contractor Association (NECA)  
California Electrical Code (CEC)  
California Building Energy Efficiency Standards  
California Green Building Standards Code (CGBSC)

- B. Wherever standards are referred to in this specification, the latest edition in effect during the bidding shall govern. All work shall conform to NECA "Standards of Installation" as a minimum.
- C. Permits and Inspections: The Contractor shall obtain and pay for all permits and inspections required for the work by all legally constituted authorities having jurisdiction.
- D. Certificates of all such permits and inspections shall be delivered to the City Engineer or his designated representative.
- E. Examination of Drawings and Site: Each bidder shall carefully study all drawings and specifications pertaining to the work. If any of the work as laid out, indicated or specified, is contrary to, or conflicts with any local, city, state, or national ordinances or regulations, the same shall be reported to the Owner before submitting his bid, who will then issue instructions as to procedure. Each bidder shall carefully examine the project site, and compare the drawings with the existing conditions. By the act of submitting a bid, each bidder shall be deemed to have made allowances therefore in preparing his bid.
- F. Verification of Dimensions: Before proceeding with any work, the Contractor shall carefully check and verify all locations, dimensions, sizes, etc. and shall assume full responsibility for the fitting-in of his equipment and materials to other parts of the equipment and to structures. Where apparatus and equipment have been indicated on the drawings, dimensions have been taken from typical equipment of the indicated type. The Contractor shall carefully check the drawings to see that the equipment he contemplates installing will fit into the spaces provided and not conflict with proposed uses or activities.

#### **1.5 Locations:**

- A. The location of all conduit, wiring, apparatus and equipment indicated on the drawings is approximate only, and shall be adjusted to meet site conditions and not be in conflict with proposed site improvements, and to meet architectural and structural conditions required, and as approved by the architect. Prior to rough-in, minor adjustments to outlet locations may be made without additional compensation. Field verify all rough-in dimensions prior to conduit installation.
- B. All conduit, wiring, apparatus and equipment shall be installed in a manner and in locations avoiding all obstructions, preserving headroom, and keeping openings and passageways clear. Changes shall be made in locations of conduit, wiring, equipment, and materials which may be necessary in order to accomplish this. The drawings are essentially diagrammatic to the extent that many offsets, bends, special fittings and exact locations are not indicated. Carefully study the drawings and premises in order to determine the best methods, exact locations, routing, building obstructions, etc., and install all apparatus and equipment in the available locations.

**1.6 Record Drawings:**

- A. The Contractor shall keep at the job site an accurate dimensioned record of the "as-built" locations of all buried conduits and ducts. At the completion of the project, such "as-built" drawings shall be transmitted to the City Engineer or his designated representative.

**1.7 Submittal Data:**

- A. Shop drawings, material lists, and plates and brochures, as required by the specifications, shall be prepared and submitted to the Architect and Engineer for review in accordance with the requirements of Division 1. No work indicated on any shop drawing shall be started until such drawings have been reviewed and approved.
- B. Submit complete brochures giving names of manufacturers and catalog numbers, trade names, the technical data, and requested information for each item to be furnished. Submit shop drawings and detail description of items that are not manufactured and must be specifically fabricated, including wiring diagrams.
- C. Submittals are required on every item to be furnished.
- D. Submittals shall be bound in sets, between covers, and each set shall be identical.
- E. Each item in submittals shall be identified as to fixture type, panel identification, specification section, etc.
- F. The Contractor shall review all shop drawings and submittals, prior to submittal, for compliance with the specification. The submittal package shall be stamped and signed by the Contractor indicating his prior review, and certification of compliance with the specification.

**1.8 Descriptive Names:**

- A. Where the name of a selected manufacturer of equipment, fixtures, or material is specified, the proposal of the Contractor shall be based on the use of the named product, or the equivalent product of manufacturers listed. No substitutions will be permitted.

**1.9 Value Engineering:**

- A. Cost reduction proposals initiated and developed by the Contractor causing any changes in the drawings, designs, specifications, or work of other trades, shall be presented for consideration within seven (7) working days of award of contract.
- B. Cost reduction proposals shall contain the following minimum information for each item proposed:
  - 1. A description of the difference between the existing contract requirements and the proposed change, and the comparative advantages and disadvantages of each;
  - 2. An itemization of the requirements of the contract which must be changed if the proposal is adopted;
  - 3. An estimate of the reduction in performance costs, if any, that will result from the adoption of the proposal taking into account the costs of implementation by the Contractor (including the amount attributable to subcontractors and engineers for design changes, change orders, and evaluation of proposal);

4. A prediction of any effects the proposed change would have on other costs to the City, such as costs of maintenance and operation;
5. A statement of the time by which a change order adopting the proposal must be issued so as to obtain the maximum cost reduction during the remainder of this contract, noting any effect on the contract delivery schedule.

**1.10 Materials and Workmanship:**

- A. All material, appliances, and equipment shall be new and of the best grade of the respective kind, free from all defects and of the make, brand and quality specified.
- B. Materials for similar use shall be of the same type and manufacture.
- C. The current or newest production model of equipment as determined by the manufacturer's most recent published literature shall be furnished even though an obsolete model may be specified and stocked.
- D. Each major component of equipment shall have the manufacturer's name, address, and catalog number on a plate securely affixed in a conspicuous place.
- E. No items of material shall be installed for any purpose, or in any manner not recommended by the manufacturer.

**1.11 Openings, Cutting and Patching:**

- A. The Contractor shall cooperate with all trades in providing information for openings required in the structure for construction of his work.
- B. The Contractor shall, at a time in advance of the work, verify the openings as shown on the Architectural and Structural drawings. If the work of this division requires such, he shall furnish new instructions as to his requirements for these openings, subject to approval by the City Engineer.
- C. Drilling, cutting and patching required by the Contractor's work shall be the responsibility of the Contractor.

**1.12 Excavation and Backfill:**

- A. The Contractor shall do all excavation and backfill required to install his work, both inside and outside. All excavation and backfill shall be in accordance with the earthwork sections of the specification. Excavation shall be of proper depth and width to install the required conduits, ducts, or structures.

**1.13 Building Footing Clearances:**

- A. Under no circumstances shall conduit or ducts be run through footings. They shall cross below footings or through sleeves above footings. Those running parallel to footings shall be installed with minimum clearances required by the governing codes.

**1.14 Cleaning:**

- A. All exterior surfaces of exposed equipment and materials shall be thoroughly cleaned of all dirt, cement, plaster and other debris.
- B. All finished surfaces of equipment furnished under this section found to be damaged, shall be refinished without additional cost to the satisfaction of the City Engineer.

**1.15 Protection of Finish:**

- A. The Contractor shall provide means for and shall fully protect all finished parts of the materials and equipment against damage from whatever cause during the progress of the work, and until final completion. All materials and equipment in storage and during construction shall be covered in such a manner that no finished surface will be damaged or marred, and all moving parts shall be kept clean and dry.

**1.16 Cleanup:**

- A. All work areas shall be policed daily. Upon completion of work and at other times during the progress of the work, the Contractor shall remove all surplus materials, rubbish, and debris resulting from the work, and shall leave the entire involved portions of the site, insofar as the work of this section is concerned in a neat, clean, and acceptable condition as approved by the City Engineer.

**1.17 Guarantee:**

- A. Should any trouble develop in the electrical installation within one year from date of acceptance of the project, due to faulty or inferior material, or workmanship, the trouble shall be corrected by the Contractor without expense to the City.

**1.18 Service:**

- A. The Contractor shall provide for the utilities connections as shown on the drawings.

**1.19 Seismic Requirements:**

- A. Brace electrical systems and equipment to withstand lateral and vertical forces that result from earthquake.
- B. Anchor all equipment, switchboards, transformers, panelboards and similar items by securely bolting them in place to the building structure. Brace free standing gear to wall or ceiling per manufacturer's recommendation. Provide vibration isolators with seismic snubbers under transformers. Provide bolts, anchors and bracing to withstand acceleration of 0.5 g.
- C. Provide two ten gauge steel support wires on diagonal corners of recessed LED fixtures tied to building structure. Allow 1/4" slack in wire. Provide retainer clips on sides of recessed fluorescent fixtures and attach clips securely to main T-bar runners. Provide approved swivel hangers for pendant mounted fixture suspension.

**1.20 Temporary Service:**

- A. The Contractor shall make all arrangements for, and install the necessary provisions for temporary electrical construction power, sized as required.

**1.21 Flashing:**

- A. Wherever conduits extend through roof, furnish and install galvanized steel flashings consisting of a #24 gauge roof jack and a flashing collar soldered or brazed to conduit and covering top of roof jack. Roof jack shall extend not less than 6" out on roof and up conduit at least 8". Coordinate installation of flashing with roofing installation to permit flanges to be installed between roofing plies.

**PART 2 - MATERIALS****2.1 General Requirements:**

Refer to the Electrical Plans, including the electrical specifications for additional requirements.

**2.2 Panelboards - General:**

A. Existing to remain. See Electrical Plans for additional requirements and information.

**2.3 Panelboards - Distribution and Power:**

A. Existing to remain. See Electrical Plans for additional requirements and information.

**2.4 Panelboards - Lighting and Receptacle:**

A. Existing to remain. See Electrical Plans for additional requirements and information.

**2.5 Receptacles:**

A. All receptacles except those equipped with a U.L. approved self-grounding device shall be installed with a bonding jumper for ground between the grounded outlet box and the receptacle ground terminal. Grounding through the receptacle mounting straps is not acceptable unless receptacles are equipped with U.L. approved self-grounding straps.

B. Refer to the Electrical Drawings and Electrical Specification on drawings for receptacle types.

D. Weatherproof convenience outlet shall consist of a ground fault circuit interrupter (GFCI) duplex grounding type receptacle as specified on the drawings mounted in a 4" box with single ring of type as required and lockable. Receptacles of 20 amperes, 125 and 250 volts installed in a wet location shall have an enclosure that is weatherproof whether or not the attachment plug cap is inserted. Cover shall be one of the following:

<u>Manufacturer</u>	<u>Cat# Series</u>
Hubbell	#WP262E_
Pass & Seymour	#WIUCED20_
Thomas & Betts	#2CKPM_

**2.6 Circuit Switches:**

A. Refer to the Electrical Drawings and Electrical Specification on drawings.

B. Weatherproof switches shall be as specified above complete with weatherproof cover.

**2.7 Wall plates:**

A. Refer to the Electrical Drawings and Electrical Specification on drawings receptacle types.

B. Weatherproof cover plate shall be gasketed cast metal with hinged gasketed device cover.

**2.8 Outlet Boxes:**

- A. Outlet boxes shall be hot dipped galvanized, one piece pressed steel knock-out type or cast iron with drilled, tapped and plugged holes. All boxes shall be of proper size for the number of wires or conduit passing through or terminated therein, but in no case shall any box be less than 4" square, unless specifically noted on the drawings. Cover shall be of the types most suitable for the outlets and shall finish flush with finished surface. Boxes in concrete shall be a type which will allow the placing of conduit without displacing the reinforce bars.
- B. Refer to the Electrical Drawings and Electrical Specification on drawings for receptacle types.

**2.9 Conduit and Fittings:**

- A. Conduit shall comply with the requirements of the Underwriters' Laboratories and shall be delivered to the site in standard lengths with each length bearing the manufacturer's trademark and the U.L. label of approval. Where conduit is mentioned in this specification, this shall be interpreted as rigid, standard weight steel conduit. Electrical metallic tubing, polyvinyl-chloride, or flexible metallic conduit shall be used only where specified or noted on the drawings. Rigid steel conduit fittings and accessories shall be hot-dipped galvanized or sherardized, with threaded connections.
- B. Rigid steel conduit may be used in all locations both above and below grade, in concrete floors, walls and ceilings, concealed and exposed work, indoor and outdoor exposed to the weather. Rigid steel conduit shall not be installed below grade unless it is encased in a concrete envelope with minimum thickness on all sides of three inches (3") or double wrapped with Scotch #50 tape. Bushings shall be non-metallic for conduits 1" or smaller and insulated metallic bushings shall be used for conduits 1 1/4" and larger.
- C. Refer to the Electrical Drawings and Electrical Specification on drawings.
- D. Aluminum conduit shall not be permitted.

**2.10 Terminal Cabinets:**

- A. Refer to the Electrical Drawings and Electrical Specification on drawings.

**2.11 Pull Boxes:**

- A. Refer to the Electrical Drawings and Electrical Specification on drawings.
- B. All boxes exposed to the weather, moisture, or special environments, shall be suitable for the installation.
- C. Pull boxes shall meet all code requirements as to size for conduits terminating therein and to thickness of metal used in fabrication or casting.
- D. Fabricated sheet steel pull boxes shall be installed only in dry protected locations and shall be furnished with required knockouts and removable screw cover. Box shall be finished with one coat of zinc chromate and a coat of primer sealer and where exposed to public view shall be painted to match the surroundings.
- E. Weatherproof sheet steel pull boxes shall be fabricated of code gauge galvanized sheet steel with two coats of rust resistant finish and shall be furnished with gasket and made completely weathertight.

- F. Cast iron pull boxes shall be furnished with gasketed screw cover, drilled and tapped holes as required. Boxes shall be as manufactured by T & B, Alhambra Foundry Co., or Russell and Stoll. Where cast iron pull boxes are called for as being flush with finished grade, boxes shall have integral flange or trim.

**2.12 Concrete Pull Boxes**

- A. Refer to the Electrical Drawings and Electrical Specification on drawings.

**2.13 Wire and Cable:**

- A. Refer to the Electrical Drawings and Electrical Specification on drawings.

**2.14 Dry Type Transformer:**

- A. Refer to the Electrical Drawings and Electrical Specification on drawings.

**2.15 Disconnect Switches:**

- A. Refer to the Electrical Drawings and Electrical Specification on drawings.

**2.16 Manual Motor Starters:**

- A. Refer to the Electrical Drawings and Electrical Specification on drawings.

**2.17 Individual Control Relay:**

- A. Refer to the Electrical Drawings and Electrical Specification on drawings.

**2.18 Time Switches:**

- A. Time switches shall be as shown on the drawings.

**2.19 Control Transformers:**

- A. Refer to the Electrical Drawings and Electrical Specification on drawings.

**2.20 Lighting Contactors:**

- A. Refer to the Electrical Drawings and Electrical Specification on drawings.

**2.21 Auxiliary Gutter:**

- A. Refer to the Electrical Drawings and Electrical Specification on drawings.

**2.22 Lighting Fixtures and Lamps:**

- A. The Contractor shall furnish and install lighting fixtures indicated in the FIXTURE SCHEDULE on the drawings or approved substitution, complete with all necessary mounting hardware, and lamps indicated.
- B. Lighting fixtures shall have all parts and fittings necessary to completely and properly install the fixtures.
- C. Refer to the Electrical Drawings and Electrical Specification on drawings.

- D. All exterior lighting fixtures shall have wet location label.

**2.23 Light Emitting Diodes (LED) and Drivers:**

- A. Refer to the Electrical Drawings and Electrical Specification on drawings.

**2.24 Telephone System:**

- A. The Contractor shall furnish and install an empty conduit system for telephones as indicated on the drawings.
- B. Telephone backboards shall be 3/4" plywood.
- C. Provide telephone system ground at the main entrance backboard.
- D. Refer to the Electrical Drawings and Electrical Specification on drawings.

**2.25 Grounding System:**

- A. Refer to the Electrical Drawings and Electrical Specification on drawings.

**2.26 Test Mandrel:**

- A. Refer to the Electrical Drawings and Electrical Specification on drawings.

**2.27 Roof Jacks:**

- A. Galvanized iron roof jacks of the proper size shall be furnished and installed by this Contractor for each conduit that stubs up through roof.

**2.28 Concrete Work:**

- A. The concrete work for conduit envelopes shall be non-structural slab type with a mix of 1:2 1/2:3 1/2 by volume 7 1/2 gal. of water per sack of cement.

**2.29 Miscellaneous Iron Work:**

- A. All miscellaneous iron work required to complete and properly install the electrical work shall be furnished and installed. This shall include all supports, pull-in irons, etc.

**2.30 Stainless Steel:**

- A. In all cases where stainless steel is specified, called for or used under this Division of the specifications for plates, cabinet or panel covers, lighting fixtures, etc., it shall be a non-magnetic, non-corrosive, chrome-nickel alloy. The finished material shall be free of any burrs. All exposed screws shall be of the same alloy. The steel shall be composed of 18% chromium and 8% nickel and shall be A.I.S.I. Type 302 finished satin.

**2.31 Nameplates:**

- A. Provide white-on-black nameplates for each switchboard, panel, terminal cabinet, control center, pull box, disconnect switch and magnetic motor starter to correspond with designations on the drawings.
- B. Nameplates shall be secured with screws, bolts, or rivets. Other means of attachment shall not be accepted. "DYMO" type labels will not be accepted.

**PART 3 - INSTALLATION****3.1 Conduit:**

- A. Conduits run exposed and subject to mechanical injury shall be rigid heavy wall galvanized steel conduit.
- B. Conduits run exposed outside, or in floor slabs, shall be rigid heavy wall galvanized or sherardized steel.
- C. Conduits run below floor slabs, and underground exterior to the building shall be schedule 40 heavy wall high impact, PVC electrical conduit. All conduit joints shall be made with factory approved welding solvent. A ground wire shall be installed in all PVC conduits along with circuitry wiring, or with the duct bank in accordance with the requirements of the drawings.
- D. All underground conduit containing cable shall be sealed with duct seal at each end.
- E. Underground conduits shall be installed 30" minimum depth where subjected to vehicular traffic and no less than 24" under any circumstances. A 6" wide yellow plastic warning tape "CAUTION-BURIED ELECTRICAL LINE BELOW" shall be installed 6" below finished grade in all trenches.
- F. All risers shall be rigid steel and shall be encased in concrete completely.
- G. Conduit for lighting and outlet circuits shall be EMT in areas above suspended ceilings, in walls, and other areas where not subject to mechanical injury.
- H. All panelboard and transformer feeders shall be rigid heavy wall steel conduit where installed above grade.
- I. Flexible conduit shall be installed to all rotating or vibrating equipment. Sealtite conduit shall be used for all exterior equipment. Flexible conduit for motor connections shall have a maximum length of 36 inches. A ground wire shall be installed in all flexible conduit.
- J. Exposed conduits one inch and smaller shall be secured to the building construction with one hole straps, spaced as required by Code.
- K. All concealed or exposed conduit larger than one inch shall be secured in place with T & B, or equal, pipe straps, suspended pipe hangers, or grouped on racks. Rods or pipe supports shall be screwed to wood construction with wood or lag screws, and to concrete with concrete inserts.
- L. Exposed conduit shall be uniform and symmetrical, rigidly and securely fastened to the structure. Perforated pipe strap may not be used.
- M. Conduits shall not be supported from ducts, pipes of other trades, or from suspended ceiling members, unless specifically approved by the Architect.
- N. Conduit shall not be run closer than 6 inches to any hot water pipe, steam pipe, heater flue, or vent.
- O. Factory ells shall be of the same make, quality, and finish as the conduit used, or ells may be formed from conduit using approved factory benders. All conduit ells used on the underground distribution shall have a minimum radius of ten times the conduit size where

- rising into equipment, or vertical runs, and shall be rigid heavy wall steel, or plastic coated or wrapped rigid heavy wall steel.
- P. Changes of direction in underground or underfloor conduit runs shall be made with long radius sweeps.
  - Q. Connectors and couplings for EMT shall be of the compression or drive on type. Set screw or indenter type will not be allowed.
  - R. No running threads or split couplings will be permitted.
  - S. Conduit terminations at outlets, boxes and cabinets shall be provided with locknuts and bushings. Ends of conduit 1 1/4" trade size and larger, and conduits containing #4 AWG size cables, and larger, shall be equipped with insulated bushings. Feeder conduit bushings shall be grounding type.
  - T. All conduit bodies installed in any location where moisture is apparent, shall be equipped with rubber gaskets. The Contractor shall furnish and install fittings, special devices and material, which may be required for the proper installation of the conduit system.
  - U. Conduits shall be thoroughly swabbed out. The Contractor shall leave all conduits dry and clean of obstructions. Conduits stubbed up during the course of construction shall be capped with a fitting approved for the purpose.
  - V. Conduit and metallic raceway systems shall be mechanically and electrically continuous from sources of current to all outlets in a manner to provide a continuous grounding path.
  - W. Conduits stubbed through concrete floors shall be rigid steel, and shall have a conduit coupling finished to the floor line. Empty conduits shall be plugged with a conduit plug at the floor line.
  - X. Install a 3/16" polyethylene rope, end to end in each spare or empty conduit, with a tag at each end, designating opposite terminus of the conduit, and planned use or designation of conduit.
  - Y. Conduit shall be supported at intervals not exceeding 10 feet and in all cases where a support not more than 3 feet from the outlet and at any point where it changes direction.
  - Z. Minimum clearances of 6" shall be maintained between conduits and hot water, steam pipes, heaters, etc., and 18" from the covering on flues and breeches.
  - AA. Each bend of conduit shall be reamed and conduit thoroughly cleaned of burrs, scale, dirt, etc., both inside and outside.
  - BB. Ends of all conduits shall be kept closed with approved conduit seals during construction of building.
  - CC. All underground stub outs or group of stub outs in one location shall be furnished with concrete monument 6" x 6" x 15" deep buried flush with 3" square brass plate securely mounted and engraved with the number and size and depth of conduits.
  - DD. Joints in all conduit installed in concrete, or exposed to weather, shall be liquid and gas tight.
  - EE. Conduit stubs installed for future extensions shall be rigid steel for at least 5 feet of the conduit run. The conduit runs shall be double terminated with couplings and pipe plugs.

The closed end shall be double wrapped with Scotchrap #50 for the last 12 inches. The concrete envelope shall leave 3" of the wrapped conduit exposed for future connection.

- FF. Conduit shall be concealed, unless otherwise noted. All conduit runs exposed to view, except those in attic spaces, shall be installed parallel, or at right angles to structural members, walls, or lines of the building. Where conduit passes from one type of construction to another, or where there is a possibility of dissimilar movements, a suitable flexible or expansion device shall be installed.
- GG. Expansion fitting shall be equal to 0.7 type DX. Where storm drains, sewer lines and other gravity lines are to be crossed by conduits, grade stakes shall be set for the gravity lines, elevations of conduits shall be put at proper depth so that there will be no conflict with storm drains, sewer lines and other gravity lines.
- HH. All public telephone conduit runs shall be installed with long radius sweeps, and no factory "ells" shall be permitted. Conduit shall be installed in a manner satisfactory to the Telephone Company Engineers.
- II. Use approved conduit unions where union joints are necessary. Running threads will not be permitted. Unless noted otherwise, and all screws, bolts, etc., shall be in place upon final inspection.

### **3.2 Outlet Box:**

- A. Outlet boxes shall be accurately placed, independently and securely fastened to the structure, and set so that plaster rings will finish flush with the finished surface of wall and ceiling. Secure conduit to outlet boxes with double lock nuts and insulated bushings.

### **3.3 Concrete Pull Boxes:**

- A. Concrete pull boxes shall be installed on a bed of twelve inches compacted pea gravel or clean river sand, level, and the pea gravel or sand shall be spread to an area six inches greater than the exterior size of the pull box.

### **3.4 Wire and Cable:**

- A. Unless otherwise noted on the drawings, all wire and cable shall be installed in conduits.
- B. All lighting, power and control circuits shall be identified at each terminus, and in each junction or pull box. Lighting and power circuits shall be identified as to panel and circuit. Wire markers shall be Brady, or equal.
- C. Splices in conductors #8 and smaller shall be made with "Scotchlok" insulated connectors of proper size.
- D. Splices in conductors #6 and larger shall be made with pressure type solderless connectors taped with 3-M "Scotch" #33 electrical tape.
- E. Connectors and terminal lugs shall be used for terminating stranded conductors #6 and larger and shall be T & B, ILSCO, or equal, solderless connectors.
- F. Wire in panel, cabinets, pull boxes and wiring gutters shall be neatly grouped, taped together with 3-M "Scotch" #33 plastic electrical tape, T & B Model Tyrap cable strap or laced with #12 stranded lacing twine and fanned out to the terminals.
- G. Neutral conductor shall be continuous in outlet boxes and shall not be broken by addition or removal of devices.

**3.5 Mounting Heights:**

- A. Unless specified elsewhere, or shown, the following mounting heights shall apply:

Panelboards over 29" high: 6'-0" to handle of highest circuit breaker  
 Disconnect switches: 4'-0" to center line  
 Receptacles: 15" finished floor to bottom of box  
 Wall switches: 4'-0" to top of box

**3.6 Grounding:**

- A. Grounding shall be executed in accordance with all applicable codes and regulations both of the State of California and local authorities having jurisdiction.
- B. The service ground shall be a footing steel "UFER" ground, or as shown on the drawings. Braze, or thermoweld, a copperclad steel rod to the reinforcing steel. Extend the rod to the service switchgear so as to make it permanently available for connecting to the ground conductor. Resistance of the "UFER" ground shall not exceed five (5) ohms. Where the measured resistance to ground is more than 5 ohms, additional ground rods or longer ground rods driven to a greater depth, shall be used.
- C. Ground conductor shall be THWN insulated stranded copper conductor installed in conduit. Connect to the ground rod, and extend to the ground bus in each service. A ground conductor shall be used for transformer grounding.
- D. The interior cold water piping system shall be bonded to the "UFER" ground rod, with THWN copper conductor installed in conduit.
- E. All equipment, including switchboard, service entrance equipment, conduit system, motors, and other applicable apparatus, shall be grounded, or bonded.
- F. If non-metallic or flexible conduit is used, a green insulated, copper ground wire sized in accordance with code shall be installed. Conduit size shall be increased to conform to code.
- G. The ground bus shall be equal to the neutral bus and shall have a separate lug for each ground conductor. Continuity of equipment ground shall be maintained throughout the system. This Contractor shall exercise every precaution to obtain good contact at all conduit connections, panel boxes, pull boxes, etc. Where it is not possible to obtain contact, bonding shall be provided.
- H. Do not use water pipe as ground. Water pipe system is non-metallic. All be connected to system ground. Neutral to ground shall not exceed five ohms. Connect fixture to ground with #10TW wire. All rigid galvanized steel conduit shall be properly grounded. Use proper ground rod clamps and conduit fittings to ground cable and conduit to driven ground rods. Size as required by code. Bond to building cold water piping.
- I. Equipment grounding conductors installed in conduit shall be in accordance with the following schedule as a minimum:

Circuit Breaker/Fuse Size	Ground Conductor
0A to 20A	#12 Copper
21A to 60A	#10 Copper
61A to 100A	#8 Copper

101A to 200A	#6 Copper
201A to 400A	#3 Copper
401A to 600A	#1 Copper
601A to 800A	#1/0 Copper

### 3.7 Lugs:

- A. Furnish and install proper lugs in all panelboards, switchboards, gutters, etc., required to properly terminate every cable. Where paralleled conductors or conductors of size larger than the capacity of breaker are to terminate on a breaker a short length of copper cable (of capacity of the breaker) shall be connected to the breaker, and the proper bolt or compression type lug installed to connect this cable to the feeder cable. The cutting of cable strands to fit the breaker will not be permitted.

### 3.8 Painting:

- A. All electrical work exposed to view which is not pre-finished or for which other finishing instructions are not given, shall be painted to match surroundings. Work to be painted shall include conduit, hangers, outlet boxes, pull boxes, surface metal raceways and similar items
- B. Factory finish paint: junction and pull boxes, panelboards, switchgear, cabinets, equipment enclosures, lighting fixtures.
- C. Field paint: All ferrous material, not having a factory finish, shall be given a prime coat of zinc chromate. Finish coat shall be field painted in accordance with Division 9, as required. All electrical work shall be left in proper, clean dry, smooth condition to receive the painting work.

### 3.9 Lighting Fixtures:

- A. On acoustical tile ceilings, fixture outlets shall be accurately located in the center, at the intersection of the four corners, at the center of the joints of two tiles, or as indicated on architectural reflected ceiling plan.  
All pendant stem mounting fixtures shall be supplied with swivel hanger and canopy assemblies providing 20 degree swiveling at top in any direction from plumb. Hangers with the proper degree of swivel and labeled by the Los Angeles City Testing Laboratory are acceptable.
- B. Light fixtures shall be furnished with swivel and canopy assemblies, and shall also have approved hinged connection at bottom permitting 20 degree longitudinal movement from plumb or rigid connection at bottom which shall be able to withstand at least 20% seismic longitudinal load without any permanent distortion or damage of metal.
- C. All swivel and canopy assemblies shall be suitable to the type of conduit mounting (surface or concealed) or the type of ceiling construction employed.
- D. Fixtures shall have special stem length to give the mounting height indicated on the drawings or as hereinafter specified. Stem shall be one piece without coupling and shall be finished the same color as the canopy unless noted otherwise. The Contractor shall check all locknuts and set screws to rigidly secure the socket to the stem and the stem to the outlet box.
- E. All pendant mounted lighting fixtures shall be securely fastened to the building structure by means of fixture studs or special mounting bracket. These devices shall be attached by means of machine screws and nuts through the construction or by 4 wood screws

which shall penetrate the wood by at least one inch. Where wood blocking or backing for fixture support is installed, it shall be securely anchored to the building structure. For pendant linear LED fixtures, individual fixtures shall be suspended on two swivel assemblies, and continuous rows shall be suspended on one more hanger assembly than the number of fixtures.

- F. Surface mounted light fixtures to be mounted on cellulose acoustic tile or other non-fireproof material, fixture shall have U.L. approval for mounting directly to non-fireproof (low density) material.
- G. Where pendant fixtures are shown to be mounted from a suspended "tee bar" ceiling or any related form of suspended ceiling, the fixtures shall be supported, using specifically approved devices, directly from the building structure. They shall not, to any extent, depend on the ceiling system for support even though the fixture hangers may be located at the ceiling members. Where fixtures are located between ceiling members, the hangers shall be attached to bridging channels (1 1/2" minimum) across main ceiling channels. Even in this case, however, the actual support of the hanger shall be by wire or rod to the building structure.
- H. Where either surface or recessed fixtures are shown to mount on or lay in a suspended "tee ceiling", the "tees" (or other ceiling members) shall be supported at each of the four corners of each 2 ft. by 4 ft. fixture (or smaller) by #12 ga. (minimum) hanger wires, 8 ft. long fixtures or continuous rows shall be supported on 4 ft. centers along the length. Where fixture spacing of surface mounted fixtures places the edges in coincidence with the "tees", specifically approved scissors type devices which cannot be accidentally removed from the "tees" shall be used. Where fixture edges do not coincide with the tees, 1 1/2" channel or "Unistrut", with welded or bolted studs, bridging the main ceiling channels, shall be provided. Hanger wires shall still be attached at each of the four corners of each fixture as described preceding. Two additional #12 gauge hanger wires shall be installed directly from the structure above to each fixture housing which shall be slightly loose for recessed fixtures to be able to seat in the "tee" system. In addition, provide hold-down clips (4 required) for each recessed fixture.
- I. For recessed fixtures where indicated with an outlet box or when located in an inaccessible ceiling system, each individual fixture or the fixture in a continuous row where conduit feeder occurs, shall be with 4" square pull box attached to a separate bracket with access opening at top of fixture.

### **3.10 Connections to Equipment or Systems:**

- A. The Electrical Contractor shall connect to equipment furnished by other contractors where noted on drawings, including irrigation controllers.

## **PART 4 - QUALITY ASSURANCE**

### **4.1 As-Built Drawings:**

- A. Maintain in good order in the field office a complete set of electrical drawings. All changes to the contract shall be clearly recorded on this set of drawings.
- B. Maintain a completely dimensioned record of all buried conduits exterior to the building. Dimensions shall include depth from finished grade or datum, and dimensions to two fixed points above grade, for all changes in direction, to define the routing of all buried conduits.
- C. Maintain a record of the routing of all major feeder conduits inside of the building.

- D. At the end of the project, the Contractor shall turn the drawings over to the Engineer. Each drawing shall be initialed by the Contractor, certifying the correctness of the "As-Built" drawing.

**4.2 Tests:**

- A. Upon completion of the work, and adjustment of all equipment, all systems shall be functionally demonstrated to the Owner's representative or the Engineer. All systems shall function electrically in the manner required.
- B. The Contractor shall furnish all necessary instruments and equipment required for making tests, and shall test all wiring for shorts, open circuits, grounds, etc. The switchboards, and distribution panels (branch panels and EXO switches excluded) shall be tested and inspected as follows:
1. All circuit breakers shall be tested and inspected for proper trip operations on long delay, short delay, and instantaneous trip. Test current for long delay tripping shall be 300 percent of rated trip.
  2. All relays, and ground fault relays, shall be tested for operation, and coordinated.
  3. All fused, non-fused, and transfer switches shall be checked for proper operation.
  4. All motor starters shall be checked for proper operation and condition. All bolted connections shall be checked and tightened for proper torque, as recommended by the manufacturer.

**END OF SECTION**

# **APPENDIX A**

## **Lead-Based Paint Clearance Inspection Report**

Independence Park Gym Building  
801 W. Valencia Drive  
Fullerton, California

Prepared for:  
Deborah Debow, P.E.  
Project Manager  
City of Fullerton - Public Works  
August 1, 2025



**BARR & CLARK**

Independent Environmental Testing  
Asbestos • Lead • Mold • Phase I

## ***Lead-Based Paint Clearance Inspection (Interior Only)***

August 1, 2025

Deborah Debow  
City of Fullerton  
303 West Commonwealth Avenue  
Fullerton, CA 92832-1710

Property Address: 801 West Valencia Drive

**\*\*\*PASSED\*\*\***

Barr & Clark Environmental recently visited the property at the above listed address. The purpose was to conduct a Lead Based Paint Clearance Inspection based on the scope of work or information provided by the client.

On 07/31/25, Barr & Clark visually inspected the lead abatement work and collected three dust wipe samples from the property. All samples were submitted to an independent environmental laboratory (*NLLAP accredited*) to be analyzed for lead content.

The results from the wipe samples indicated that any residual lead dust that was present after abatement and clean up were below the accepted HUD clearance levels (*<10 µg/ft<sup>2</sup> for interior floors, <100 µg/ft<sup>2</sup> for window sills, <40 µg/ft<sup>2</sup> for exterior porches/floors and <100 µg/ft<sup>2</sup> for window troughs/wells – see note below*).

Barr & Clark's evaluation of the relative risk of lead dust exposure identified during this clearance inspection is based on conditions observed at the time of the inspection. Barr & Clark cannot be responsible for changing conditions that may alter the relative exposure risk.

I have included a copy of the laboratory manifest and results for your files. If you have any further questions, please feel free to call.

Sincerely,

Troy Whitmark  
State of California  
Certified Lead Inspector/Risk Assessor

**Project Number:** 3114429

**NOTE:** Per the U.S. Department of Housing and Urban Development (*HUD*) Guidelines for the Evaluation and Control of Lead-Based Paint Hazards (*Office of Healthy Homes and Lead Hazard Control Second Edition, July 2012*), if Federal standards differ from State, Tribal or local standards, **the most stringent (protective) standards must be applied.**

The U.S. Department of Housing and Urban Development (*HUD*) has revised the Dust-Lead Action Levels for Risk Assessment and Clearance; Clearance of Porch Floors (***Policy Guidance Number: 2017-01 Date: January 31, 2017***). Effective April 1, 2017, the following lead dust hazard and clearance action levels (*or lower levels if required by their state regulations*) should be followed:

**New Lead Dust Hazard Action Levels: Floors:  $\geq 10$   $\mu\text{g}/\text{ft}^2$  and Window Sills:  $\geq 100$   $\mu\text{g}/\text{ft}^2$ ,**

**New Lead Clearance Action Levels: Interior Floors:  $< 10$   $\mu\text{g}/\text{ft}^2$ ; Porch Floors:  $< 40$   $\mu\text{g}/\text{ft}^2$ , Window Sills:  $< 100$   $\mu\text{g}/\text{ft}^2$ , and Window Troughs:  $< 100$   $\mu\text{g}/\text{ft}^2$**

**Certificate of Analysis: Lead In Dust Wipe by EPA Method 7000B/NIOSH 7082\***

**Client :** BARR & CLARK ENVIRONMENTAL  
 16531 BOLSA CHICA STREET SUIT 205  
 HUNTINGTON BEACH, CA 92649

**Attn :** OFFICE ADMIN      **Email :** officeadmin@barrandclark.com

**Phone :** 714 894 5700      **Fax :**

**Client Project :** 3114429

**Project Location :** 801 WEST VALENCIA DRIVE FULLERTON CA 92832

**AAT Project :** 1188896  
**Sampling Date :** 07/31/2025  
**Date Received :** 08/01/2025  
**Date Analyzed :** 08/01/2025  
**Date Reported :** 08/01/2025

Sample ID	Client Code	Sample Description	Length (inch)	Width (inch)	Area (Sq ft)	Results Lead µg/ft <sup>2</sup> *
10657148	DS 1	MENS RSTRM INT FL	12	24	2.00	<2.50
10657149	DS 2	GAME RM INT FL	12	24	2.00	<2.50
10657150	DS 3	BLANK	N/A	N/A	N/A	N/D

Analyst Signature



Alex Hall

ND = Not Detected, N/A = Not Available, RL = Reporting Limit, Analytical Reporting Limit is 5 ug/sample. A '<' indicates the reported result is below AAT's reporting limit. For true values assume (3) significant figures. AAT internal SOP S205. The method and batch QC are acceptable unless otherwise stated. EPA Regulatory Limits: 5 ug/ft<sup>2</sup> (Floors, Carpeted/Uncarpeted), 40 ug/ft<sup>2</sup> (Window Sill/Stools), 100 ug/ft<sup>2</sup> (Window Trough/Well/Ext Concrete Surfaces). HUD Grantee Regulatory Limits: 10 ug/ft<sup>2</sup> (Interior Floors), 40 ug/ft<sup>2</sup> (Porch Floors), 100 ug/ft<sup>2</sup> (Window Sills), 100 ug/ft<sup>2</sup> (Window Troughs). The laboratory operates in accord with ISO 17025 guidelines and holds limited scopes of accreditation under AIHA LAP and NY State DOH ELAP programs. These results are submitted pursuant to AAT, LLC current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. Analytical results relate to the samples as received by the lab. AAT will not assume any liability or responsibility for the manner in which the results are used or interpreted. All Quality Control requirements for the samples this report contains have been met. AAT does not blank correct reported values. Sample data apply only to items analyzed. Results are calculated with wipe dimensions supplied by client. Measurement uncertainty can be provided upon request; Measurement Uncertainty represents only Analytical Uncertainty. Reproduction of this document other than in its entirety is not authorized by AAT, LLC. \* = Validated modified method. Samples are stored for 15 days following report date.

AIHA LAP- Lab ID #100986, NY State DOH ELAP -Lab ID #11864, State of Ohio- Lab ID # 10042, State of RI- Lab ID# LAO00345

Date Printed: 08/01/2025

AAT Project: 1188896





30105 Beverly Road  
Romulus, MI 48174  
Ph: 734-629-8161; Fax: 734-629-8431

To : BARR & CLARK ENVIRONMENTAL  
16531 BOLSA CHICA STREET SUIT 205  
HUNTINGTON BEACH, CA 92649

AAT Project : 1188896  
Client Project : 3114429  
Date Reported 08/01/2025

Attn : OFFICE ADMIN                      Email : officeadmin@barrandclark.com  
Phone : 714 894 5700

Project Location : 801 WEST VALENCIA DRIVE FULLERTON CA 92832

Sample	Client Code	Analysis Requested	Completed	Analyst
10657148	DS 1	Dust Wipe	08/01/2025	Alex Hall
10657149	DS 2	Dust Wipe	08/01/2025	Alex Hall
10657150	DS 3	Dust Wipe	08/01/2025	Alex Hall

Reviewed By

Elyse Bidle  
Quality Assurance Coordinator

This report is intended for use solely by the individual or entity to which it is addressed. It may contain information that is privileged, confidential and otherwise exempt by law from disclosure. If the reader of this information is not the intended recipient or an employee of its intended recipient, you are herewith notified that any dissemination, distribution or copying of this information is strictly prohibited. If you have received this information in error, please notify AAT immediately. Thank you.

# BARR & CLARK ENVIRONMENTAL

Project Name: **Independence Park Gym**  
 Address: **801 West Valencia Drive, Fullerton, CA 92832**

Project No. **3114429**

## REQUEST FOR LABORATORY SERVICES - DUST SAMPLES

No. of Samples Submitted 3

Analysis Type: AAS - Report all samples in  $\mu\text{g} / \text{ft}^2$

Turn Around: (Circle One)

**24hr**

**RUSH 6 HR**

10657148

Sample Number	Room:	Size of Subsample (inches x inches)	Surface Type:	
DS 1	<u>Mens Restroom</u>	<u>12 x 24</u>	<input checked="" type="checkbox"/> Interior Floor <input type="checkbox"/> Int. Window Sill	<input type="checkbox"/> Exterior Floor <input type="checkbox"/> Ext. Window Well
DS 2	<u>Grand Room</u>	<u>12 x 24</u>	<input checked="" type="checkbox"/> Interior Floor <input type="checkbox"/> Int. Window Sill	<input type="checkbox"/> Exterior Floor <input type="checkbox"/> Ext. Window Well
DS 3	<u>Blank</u>	<u>x</u>	<input type="checkbox"/> Interior Floor <input type="checkbox"/> Int. Window Sill	<input type="checkbox"/> Exterior Floor <input type="checkbox"/> Ext. Window Well
DS 4		<u>x</u>	<input type="checkbox"/> Interior Floor <input type="checkbox"/> Int. Window Sill	<input type="checkbox"/> Exterior Floor <input type="checkbox"/> Ext. Window Well
DS 5		<u>x</u>	<input type="checkbox"/> Interior Floor <input type="checkbox"/> Int. Window Sill	<input type="checkbox"/> Exterior Floor <input type="checkbox"/> Ext. Window Well
DS 6		<u>x</u>	<input type="checkbox"/> Interior Floor <input type="checkbox"/> Int. Window Sill	<input type="checkbox"/> Exterior Floor <input type="checkbox"/> Ext. Window Well
DS 7		<u>x</u>	<input type="checkbox"/> Interior Floor <input type="checkbox"/> Int. Window Sill	<input type="checkbox"/> Exterior Floor <input type="checkbox"/> Ext. Window Well
DS 8		<u>x</u>	<input type="checkbox"/> Interior Floor <input type="checkbox"/> Int. Window Sill	<input type="checkbox"/> Exterior Floor <input type="checkbox"/> Ext. Window Well
DS 9		<u>x</u>	<input type="checkbox"/> Interior Floor <input type="checkbox"/> Int. Window Sill	<input type="checkbox"/> Exterior Floor <input type="checkbox"/> Ext. Window Well
DS 10		<u>x</u>	<input type="checkbox"/> Interior Floor <input type="checkbox"/> Int. Window Sill	<input type="checkbox"/> Exterior Floor <input type="checkbox"/> Ext. Window Well
DS 11		<u>x</u>	<input type="checkbox"/> Interior Floor <input type="checkbox"/> Int. Window Sill	<input type="checkbox"/> Exterior Floor <input type="checkbox"/> Ext. Window Well
DS 12		<u>x</u>	<input type="checkbox"/> Interior Floor <input type="checkbox"/> Int. Window Sill	<input type="checkbox"/> Exterior Floor <input type="checkbox"/> Ext. Window Well

Relinquished By:

Date: July 31, 2025  
 Inspector/Technician: Troy Whitmark

Signature: Troy Whitmark

Received By:

Date: AUG 01 2025

Name: Peter Tiller

Signature: [Signature]

AAT



102355

1198896

**LEAD HAZARD EVALUATION REPORT****Section 1-Date of Lead Hazard Evaluation** 07/31/25**Section 2-Type of Lead Hazard Evaluation** (Check one box only)

Lead inspection     Risk assessment     Clearance inspection     Other

**Section 3-Structure Where Lead Hazard Evaluation Was Conducted**

Address (number, street, apartment (if applicable)) 801 West Valencia Drive		City Fullerton	County Orange	ZIP code 92832
Construction date (year) of structure 1960	Type of structure (check one box only) <input type="checkbox"/> Multi-unit building <input type="checkbox"/> School or Daycare <input type="checkbox"/> Single Family Dwelling <input checked="" type="checkbox"/> Other (Park Gym)		Children Living in Structure? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Don't Know	


**Section 4-Owner of Structure** (If business/agency, list contact person)

Name Deborah Debow		Telephone number (714) 738-6874		
Address [number, street, apartment (if applicable)] 801 West Valencia Drive		City Fullerton	State CA	ZIP code 92832

**Section 5-Results of Lead Hazard Evaluation** (Check all that apply)

No lead-based paint detected     Intact Lead-based paint detected     Deteriorated Lead-based paint detected  
 No lead hazards detected     Lead Contaminated Dust Found     Lead Contaminated Soil Found     Other (specify)

**Section 6-Individual Conducting Lead Hazard Evaluation**

Name Troy Whitmark		Telephone number 714-894-5700		
Address (number, street, apartment (if applicable)) 16531 Bolsa Chica, Suite 205		City Huntington Beach	State CA	ZIP code 92649
CDPH certification number LRC-00009920	Signature 			Date 8/1/25

Name and CDPH certification number of any other individuals conducting sampling or testing (if applicable)

**Section 7-Attachments**

- A. A foundation diagram or sketch of the structure indicating the specific locations of each lead hazard or presence of lead-based paint;  
 B. Each testing method, device, and sampling procedure used;  
 C. All data collected, including quality control data, laboratory results, including laboratory name, address, and phone number.

*First copy and attachments retained by inspector*

*Second copy and attachments retained by owner  
(no attachments) mailed to:*

*Third copy only*

California Department of Public Health  
 Childhood Lead Poisoning Prevention Branch Reports  
 850 Maria Bay Parkway, Building P,  
 Third Floor  
 Richmond, CA 94804-6403  
 Fax (510) 620-5656

## **APPENDIX B**

# **Limited Geotechnical Engineering Evaluation**

Independence Park Gym Building  
801 W. Valencia Drive  
Fullerton, California

Prepared for:  
David Grantham, P.E.  
City of Fullerton Public Works  
January 19, 2026



**TWINING**

Engineering a Better Tomorrow

## **Limited Geotechnical Engineering Evaluation**

Independence Park Gym Building  
801 W. Valencia Drive  
Fullerton, California

Prepared for:

David Grantham, P.E.  
City of Fullerton Public Works

January 19, 2026  
Project No.: 250918.1



4811 Airport Plaza Drive  
Suite 220  
Long Beach CA 90815

Tel 562.426.3355  
Fax 562.426.6424

January 19, 2026  
Project No. 250918.1

David Grantham, P.E.  
City Engineer  
City of Fullerton Public Works  
303 W. Commonwealth Avenue  
Fullerton, CA 92832

Subject: Limited Geotechnical Engineering Evaluation  
Independence Park Gym Building  
801 W. Valencia Drive  
Fullerton, California 92832

Dear Mr. Grantham:

In accordance with your request and authorization, Twining, Inc. is pleased to present the results of our limited geotechnical engineering evaluation for the Independence Park Gym Building located at 801 W. Valencia Drive in Fullerton, CA. The objectives of this study are to evaluate the subsurface conditions at the site and provide geotechnical recommendations for proper drainage and water proofing to mitigate potential for damage and settlement.

We appreciate the opportunity to be of service on this project. Should you have any questions regarding this report or if we can be of further service, please do not hesitate to contact the undersigned.

Respectfully submitted,  
**TWINING, INC.**

Paul Soltis, RCE 56140, GE 2606  
Vice President, Geotechnical Engineering



4811 Airport Plaza Drive  
Suite 220  
Long Beach CA 90815

Tel 562.426.3355  
Fax 562.426.6424

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## FIGURES

Figure 1 – Site Location Map

Figure 2 – Site Plan and Boring Location Map

## APPENDICES

Appendix A – Field Exploration

Appendix B – Laboratory Testing

## **1. INTRODUCTION**

This report presents the results of the limited geotechnical engineering evaluation performed by Twining, Inc. (Twining) for the Independence Park Gym Building located at 801 W. Valencia Drive in Fullerton, CA. The objectives of this study are to evaluate the upper subsurface conditions at the site and provide an opinion regarding the potential for future movement and/or settlement in the future. Additionally, based on observation performed during our evaluation, we provide recommendations for proper drainage away from the building to mitigate the potential for water intrusion into the building and building subgrade.

## **2. SITE DESCRIPTION AND PROPOSED IMPROVEMENTS**

The project site is located near the center of Independence Park. The location of the site is depicted on Figure 1, Site Location Map, and Figure 2, Site Plan and Boring Location Map. The approximate site coordinates are latitude 33.867418°N and longitude 117.939069°W, and the site is located on the Anaheim, California 7½-Minute Topographic Quadrangle (United States Geological Survey, 2022).

The Independence Park Gym Building includes a multipurpose room at the north corner of the building that exhibits surface cracking within the floor slab. Cracks were observed in the exposed floor slab approximately 2 feet inside the northwest and southwest walls of the multipurpose room. Each location consisted of single crack that trends parallel to the adjacent walls and terminates near the ends of the rooms. Additionally, the building includes a gymnasium located at the southeast corner that exhibits surficial cracking within the southeast wall, as well as water staining at the base of the wall. Wood flooring in the gymnasium covers the existing floor slab; we observed no significant separations or vertical offsets within the flooring.

Based on review of the plans provided for the building dated July 1975 (LeRoy Rose and Associates, structural plans), the multipurpose room is supported by perimeter shallow spread footings 14-inches wide with the bottom of footing at a depth of approximately 3 feet as measured below the top of existing floor slab. The floor slab is 4-inches thick and underlain by a 6-mil vapor retarder sandwiched between two 2-inch-thick sand layers. Based on the plans, the floor slab is doweled into the stem walls above the foundations in the multipurpose room using number 3 reinforcing steel bars spaced at 18 inches on center.

The precast panel walls of the gym adjacent to the south of the multipurpose room are supported on concrete spread footings that are generally 6.5-foot square and embedded to a depth of 3 feet as measured below the top of existing floor slab. The panels are attached to the tops of footings and the panels span between the foundations on top of a grade beam tying the foundations together. The gym floor slab is attached the foundations with two number 4 reinforcing steel bars spaced at 6.5 inches at foundation locations and number 3 bars spaced at 18 inches on center between foundation locations are tied into the grade beam below the precast panels. The floor slab in general is 4-inches thick and underlain by a 6-mil vapor retarder sandwiched between two 2-inch-thick sand layers.

The proposed improvements consist of cosmetic renovations to the existing building. No new structural elements are planned. We understand the existing wood flooring in the gymnasium will be removed and replaced.

## **3. SCOPE OF SERVICES**

Our scope of services for this project consisted of the following:

- We performed a subsurface investigation, including the excavation, logging, and sampling of five exploratory borings (HA-1 through HA-5) advanced to a maximum depth of approximately 10 feet below the existing ground surface (bgs). We obtained samples of earth materials from the investigation and transported them to our in-house laboratory for observation and testing.
- We performed laboratory testing on selected samples of earth materials in order to evaluate the geotechnical engineering properties of the on-site soils.
- We compiled and analyzed the data collected from our site reconnaissance, subsurface evaluation, and laboratory testing. Specifically, our analyses included the following:
  - Evaluation of general subsurface conditions and description of types, distribution, and engineering characteristics of subsurface materials;
  - Evaluation of expansive soils;
  - Review of drainage conditions around the building;
  - Evaluation of potential for future distress; and
  - Evaluation of the potential for the on-site materials to corrode buried concrete and steel objects.
- We prepared this report that presents the work performed and data acquired and summarizes our conclusions and geotechnical recommendations for the proposed project.

#### **4. FIELD EXPLORATION AND LABORATORY TESTING**

##### **4.1. Field Exploration**

The subsurface conditions were evaluated by advancing five soil borings. Two borings were located at the exterior of the gym building, and three borings were located within the gym building. The approximate locations of the exploratory soil borings are shown on Figure 2 – Site Plan and Boring Location Map. The Logs of Borings are presented in Appendix A.

The soil borings were advanced to depths of approximately 10-feet below the existing grades using a 5-inch diameter hand auger. The concrete slab at the three borings located on the interior of the building was cored prior to being hand augered. Bulk samples of the soil were obtained and the materials encountered in the soil borings were logged by our field engineer/geologist. Upon completion of the soil borings, the excavations were backfilled with spoils and the surface patched to match the existing conditions.

##### **4.2. Laboratory Testing**

Laboratory tests were performed on selected samples obtained from the soil borings to aid in the soil classification and to evaluate the engineering properties of the foundation soils. The following tests were performed:

- Atterberg limits;
- #200 wash sieve;
- Expansion index;
- Moisture content; and
- Corrosivity.

The test results and details of the laboratory testing program are included in Appendix B.

## **5. SUBSURFACE CONDITIONS**

### **5.1. Subsurface Conditions**

Subsurface conditions encountered during the subsurface exploration consist of Quaternary-age alluvial deposits. Generalized descriptions of the earth materials are provided below, and detailed descriptions of the exploratory soil borings are presented in Appendix A - Field Exploration.

The subsurface materials generally consist of sandy lean clay. At the exterior boring locations (HA-1 and HA-5), the native soils are overlain by approximately 6 inches of topsoil. At the interior boring locations (HA-2 through HA-4), the native soils are overlain by approximately 1 foot of artificial fill. The thickness of concrete slab observed in at our three locations inside the building ranged from approximately 4 to 5 inches with a plastic membrane and sand layer below the slab.

### **5.2. Groundwater**

Groundwater was not encountered within any of our exploratory borings to a maximum depth of 10 feet below the existing ground surface, corresponding to an approximate elevation of 125 feet.

According to the Seismic Hazard Zone Report for the Anaheim 7.5-Minute Quadrangle, the historically highest groundwater is between 35 to 45 feet bgs at the project site. Groundwater conditions may vary across the site due to stratigraphic and hydrologic conditions and may change over time as a consequence of seasonal and meteorological fluctuations, or of activities by humans at this and nearby sites.

Based on our observations during our subsurface exploration and our site research, we the groundwater depth may be assumed at a depth of greater than 30 feet below the existing ground surface.

## **6. GEOTECHNICAL ENGINEERING RECOMMENDATIONS**

### **6.1. General Considerations**

Based on the results of our review of available documents, field observations during exploration, and engineering analyses, it is our opinion that the proposed renovation of the gym building is feasible and renovations should not be significantly impacted by future settlement of the existing building structure. This section discusses our findings and presents recommendations to improve the drainage conditions surrounding the building.

### **6.2. Expansive Soils**

Expansive soils are characterized by their ability to undergo significant volume changes (shrink or swell) due to variations in moisture content. Changes in soil moisture content can result from rainfall, landscape irrigation, utility leakage, roof drainage, perched groundwater, drought, or other factors, and may cause unacceptable settlement or heave of structures, concrete slabs supported on-grade, or pavements supported over these materials.

In general, it is our opinion that no evidence was observed to indicate that expansive soil has caused significant distress to the building. We note that the soils encountered and sampled during our exploration show Expansion Indices (EI) between 56 and 62, indicating a medium potential for expansion. Based on our review of the structural plans provided, the bottoms of foundations are typically founded at a depth of 3 feet below the top of existing floor slab.

Typically, at a depth of 3 feet below the ground surface, the moisture content of the soil is not expected to vary significantly in moisture content. With no significant variation in moisture at this depth, the potential for soil expansion to cause heave of foundation elements is relatively low. Additionally, based on our observations of the distress, there is no indication of significant foundation or floor slab heaving; that is, cracks observed in the floor slab in the multipurpose room show no signs of significant vertical offset along the cracks, and wall cracks in the gymnasium show no signs of significant offset along the cracks. The cracks in the gym walls (consisting of precast panels) are indicative of: 1) shrinkage cracks which are typical in concrete elements due to the nature of concrete when it cures, and 2) "crazing" which are web-like hairline cracks that likely developed due to over-troweling of the finish or shrinkage of the top, thin layer of concrete on the final finish of the precast concrete panels. Neither the shrinkage cracking or crazing observed at the building are a structural concern as this type of cracking is generally cosmetic in nature.

### **6.3. Corrosive Soils**

Corrosion testing of two bulk samples collected during our field exploration was performed to determine the potential for corrosion of concrete and steel. Based on the results of the testing, the potential for on-site soil to corrode buried concrete is relatively low. Based on the tested resistivity of the upper 5 feet of soil collected at the site, the soil is potentially corrosive to metal. The results of testing are presented in Table B-5 of Appendix B. We recommend that a corrosion specialist review these results with respect to protection of new near-surface utilities that may be planned for the proposed building renovation.

### **6.4. Settlement Potential**

Based on our observations at the site, the building does not appear to have suffered from excessive foundation settlement. As previously described, cracking observed in the floor slabs and concrete walls show no signs of significant offsets along the cracks, which would be indicative of past and/or current movement of the building. The observed crack in the floor slab in the multipurpose room that generally runs parallel to the footing line may have occurred as a result of preliminary movement/very slight settlement of the building, but does not appear to have widened or vertically offset over the life of the building. The floor slab at this location is generally level and not indicative of a slab that has experienced significant settlement. It should be noted that the floor slab is tied into the foundations and thereby restrained from movement relative to the slab. In our experience, if settlement of the foundations occurred, damage to the floor slab including fracturing of the concrete floor at the locations of ties to the foundation and out-of-level surfaces would likely be evident – no such damage was observed. Additionally, no significant separations in the exposed wood framing of the multipurpose room were observed at any of the structural joints in the framing.

In the gymnasium, observed distress, generally consisting of shrinkage cracking and crazing of concrete wall surfaces, does not indicate significant movement or settlement of the foundations. The observed vertical shrinkage cracks in the walls do not show signs of movement along the cracks, which may be indicative of building movement/settlement. We were unable to view the floor slab of the gymnasium as it was covered with wood flooring at the time of our investigation; however, reviewing the wood flooring, which would be susceptible to separations/heaving/vertical offsets along the wood floor panels if the building slab was affected by settlement or excessive movement, no such significant separations, heaving or offsets in the wood flooring were observed anywhere in the gymnasium. Additionally, the wood flooring does not appear to have suffered from water intrusion to cause distress. Overall, the wood flooring is in very good condition with respect to stability and levelness. On this basis, it is our opinion that the potential for future settlement of the multipurpose room and gymnasium is very low given the age of the building and current conditions observed.

## **6.5. Conclusions and Recommendations**

It is our opinion that the proposed renovation and cosmetic improvements to the gym building are feasible and should not suffer excessive distress due to long-term movement/settlement of the gym building. However, we do note that the north and east sides of building, particularly at the northeast corner of the multipurpose room, the ground surface is wet and had some standing water in the grass-covered areas adjacent to the building. In general, the surface surrounding the building should be sloped such that surface water moves away from the buildings. It is generally recommended that surfaces covered with landscaping be sloped away from the building at a gradient of at least 5 percent. On this basis, we recommend reviewing the grades surrounding the building and providing a 5 percent sloping surface away from the building, or engage a civil engineer specializing in drainage to capture the buildup of water adjacent to the building. It is important to note that water encroaching into the subgrade soils adjacent to and below the building could lead to water intrusion through foundation/slab areas and cause damage to flooring and potentially cause softening of clay soils at the site that could lead to unwanted long-term settlement of the building foundations.

## **7. LIMITATIONS**

The recommendations and opinions expressed in this report are based on Twining, Inc.'s review of available background documents, on information obtained from field explorations, and on laboratory testing. It should be noted that this study did not evaluate the possible presence of hazardous materials on any portion of the site. In the event that any of our recommendations conflict with recommendations provided by other design professionals, we should be contacted to aid in resolving the discrepancy.

Due to the limited nature of our field explorations, conditions not observed and described in this report may be present on the site. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluation and laboratory testing can be performed upon request. It should be understood that conditions different from those anticipated in this report may be encountered during grading operations, for example, the extent of removal of unsuitable soil, and that additional effort may be required to mitigate them.

Site conditions, including groundwater elevation, can change with time as a result of natural processes or the activities of man at the subject site or at nearby sites. Changes to the applicable laws, regulations, codes, and standards of practice may occur as a result of government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Twining, Inc. has no control.

Twining's recommendations for this site are, to a high degree, dependent upon appropriate quality control of subgrade preparation, fill placement, and foundation construction. Accordingly, the recommendations are made contingent upon the opportunity for Twining to observe grading operations and foundation excavations for the proposed construction. If parties other than Twining are engaged to provide such services, such parties must be notified that they will be required to assume complete responsibility as the geotechnical engineer of record for the geotechnical phase of the project by concurring with the recommendations in this report and/or by providing alternative recommendations.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Twining should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.



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This report has been prepared for the exclusive use by the client and its agents for specific application to the proposed project. Land use, site conditions, or other factors may change over time, and additional work may be required with the passage of time. Based on the intended use of this report and the nature of the new project, Twining may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the Client or anyone else will release Twining from any liability resulting from the use of this report by any unauthorized party.

Twining performed its evaluation using the degree of care and skill ordinarily exercised under similar circumstances by reputable geotechnical professionals with experience in this area in similar soil conditions. No other warranty, either express or implied, is made as to the conclusions and recommendations contained in this report.



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## FIGURES



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# **APPENDIX A**

## **FIELD EXPLORATION**



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## **Appendix A Field Exploration**

### **General**

The field exploration for the proposed project consisted of testing, sampling, and logging of five exploratory soil borings (HA-1 through HA-5). The approximate locations of the exploration are shown on Figure 2 – Site Plan and Boring Location Map.

### **Soil Borings**

Five soil borings were advanced below ground surface using a 5-inch diameter hand auger. Bulk samples were taken of the materials encountered. At the conclusion of the soil borings, the boreholes were backfilled with spoils and the surface patched to match the existing conditions. Logs of the explorations are attached below.



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# **APPENDIX B**

## **LABORATORY TESTING**

### Appendix B Laboratory Testing

#### Atterberg Limits

Plasticity index testing was performed on selected samples obtained from the borings to evaluate plasticity characteristics and to aid in the classification of the soil. The tests were performed in general accordance with ASTM D 4318. The results are presented on Table B-1, Atterberg Limits.

**Table B-1  
Atterberg Limits Results**

Boring No.	Depth (feet)	Liquid Limit	Plastic Limit	Plasticity Index	U.S.C.S. Classification
HA-1	0-5	33	14	19	CL
HA-2	5-10	31	17	14	CL
HA-3	0.5-5	34	15	19	CL
HA-4	5-10	35	15	20	CL
HA-5	0-5	32	14	18	CL

#### Wash Sieve

The amount of fines passing the No. 200 sieve was evaluated by the wash sieve on selected soil samples. The test procedure was in general accordance with ASTM D 1140. The test results are presented in Table B-2.

**Table B-2  
No. 200 Wash Sieve Results**

Boring No.	Depth (feet)	Percent Passing #200
HA-1	0-5	58.7
HA-2	5-10	67.3
HA-3	0.5-5	59.0
HA-4	5-10	61.4
HA-5	0-5	56.0

#### Laboratory Moisture Content

The moisture content of select bulk samples obtained from the exploratory borings were evaluated in general accordance with ASTM test method D 2216. The results are presented on the logs of the exploratory borings in Appendix A and also summarized in Table B-3.

**Table B-3  
Laboratory Moisture Content**

Boring No.	Depth (feet)	Moisture Content (%)
HA-1	0-5	15.5
HA-1	5-10	9.3
HA-2	0.5-5	10.3
HA-2	5-10	16.0
HA-3	0.5-5	17.3
HA-3	5-10	19.3
HA-4	0.5-5	17.0

HA-4	5-10	19.9
HA-5	0-5	14.1
HA-5	5-10	20.6

### Expansion Index Tests

The expansion index for select bulk samples was evaluated in general accordance with ASTM D 4829. The specimens were molded under a specified compactive energy at approximately 50 percent saturation. The prepared 1-inch thick by 4-inch diameter specimen was loaded with a surcharge of 144 pounds per square foot and was inundated with tap water. Readings of volumetric swell were made for a period of 24 hours. The results of the Expansion Index test is presented on Table B-4.

**Table B-4  
Expansion Index Test Result**

Boring No.	Depth (feet)	Expansion Index	Expansion Potential
HA-1	0-5	60	Medium
HA-2	5-10	62	Medium
HA-3	0.5-5	56	Medium

### Corrosivity

Soil pH and resistivity tests were performed by Anaheim Test Lab, Inc. (ATLI) of Irvine, California on a representative soil sample. The resistivity of the soil assumes saturated soil conditions. The chloride and sulfate contents of the selected samples were evaluated in general accordance with the latest versions of Caltrans test methods CT417, CT422, and CT 643. The test results are presented on Table B-5 and the ATLI report included in this appendix.

**Table B-5  
Corrosivity Test Results**

Boring No.	Depth (feet)	pH	Water Soluble Sulfate (ppm)	Water Soluble Chloride (ppm)	Minimum Resistivity (ohm-cm)
HA-1	0-5	7.6	185	54	1,100
HA-2	5-10	7.7	234	108	1,900