Continuous Kerfs – Depth:	-1/16";+ 1/8" (-1.5 mm, +3 mm)
Rebated Kerf Elevation of Bearing Surface:	±1/16" (±1.5 mm)
Bearing Checks - Elevation of Bearing Surface:	±1/16" (±1.5 mm)
Bearing/Clearance Checks Lateral Location:	±1/2" (±13 mm)
Bearing/Clearance Checks – Setback from Face:	±1/16" (±1.5 mm)

Comment: TOLERANCES AND THICKNESSES: The suggested minimum nominal thickness for exterior veneer is as follows:

Bush hammered finish: 4" (102 mm)

Pointed finish: 4" (102 mm)

All other finishes: Minimum nominal thickness of granite panel is to be determined pending analysis of the following criteria:

A. Piece Size

B. Face Finish

C. Anchoring Method & Location

D. Structural Design Load Requirements

(e) Comment: It is more economical if the granite panel thickness coincides with one of the industry standard nominal thicknesses of 4" (102 mm), 3" (76 mm), 2" (51 mm), 1 5/8" (41 mm) or 1 ¼" (32 mm).

3.02 FLATNESS TOLERANCES

Variation from true plane, or flat surfaces, shall be determined by a 4' dimension in any direction on the surface.

Such variations on polish, hone, and fine rubbed surfaces shall not exceed tolerances listed below or 1/3 of the specified joint width, whichever is greater. On surface having other finishes, the maximum variation from true plane shall not exceed the tolerance listed below or 1/2 of the specified joint width, whichever is greater.

Polished, honed or fine rubbed finishes	1/16" (1.5 mm)
Sawn, 4-cut, 6-cut, and 8-cut finishes	1/8" (3 mm)
Thermal and coarse stippled finishes	3/16" (1.5 mm)
Pointed or other rough cut finishes	1" (25 nn)
Split face	Dependent on piece size & stock

3.03 BEDS AND JOINTS (F)

(f) Comment: BED AND JOINT WIDTH: The minimum recommended joint width is 3/8" for pieces with sawn beds and joints. Larger joint widths are required if pieces have split or otherwise rough cut beds and/or joints.

Pieces shall be bedded and jointed as shown on the approved shop drawings, and bed and joint surfaces shall be cut as follows:

(1) Bed and joint surfaces shall be sawn through the full thickness of the granite piece. Bed and joint surfaces shall be within ±3° of 90° to the face of the piece unless otherwise specified.

Comment: (This specification is recommended for most applications where a 3/8" bed or joint width specification is used.)

(2) Beds and joints shall be sawn or cut full square 2" back from the face and from that point may fall under square not more then 1" in 12". Both beds and joints shall be reasonable free of large depressions.

Comment: (This or similar specification is recommended for pieces 4" or more in thickness when cost savings may e achieved by eliminating the above full sawn specification.)

(3) Beds and joints shall be split or rough sawn generally square with the face and may fall under square with the face not more then 2" in 12".

Comment: (This or similar specification is recommended only for projects with bed and joint widths of ¾" or more where a split face or other rough sawn appearance is specified.)

3.04 BACKS OF PIECES (G)

(g) Comment: SAWN BACKS: Because of physical characteristics, most granites cannot be split to a thickness less than one-third the lesser face dimension. Consequently sawn backs (the first specifications) should be specified for most veneers, and are frequently specified also for thicker ashlar, because of design considerations.

Installer's Option of one of the following:

(1) Backs of all pieces shall be sawn to approximately true planes.

Comment: (Recommended for most building granite specifications.)

(2) Backs of all pieces may be either rough or natural quarry split to provide surfaces, which vary not more then 1" in 12" from true plane and not more then 2" from their specified thickness.

Comment: (Recommended for structural bridge piers, 4" or more split face pieces, or other installations of thicker pieces where a sawn back is not required.)

Fabricate stone to maintain minimum clearance of 1 inch between backs of stone units and surfaces behind stone.

All tolerances listed assume panels 4" or less in thickness, not more then 5' x 5', and sawn on all six sides.

Comment: For thicker pieces, very large pieces, or pieces with split, pointed or rough sawn faces, backs, beds or joints, tolerances generally must be increased. Consult with suppliers on tolerances for special pieces.

A minimum cavity void of approximately 1" (25 mm) shall be maintained behind ashlar or dimensional granite used as a veneer. This cavity should be adequately ventilated and wept to eliminate the accumulation of moisture behind the granite veneer.

Comment: The NBGQA recommends a minimum factor of safety of 3.0 to 1 for granite panels and a minimum factor of safety of 4.0 to 1 for all anchorage assemblies.

3.05 FABRICATION, GENERAL REQUIREMENTS

A. Mouldings, washes, and drips shall be constant in profile throughout their length, in strict conformity with details shown on approved shop drawings.

B. Dress joints straight and at 90 degree angle to face. Shape beds to fit supports.

C. Anchor Provision: Cut and drill sink provisions and holes in stone for anchors, fasteners, supports, and lifting devices as indicated or needed to set stone in place.

D. Allow room for expansion of the anchoring devices where necessary.

E. Where liners are required on the back of panels, secure by means of mechanical anchors. Comply with referenced standards.

F. Finish exposed faces and edges of stone, except sawed reveals, to comply with requirements indicated for finish and to match final samples and mockups.

G. Joint Width: Cut stone to produce uniform joints 3/8 inch or as shown on Drawings.

H. Provide chases, reveals, reglets, openings, and similar features as required to accommodate adjacent work.

I. Grade and mark stone to achieve uniform appearance when installed. Inspect finished stone units at fabrication plant. Replace defective units.

3.06 INCIDENTAL CUTTING AND DRILLING

Panels in excess of 100 pounds (45 kg) may include, at installer's option, lifting clamp dimples, Lewis holes, or other provisions as required to accommodate the lifting device (s) utilized by the installing contractor. Lifting holes in the top beds of panels or other locations where moisture collection is likely to occur shall be filled with non-expanding grout or high-modulus elastomeric sealant after installation and final alignment.

PART 4 -- EXECUTION

4.01 EXAMINATION

A. Examine the areas and conditions under which work of this Section will be performed.

B. Correct conditions detrimental to timely and proper completion of the Work.

C. Do not proceed until unsatisfactory conditions are corrected.

D. Beginning of installation means acceptance of conditions.

PART 5 -- SHIPPING AND HANDLING

5.01 PACKING AND LOADING

Finished granite shall be carefully packed and loaded for shipment using all reasonable and customary precautions against damage in transit. No material which may cause staining 3.4(h) or discoloration shall be used for blocking or packing.

(h) Comment: STAINING: Granite is highly resistant to staining, but should be protected from certain elements, such as wet (green) wood, oils mud, rust, construction waste, and asphalt compounds. Contact supplier for proper remedies to staining problems that occur.

5.02 SITE STORAGE

Upon receipt at the building site or storage yard, the granite shall be stacked on timber or platforms at least 3" above the ground, and extreme care shall be taken to prevent staining 3.4(h) during storage. If storage is to be for a prolonged period, polyethylene or other suitable plastic film shall be placed between any wood and finished surfaces, and shall be used also as an

overall protective covering. All holes shall be plugged during freezing weather to prevent the accumulation of water. Salt shall not be used for melting of ice formed in Lewis holes or on pieces, or for any purpose involving its contact with the granite.

PART 6 -- STONE INSTALLATION

Proceed with the installation of the stonework in accordance with Drawings and using skilled mechanics capable of proper handling of the setting of the stone and able to field cut where necessary with sharp and true edges.

Set stone with joints uniform in appearance and stone edges and faces aligned to tolerances indicated.

Clean surfaces that are dirty or stained. Scrub with fiber brushes, and then rinse with clear water.

Provide expansion, control, and pressure-relieving joints of widths and at locations shown on Drawings.

PART 7 -- CLEANING AND PROTECTION

7.01 CLEANING

Granite shall be shop cleaned at the time of final fabrication. After installation and pointing or caulking are completed, the contractor shall carefully clean the granite, removing all dirt, excess mortar, weld splatter, stains, and/or other site incident defacements.

Stainless steel wire brushes or wool may be used, but the use of other wire brushes or of acid or other solutions which may cause discoloration is expressly prohibited. Fabricator should be contacted before cleaners other then detergents are used.

7.02 PROTECTION OF FINISHED WORK

After the granite work is installed, the granite shall be properly and adequately protected from damage. Boxing or other suitable protection shall be provided wherever required, but no lumber which may stain or deface the granite shall be used. All nails shall be non-corrosive.

All granite work in progress shall be protected at all times during construction by use of a suitable strong impervious film or fabric securely held in place.

*****END OF SECTION*****

SECTION 05120

STRUCTURAL STEEL

PART 1 -- GENERAL

1.01 SUMMARY

Division 0, Contract requirements and Division 1, General Conditions apply to this section.

1.02 DESCRIPTION

The work under this section includes furnishing all labor, materials and equipment, and performing all operations in connection with Structural and Miscellaneous Steel and related items indicated on the Drawings, specified herein or reasonably implied to complete the work.

1. Structural Steel framing members, support members, embed angles, and struts.
2. Base plates, anchor bolts and structural framing accessories for a complete and proper installation of the work.

1.03 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 the work of this Section.

B. Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedures." Conform to AWS Code D1.1-85. Welding Inspection:

1. It shall be the responsibility of the Contractor that the Architect be notified of the commencement of welding, shop or field, in ample time to provide inspection.
2. A representative of the Owner will inspect installation of Automatic end and welded studs. At the beginning of each day's work, a minimum of two test stud welds shall be made with the equipment to be used to metal, which is the same as the actual work piece. The test studs shall be subjected to a 90-degree bend test by striking them with a hammer. After the above test, the weld section shall not exhibit any tearing out or cracking.

C. The American Institute of Steel Construction (AISC) "Manual of Steel Construction" shall apply in the performance of this work, except for clauses contradicted by the General and special Conditions and this section of the Specifications.

1.04 SUBSTITUTIONS

Substitutions will be considered per Article 5 of the General Conditions, Project Manual Section 00700.

1.05 SUBMITTALS

A. In accordance with Article 5 of the General Conditions, Project Manual Section 00700.

B. Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

1. Producers' or manufacturers specifications and installation recommendations for the following products, including laboratory test reports and other data required to prove compliance with the specified requirements.
   a. Structural steel, including certified copies of mill test reports covering chemical and physical properties;
   b. Unfinished bolts and nuts;

c. Structural steel primer paint.

2. Shop Drawings including complete details and schedules for fabrication and shop assembly of members. Shop Drawings shall be generally in accordance with AISC "Structural Steel Detailing"

a. Include details of cuts, connections, camber, holes, and other pertinent data;

b. Indicate welds by AWS symbols, and show size, type, and length of weld;

c. Provide setting drawings, templates, and directions for installing anchor bolts and other required anchors;

d. Identify details by reference to sheet and detail number of the Drawings.

1.06 PRODUCT HANDLING

A. All material shall be handled, shipped, and stored in a manner that will prevent distortion or other damage. Material shall be stored off of the ground, in a clean location and kept properly drained. All damaged material shall be replaced or repaired as directed by the Architect.

B. Delivery and storage:

1. Delivery materials to the job site properly marked to identify the location for which they are intended.

2. Use markings corresponding to markings shown on the approved Shop Drawings.

3. Store in a manner to maintain identification and to prevent damage.

PART 2 -- PRODUCTS

2.01 MATERIALS

A. Rolled steel plates and bars: Comply with ASTM A36.

1. Girder and beam sections and beam cover plates.

2. All other bars, plates and shapes.

B. Steel Tube: Comply with ASTM A500, grade B. 46 ksi

C. Anchor bolts: Comply with ASTM A307, non-headed type with double hexagonal nuts unless otherwise indicated.

D. Unfinished threaded fasteners:

1. Comply with ASTM A307, grade A, regular low carbon steel bolts and nuts.

2. Provide either hexagonal or square heads and nuts, except use only hexagonal units for exposed connections.

3. High strength bolts: ASTM A-325

E. Primer: Use "10-99 Tnemec Primer," "Rustoleum No. 5769 Primer," or equal approved in advance by the Architect.

F. Anchor bolt templates: Provide separate steel templates not less than 10 gage for each anchor bolt group or assembly.

G. Electrodes for welding: Comply with AWS Code, using AWS A5.1 or A5.5 E70XX electrodes as required for intended use.

H. Welding rod for mild steel: ASTM A-233

I. Resistance welded studs shall be as manufactured by Nelson Stud Welding Division of Gregory Industries or by KSM Products, Inc.

2.02 FABRICATION

A. Shop fabrication and assembly:

1. Fabricate items of structural steel in accordance with AISC specifications: "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings", latest edition, and as indicated on the approved Shop Drawings.

2. Properly mark and match-mark materials for field assembly and for identifications as to location for which intended.

3. Fabricate for delivery sequence that will expedite erection and minimize field handling of materials.

4. Where finishing is required, complete the assembly, including welding of units, before start of finishing operations.

5. Provide finish surfaces of members exposed in the final structure free from markings, burrs, and other defects.

B. Connections:

1. Provide bolts and washers of types and sizes required for completion of field erection.

2. Welded construction: Comply with AWS Code for procedures, appearance, and quality of welds, and methods used in correcting welded work.

3. Assemble and weld built-up sections by methods that will produce true alignment of axes without warp.

C. Experienced welding operators shall do welding. The operator, the welding equipment, the electrodes, the methods of making the welds, and all structural welds, as completed, shall be as approved by the representative of the approved Testing Laboratory.

D. Resistance welded studs shall be installed with special approved welding equipment, in accordance with stud manufacturer's recommendations.

E. Shop welds shall in general be made with the material to be welded positioned for down-hand welding. Root passes of all "U" or "V" joints for butt welds by manual process shall be made with #6010 rod; roots of butt welds shall be chipped or flame-gouged prior to deposition of seal weld or of initial pass of back-up weld.

F. Anchors. Welding rod for welded bar anchors shall be E 70 Series low hydrogen.

G. Exposed Welds. Welds that will be exposed to view, after building is completed, shall be neatly dressed off smooth, flush with the parent metal.

H. Holes for other work:

1. Provide holes required for securing other work to structural steel framing, and for passage of other work through steel framing members, as shown on the approved Shop Drawings.

2. Provide threaded nuts welded to framing, and other specialty items as shown, to receive other work.

3. Cut, drill, or punch holes perpendicular to metal surfaces.

4. Do not flame cut holes or enlarge holes by burning.

5. Drill holes in bearing plates.

2.03 SHOP PAINTING

A. General:

1. Shop paint structural steel work, except those members or portions of members to be embedded in concrete or mortar.

2. Paint embedded steel that is partially exposed on the exposed portions, and the initial 2" of embedded areas only.

3. Do not paint surfaces that are to be welded or high-strength bolted with friction type connections.

4. Apply two coats of paint to surfaces that are inaccessible after assembly or erection. Change color of the second coat to distinguish it from the first.

B. Surface preparation:

1. After inspection and before shipping, clean steel work to be painted.

2. Remove loose rust, loose mill scale, and spatter, slag, and flux deposits.

3. Clean steel in accordance with Steel Structures Painting Council SP-3k, "Power Tool Cleaning."

C. Painting:

1. Immediately after surface preparation, apply structural steel primer paint in accordance with the manufacturer's recommendations and at a rate to provide a uniform dry film thickness.

2. Use painting methods that will result in full coverage of joints, corners, edges, and exposed surfaces.

2.04 GALVANIZING

A. All steel and ferrous metal items located on the exterior of the building, or otherwise specifically shown or noted on drawings to be galvanized, shall be galvanized by the hot-dip process, conforming to ASTM A123-68a. All required hot-dip galvanizing shall be done after fabrication, in the largest sections possible. Items too large for available dip tanks shall be sprayed, by approved methods, with molten zinc to coating thickness of .003" to .004".

B. Weight of the zinc coating per square foot of actual surface shall average not less than 2.0 ounces and no individual specimen shall show less than 1.8 ounces. The thickness of the zinc coating shall be the normal coating to be obtained by immersion in a bath of molten zinc at a temperature of not more than 865 degrees F., and allowed to remain until the temperature of the work being galvanized becomes the same as the bath.

C. All shop galvanized metal work necessitating field soldering or welding which in any manner removes original galvanizing shall be restored by field cold galvanizing with "Galvaloy," "Galvicon," or "Drygalv."

D. After fabrication, work indicated on the Drawings to be galvanized shall be thoroughly cleaned in a pressure spray of hot alkali solution to remove all oil, grease and dirt, and then rinsed in hot water. Work shall then be hot-dip galvanized. Finish work shall be free from twist, bow, warp and excess spelter.

E. Spelter: The slab zinc (spelter) used shall conform to the standard specification for slab zinc of the American Society for Testing Materials.

PART 3 -- EXECUTION

3.01 EXAMINATION

A. Examine the areas and conditions under which work of this Section will be performed.

B. Correct conditions detrimental to timely and proper completion of the Work.

C. Do not proceed until unsatisfactory conditions are corrected.

D. Beginning of installation means acceptance of conditions.

3.02 INSTALLATION

A. All work shall be executed and finished in accordance with approved shop drawings, and to conform to the best practice required to produce the highest-grade construction. Workmanship shall be equal to the best practice in modern structural shops. Portions of work exposed to view shall be finished neatly. Welds shall be neat and uniform.

B. Construction. Type I and Type II, in accordance with Section 1 of the AISC "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings".

C. Substitution of sections or modifications of details, or both, shall not be made without written approval of the Architect.

D. Furnish and deliver anchor bolts, inserts, plates and other incidental items of structural steel required to be built into concrete with instructions or templates for their installation, to respective trades at the proper time to avoid delay in work.

E. Report any errors in shop fabrication or deformation resulting from handling and transportation that prevent proper assembly and fitting of parts immediately to Architect and obtain approval of method of correction. Approved corrections shall be made at no additional cost to the Owner.

3.03 ERECTION

A. Comply with AISC specifications and "Code of Standard Practice," except as may be modified herein.

B. Anchor bolts:

1. Provide anchor bolts and other connectors required for securing structural steel to foundations and other in-place work.

2. Provide templates and other devices necessary for pre-setting bolts and anchors to accurate locations.

C. Bases and bearing plates: Shop weld to columns and members attached to concrete.

D. Splicing:

1. Splice members only where indicated unless, with the Architect's approval, splices not indicated would result in lower costs due to reduced shipping expense.

2. For splices not indicated, submit structural calculations prepared and signed by a structural engineer licensed to practice where the fabricator is located.

E. Gas cutting:

1. Do not use gas-cutting torches for correcting fabricating errors in the structural framing.

2. Cutting will be permitted only in secondary members as acceptable to the Architect.

3. When gas cutting is permitted, finish the gas cut section to a sheared appearance acceptable to the Architect.

F. Surveys:

1. Establish permanent benchmarks necessary for accurate erection of structural steel.

2. Check elevations of concrete surfaces, and locations of anchor bolts and similar items, before erection proceeds.

G. Temporary shoring and bracing:

1. Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads.
2. Provide temporary guy lines to achieve proper alignments of the structure as erection proceeds.
3. Remove temporary connections and members when permanent members are in place and the final connections have been made.

H. Setting bases and bearing plates:

1. Clean concrete bearing surfaces free from bond-reducing materials, and then roughen to improve bond to the surface by either sandblasting or waterblasting.
2. Clean the bottom surface of base and bearing plates.
3. Set loose and attached base plates and bearing plates for structural members in wedges or other adjusting devices.
4. Tighten anchor bolts after the supported members have been positioned and plumbed.
5. Do not remove wedges or shim but, if protruding, cut off flush with the edge of the base or bearing plate prior to packing with grout.
6. Pack grout solidly between bearing surfaces and bases or plates to assure that no voids remain.
7. Finish exposed surfaces, protect installed materials, and allow to cure in strict compliance with the manufacturer's recommendations as approved by the Architect.

I. Field Assembly:

1. Set structural frames accurately to the lines and elevations indicated.
2. Align and adjust members forming part of a complete frame or structure before fastening permanently.
3. Clean the bearing surface, and other surfaces that will be in permanent contact, before assembly.
4. Adjust as required to compensate for discrepancies in elevation and alignment.
5. Level and plumb individual members of the structure within specified AISC tolerances.
6. Establish required leveling and plumbing measurements on the mean operating temperature of the structure, making allowance for the difference between temperature at time of erection and the mean temperature at which the structure will be when completed and in service.
7. Comply with AISC specifications for bearing, adequacy of temporary connections, alignment, and the removal of paint on surfaces adjacent to welds.
8. Bolted connections shown on the Drawings, except as specified otherwise, are for unfinished bolts. Holes for same shall be punched or drilled 1/16 inch larger than the diameter of the bolt, except as called for otherwise on the drawings.
9. Bolting of end under connections and girder splices shall be with turned bolts in reamed holes or with torqued high-strength bolts.

3.04 TESTING AND INSPECTING (Conform to California Code Amendments, Current Edition)

A. Testing:

1. The Owner's selected testing laboratory will pick up specimens and make required tests.

2. Cost of procuring test specimens at locations more than 50 miles from the job site will be paid by the Owner and back-charged to the Contractor.

3. Costs of tests of identified stock will be paid by the Owner; except that if a test fails to comply with the specified requirements, the cost of testing will be paid by the Owner and back-charged to the Contractor.

4. Costs of tests of unidentified stock will be paid by the Owner and back-charged to the Contractor.

B. Test specimens:

1. Test specimens shall be furnished by the steel fabricator, and shall be taken under the direction of the Owner's selected testing laboratory.

2. Each specimen shall be machined by the Owner's selected testing laboratory to dimensions required by ASTM A370.

3. Cost of procuring, making, and machining test specimens shall be considered test costs as defined above.

4. Provide continuous field inspection for all in field welds and tightening of high strength bolts.

C. Identification and tests:

1. Structural steel identified by heat or melt numbers, and accompanied by mill analysis and test reports, does not require additional testing.

2. If structural steel cannot be identified, or if its source is questionable, not less than one tension test and one bend test will be made for each five tons or fractional part thereof.

D. Inspecting:

1. A complete four-sided inspection of steel will be made when required by the Architect.

2. Cost of inspecting will be paid by the Owner subject to the same provisions made above for tests.

3. If, after fabrication and inspection, the work of this Section is found to be defective and to require reinspection, cost of such reinspection will be paid by the Owner and back-charged to the Contractor.

4. Provide labor, equipment, and facilities needed to move and handle the materials to be inspected.

E. Welding inspection:

1. Unless otherwise specified, perform welding under observation of a qualified inspector from a testing laboratory approved by the Architect.

2. Inspect every layer of weld for quality, penetration, and conformity with design requirements.

3. Require the welding inspector to submit a signed report to the Architect, verifying that:

a. The welding is adequate and was performed in conformity with the specified requirements; and

b. Adequate methods have been used to determine the quality of the welding.

4. The welding inspector may use gamma ray, magnaflux, trepanning, or any other aid to visual inspection considered necessary to assure adequacy of welding, or may use ultrasonic testing performed in accordance with pertinent requirements of governmental agencies having jurisdiction.

5. The Owner will pay cost of welding inspection. The Contractor shall pay any reinspections required due to improper installation.

F. Access:

1. Provide access for the testing agencies and inspectors to places where structural steel work is being fabricated or produced, so that required testing and inspecting may be accomplished.

G. Erection inspecting:

1. The Owner's testing and inspecting agency will visually inspect field welded connections, will perform such additional tests and inspections of field work as are required by the Architect, and will prepare test reports for the Architect's review.

2. The testing agency will conduct and interpret the tests, and will state in each report whether the inspected work complies with the requirements, specifically stating all deviations therefrom.

H. Corrections:

1. Correct deficiencies in structural steel work which inspections and test reports indicate to be not in compliance with the specified requirements.

2. Perform additional tests required to reconfirm non-compliance of the original work and to show compliance of corrected work, all at no additional cost to the Owner.

3.05 FIELD PAINTING

A. General:

1. Prepare surfaces in a manner appropriate to the condition, and as approved by the Architect.

2. Clean spots and surfaces where primer coats have been removed, damaged, or burned off, and clean field bolts and other field connections not concealed in the finished work.

3. Remove dirt, oil, and grease.

4. Apply a spot coat of the approved primer.

5. Do not apply paint to wet, damp, oil, or improperly prepared surfaces.

B. Notify the Architect when the work of this Section is ready to receive field painting.

1. Secure inspection and approval by the Architect prior to field painting.

2. Using spray or brush, as recommended by the manufacturer of the approved paint material, fill all joints and corners and cover the surfaces with a smooth unbroken film of at least 1.5 dry mils thickness.

*****END OF SECTION*****

SECTION 05300

METAL DECK

PART 1 -- GENERAL

1.01 SUMMARY

Division 0, Contract requirements and Division 1, General Conditions apply to this section.

1.02 DESCRIPTION

A. Work included: Provide metal deck and accessories where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, Special Conditions, and Sections in Division 1 of these Specifications.

2. Structural Steel.

1.03 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 the work of this Section.

B. When the materials of this Section are used as part of an assembly indicated on the Drawings in which fire-resistive construction ratings are required, demonstrate approval by Underwriters' Laboratories, Inc. and the governmental agencies having jurisdiction.

1.04 SUBSTITUTIONS

Substitutions will be considered per Article 5 of the General Conditions, Project Manual Section 00700.

1.05 SUBMITTALS

A. In accordance with Article 5 of the General Conditions, Project Manual Section 00700. Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

1. Materials list of items proposed to be provided under this Section;

2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements;

3. Shop Drawings showing layout of decking, with details of materials, gages, accessories, openings, finishes, welds, and other pertinent conditions;

4. Manufacturer's recommended installation procedures which, when accepted by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the work.

1.06 PRODUCT HANDLING

Comply with pertinent provisions of Division 1.

PART 2 -- PRODUCTS

2.01 METAL DECK UNITS

Properties:

1. Form from galvanized steel sheets complying with ASTM A446, with a minimum yield strength of 33,000 psi, and coat in accordance with ASTM A525, designation G60.

2. Provide section properties shown on the Drawings.

   a. Roof: Acceptable manufacturers: A.S.C. Pacific, Inc., Type B-36, 1-1/2" deep, 20 gauge.

   b. Floor: Acceptable manufacturers: A.S.C. Pacific, Inc., Type B-36 HiForm, 1-1/2" deep, 20 gauge composite floor deck.

2.02 ACCESSORIES

A. Provide accessories specifically designed to be used with the metal deck units supplied to the work, and as normal to the uses shown on the Drawings including, but not necessarily limited to, ridge and valley plates, closures, cant strips, and sump pans if required.

B. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the acceptance of the Architect.

PART 3 -- EXECUTION

3.01 EXAMINATION

A. Examine the areas and conditions under which work of this Section will be performed.

B. Correct conditions detrimental to timely and proper completion of the Work.

C. Do not proceed until unsatisfactory conditions are corrected.

D. Beginning of installation means acceptance of conditions.

3.02 INSTALLATION

A. Prior to start of installation, verify that beams are in proper alignment and that surfaces are clean for welding.

B. Place each unit on the supporting steel framework, and adjust to final position prior to permanent welding.

   1. Fasten panels to each structural support by puddle welds not less than 3/4" diameter (1/2" effective diameter) at spacing noted on Drawings, or required by code approvals.

   2. Fasten sheet metal accessories by tack welding or screwing at 6" on center.

   3. Weld sump pans, when required, directly to the deck at 6" on center around the perimeter of the pan.

   4. Panel edges (side seams) shall be welded as noted on the Drawings, or where not noted provide a minimum of 1-1/2" long seam welds at 12" on centers.

C. Complete installation in accordance with the manufacturer's recommendations.

3.03 TESTING AND INSPECTION

A. Comply with California Code Requirements Amendments to the Building Code, "Testing and Inspection."

B. Unless otherwise specified, perform welding under observation of a qualified inspector from a testing laboratory approved by the Architect and O.S.A.

C. Inspect every weld for quality, penetration, and conformity with design requirements.

D. The welding inspector is to submit a signed report to the Architect, verifying that:

1. The welding is adequate and was performed in conformity with the specified requirements; and

2. Adequate methods have been used to determine the quality of the welding.

3.04 TOUCH-UP

Upon completion of installation, and as a condition of its acceptance, visually inspect each item installed under this Section and locate surfaces where finish was damaged.

1. Touch-up galvanized surfaces with zinc-rich primer or other galvanize repair paint accepted for the purpose by the Architect.

2. Touch-up other damaged surfaces as required to return the surfaces to condition commensurate with the services required.

***** END OF SECTION *****

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SECTION 05410

METAL STUD FRAMING

PART 1 -- GENERAL

1.01 SUMMARY

Division 0, Contract requirements and Division 1, General Conditions apply to this section.

1.02 SCOPE OF WORK

This section includes structural and non-structural cold-formed metal framing and furring systems as indicated and specified.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. A 653 – General Requirements for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

2. C 955 – Load Bearing (Transverse and Axial) Steels Studs, Runners (Track) and Bracing or Bridging for Screw Application of Gypsum Board and Metal Plaster Bases.

3. C 1007 – Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.

B. American Welding Society (AWS).

1. D1.1 – Structural Welding Code.

1.04 SUBSTITUTIONS

Substitutions will be considered per Article 5 of the General Conditions, Project Manual Section 00700.

1.05 SUBMITTALS

A. In accordance with Article 5 of the General Conditions, Project Manual Section 00700.

B. Product Data: Submit framing manufacturer's literature, including a current I.C.B.O. Research Committee Report, showing tabulation of structural properties, load capacities, dimensions, metal gages and the type of coating for all framing and furring members. Submit powder driven fastener manufacturer's current I.C.B.O. Research Committee Report.

C. Shop Drawings: Include plans, elevations, and details for wall and ceiling framing systems and special assemblies where the design is not indicated. Show: profiles, gage, cross sections and spacing of framing members; sizes, connections including welding procedures and electrodes, attachments, reinforcing, anchorage, size and type of fasteners, and accessories required for proper installation.

D. Submit certification from manufacturer of steel framing material that all products have been rolled from new steel sheet material.

1.06 QUALITY ASSURANCE

A. Welder Qualifications: AWS Certified.

B. Regulatory Requirements: Support framing for fire resistive walls and ceilings shall conform to "Fire Resistive Standards" of the latest adopted edition of the Uniform Building Code and shall be listed in the current UL "Fire Resistance Directory".

1.07 DELIVERY, STORAGE, AND HANDLING

Deliver materials to the project site and store them in adequately ventilated dry locations. If it is necessary to store materials outside, stack them off the ground on a platform and fully protect them from the weather.

PART 2 -- PRODUCTS

2.01 MANUFACTURER'S

Load Bearing Metal Stud System: One of the following or equal:

1. Dietrich.
2. LA Metal
3. Metal Stud Forming Corp.
4. Western Metal Lath Company.

2.02 MATERIALS

A. Steel:

1. ASTM A 653, Grade 33.
2. Yield Strength; Minimum yield strength of 33,000 PSI.
3. Galvanized to G60 in accordance with ASTM A 653.

B. Screws, Track to Stud, Stud to Stud: Self-drilling, self-tapping, hot-dip galvanized.

C. Screws, Track to Wood: Hot-dip galvanized, long enough for minimum 1-inch penetration into wood.

D. Nails, Track to Wood: Hot-dip galvanized, long enough for minimum 1-1/2 inch penetration into wood.

E. Bolts, Nuts and Washers: As specified in Section 05500, hot-dip galvanized.

F. Anchorage Devices: Powder Activated Fasteners.

G. Welding Materials: AWS D1.1.

H. Primer: As specified in Section 09900.

2.03 FABRICATION

A. Fabricate studs, runners, bracing, and bridging in accordance with ASTM C 955.

B. Studs: Minimum 20 gauge steel sheet, 3-5/8 inches wide, unless otherwise indicated on the Drawings.

C. Track: Minimum 20 gauge steel sheet, channel shaped, minimum 1-3/8 inch flanged same width as studs, for tight fit, unless otherwise indicated on the Drawings.

D. Backing for fixtures: Minimum 16 gauge steel sheet, 3-5/8 inches wide, unless otherwise indicated on the Drawings.

E. Plates, Gussets, Clips: Steel and steel sheet, thickness suitable for conditions, manufacturer's standard shapes.

PART 3 -- EXECUTION

3.01 EXAMINATION

A. Examine the areas and conditions under which work of this Section will be performed.

B. Correct conditions detrimental to timely and proper completion of the Work.

C. Do not proceed until unsatisfactory conditions are corrected.

D. Beginning of installation means acceptance of conditions.

3.02 NON-STRUCTURAL WALL FRAMING

A. Erect load bearing metal stud system in accordance with ASTM C 1007.

B. Framing may be prefabricated into panels before erection. Brace panels to prevent racking. Lift panels so as to prevent local distortion of members.

C. Make provision for erection stresses. Provide temporary alignment and bracing. Align runners accurately at the floor and ceiling. Where partitions abut underside of steel or concrete construction, install runner and bent plate as detailed. Restrain lateral movement of the runners with bent plated channels.

D. Cut framing members to fit squarely against abutting members. Hold Members firmly in position until fastened.

E. Attach tracks to the floor and ceiling construction at maximum 2 inches for track ends and at maximum 24 inches on center. Fasten track to concrete with powder actuated fasteners or concrete stub nails, to steel with bolts or welds, and to wood with screws or nails. Butt-weld or splice track butt joints in accordance with AWS D1.1.

F. Use 1 piece, full-length studs without splices between tracks.

G. At curved walls, unless otherwise recommended by stud manufacturer, notch runners and form to indicated radius. Reinforce notched flanges with continuous, one inch by 25 gauge straps, clinched to runners around curve and to extend 4 inches beyond curve, where space permits. Space studs not to exceed 8 inches on center. Anchor each stud to strap reinforcing with screws.

H. Seat studs squarely in upper and lower tracks with study flanges abutting track webs. Securely attach studs to tracks. Fasten non-load bearing studs to provide for deflection. Space studs at maximum 16 inches on center, maximum 2 inches from abutting walls, and at each side of openings, unless otherwise indicated on the Drawings.

I. Connect studs to racks with screws or welds in accordance with manufacturer's instructions. Secure both stud flanges at door and window jambs, and partition intersections and corners to track flanges. Weld members that form trusses in accordance with AWS D1.1. Do not tie members with wire.

J. Framing at Doors: Unless otherwise indicated, provide no lighter than 16 gauge studs at each side of all doors or there openings through partitions. Over metal doorframes, place a cut-to-length section of runner with a web-flange bent at each end and fasten to adjacent vertical studs with 2 screws in each flange. Position a cut-to-length stud at the location of vertical joints over doorframe header extending to the top of the wall. Install a horizontal stiffener channel above each door extending to engage first stud beyond each jamb and attach channel to each stud.

K. Use minimum 3 studs at corner and minimum 2 studs at jambs of openings.

L. Frame both sides of expansion and control joints with separate studs. Do not bridge the joint with components of stud system.

M. Install cripple studs above and below openings at same spacing as full-length stud spacing.

N. Attach cross studs or furring channels to studs for attachment of fixtures behind lavatory basins, toilet and bathroom accessories, grab bars and other items anchored to partitions or walls.

O. Install framing between studs for attachment of electrical boxes and other mechanical and electrical items.

P. Touch-up field welds and scratched surfaces with primer.

3.03 SUSPENDED CEILING FRAMING

A. Space number 9 hanger wires at 36 inches on center to carry 1-1/2 inch runner channels spaced 48 inches apart. Tie wires securely around channels, using at least 2 turns and attach securely to concrete or steel framing above.

B. Install 1-1/2 inch runner channels and adjust so that furring is in true and accurately level planes. Lap runner channels at least 12 inches at splices and securely tied together with number 18 wire, double wrapped 2 inches from each end of splice. Main runners and cross runners shall not be let into nor shall contact abutting partitions. Locate main runners within 6 inches of walls to support ends of cross furring.

C. Space cross furring channels or "hat" sections, as applicable, 16 inches on center (maximum) and in accordance with Uniform Building Code requirements. Saddle-tie cross furring and hat section toe each runner channel with not less than 2 strands of number 16 tie wire 1 inch from ends of splice.

D. Suspensions under Ducts and at Special Conditions: For hangers spaced from 48 inches on center to 66 inches on center (maximum), use number 6 wire hanger and 2 inch channel runners.

3.04 CLEAN-UP

On completion of work, remove all excess material, equipment, debris and cuttings; dispose of away from premises. Leave work in clean condition.

***** END OF SECTION *****

SECTION 05720

METAL STAIRS AND RAILINGS

PART 1 -- GENERAL

1.01 SUMMARY

Division 0, Contract requirements and Division 1, General Conditions apply to this section.

1.02 SECTION INCLUDES

Pre-engineered Ferric powder coated steel and stainless steel Railing System. All drawings, general and supplementary conditions including division one specifications apply to this section.

1.03 REFERENCES AND DESIGN REQUIREMENTS

A. Principle items specified is this section are:

1. Stainless steel and Stainless/wood combination handrails.
2. Stainless steel guardrails or other ornamental barrier railings.
3. Stainless steel or tempered glass infill panels.
4. Steel posts and fastener plates with powder coated finishes.

B. Design requirements are based on IBC and ADA standards:

1. Guardrails and handrails shall meet or exceed all applicable building codes.
2. Railings shall have high strength steel to comply with structural requirements with an appropriate safety margin.
3. All internal members shall be stainless steel or aluminum to eliminate the possibilty of rust.
4. Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.04 DEFINITIONS

Terms and definitions from ASTM E985 and ISO/TC 59 for railing related items apply to this section.

1.05 SUBSTITUTIONS

Substitutions will be considered per Article 5 of the General Conditions, Project Manual Section 00700.

1.06 SUBMITTALS

A. In accordance with Article 5 of the General Conditions, Project Manual Section 00700.

B. Samples: Provide 6" long handrail samples complete with supports and rosette covers to demostrate stainless steel grade and finish colored components to be included if specified, color as required.

C. Shop Drawings: Provide drawings for architectural approval including plans, elevations, sections and details necesarry to clearly indicate the design of the railing system and and the method of attachment to the various building elements.

D. Structural computations: Provide PE (Profesional Engineer) calculations when required by contract prepared by a structural engineer licensed in the state of the project to demonstrate satisfactory structural compliance to applicable building codes. Calculations, when possible should be based on Final Fabrication drawings.

E. Maintenance instructions: Provide manufacturers maintenance and cleaning instructions.

F. Warranty: Provide manufacturers warranty effective from completion of work.

G. Qualification data: Qualification data for factory authorized installers specified in *Quality Assurance* is to demonstarate their capabilities and experience. Include list of completed projects with project and architect names.

1.07 QUALITY ASSURANCE

A. Provide all materials, labor and equipment necessary to fabricate and completely install handrails, guardrails, and infill panels as shown on drawings or specified herein.

B. Single Source Responsibility: Materials shall be supplied and installed by HDI Railing Systems, 3905 Continental Drive, Columbia PA 17512 (Tel: 717-285-4088 Fax 717-285-5083).

C. Execution tolerance plus/minus 5/64" (2 mm).

1.08 STORAGE

A. Store handrails and railing systems in clean, dry location, away from uncured concrete and masonry, protected against damage of any kind.

B. Materials must be kept in original packing until installation.

C. Materials to be stored at not lower than -40°C (-40°F) or higher than 100°C (212°F).

1.09 PROJECT CONDITIONS

A. All measurements for handrails and railings should be taken from construction site elements to which railings are to fasten. This information to be recorded on final shop drawings.

B. Coordinate fabrication schedule with construction progress to avoid delay of work.

PART 2 -- PRODUCT

2.01 MANUFACTURER

Manufacturer shall be HDI Railing Systems, a U.S. manufacturer of a custom pre-engineered, mechanically fastened guardrail and handrail system, in strict compliance with all technical requirements of the drawings and specifications. Miscellaneous metal fabricators/suppliers will not be acceptable. This standard is based on HDI Railing Systems, 3905 Continental Drive, Columbia PA 17512 (Tel. 717.285.4088 Fax. 717.285.5083).

2.02 MATERIALS: GUARDRAILS AND HANDRAIL SYSTEM

A. All rails and other tubular components shall be constructed using the following:

1. Stainless steel grade UNS 1.4305, type 304; surface to be 240 grain/grit finish; tubes 1-1/2" (38mm) outside diameter by 5/64" (2 mm) wall thickness.

2. Optional natural wood handrails and top rails are connected to stainless steel true bar secured to posts using stainless steel T-connectors on top of posts: Standard wood types are available in natural beech, birch or maple, other wood types available upon request. All custom stains are subject to customer approval and require customer samples. Stainless steel true bar to be inserted into the underside of the wood as a structural element, wood is slotted to recieve the true bar. All bends required for either sloped rail or other necesarry changes in direction to be manufactured from stainless steel with a 240grit finish to match posts and other stainless steel fittings. Transitions from wood to stainless steel either at posts or at bends to be smooth and without burrs.

B. All posts and other components shall be constructed using the following:

1. Post Steel to be type A36 - 2" (50mm) by ¼" (6mm). Hardware attachment surface to be on inside of post formed from the post bar. Attaching hardware

to be fastened by vertically sliding clamps. All steel to be powder coated to required color.

2. Surface and side mount fastening plates and clamps to be made from steel type A36. All steel to be powder coated to required color.

3. Clamps, end block at top of post and handrail attachment all to be Stainless steel grade UNS 1.4305, type 304. Surface to be 240 grain/grit finish to match handrail finish.

4. Salt water and chlorinated swimming pool environments require stainless steel grade 316 and an exterior grade powder coating formulation; Stainless steel surface to be 240 grain/grit finish; component parts are dimensionally equivalent to those described in 2.2.2 (a), (b) and (c).

C. Fastening bolts to be stainless steel or other high strength material as determined by engineering requirements.

D. Exterior and aggresive environments require stainless steel grade 316 to minimize maitenance requirements.

2.03 GLASS PRODUCTS, GLAZING AND INFILL MATERIALS

A. Tempered glass: Provide fully tempered safety glass with polished edges and dubbed (blunt) corners complying with ASTM C1048. Kind FT (fully tempered), condition A (un-coated). Types 1 (transparent glass, flat), quality Q3 (glazing select), class, thickness and manufacturing process as indicated below.

B. Clear glass: Class 1 clear

C. Tinted glass: Class 2 (tinted heat absorbing and light reducing), Manufacturers standard tint color indicated below.

1. Bronze

2. Gray

3. Custom pattern, etch or surface as specified herein.

D. Allowable thickness 3/8" (9 mm) to 1/2" (13 mm) to be noted on final shop drawings.

E. Manufacturing process: Manufacture fully tempered glass by horizontal (roller hearth) process

with roll wave distortion parallel with bottom edge of glass as installed.

2.04 STAINLESS PERFORATED METAL PANELS

Stainless steel perforated metal infill panels with continuous frame by HDI Railing Systems. Installed post centers are required complete with sketch, to allow panel fabrication. Standard patern to be 3/8" square holes on ½" centers surrounded by a continuous 1-3/4" frame with hairline joints.

2.05 STAINLESS STEEL INFILL RAILS

Stainless steel infill rods, max. 9 ea.with guardrail height 42". Infill rails to be 5/8" O.D. (15mm * 2mm) stainless steel. Brushed finish #6 polished radially. Clamping knobs and fixtures to be stainless steel finished to match.

2.06 STAINLESS STEEL PICKET RAILS

Stainless steel solid vertical picket rails 3/8" (9mm) supported by upper and lower rails 5/8" (15mm * 2mm). Picket rails on approx. 4" centers, gaps between pickets and adjacent posts to be equalized depending on required rail length and site conditions (not to exceed 4"). Brushed finish #6 on vertical picket is to be lengthwise (vertically oriented), upper and lower supports to be polished radially. Clamping knobs and fixtures to be stainless steel finished to match.

2.07 FASTENERS

Anchors shall be fabricated from stainless steel or other materials as determined by engineering requirements with capability to sustain, without failure, load imposed within a safety factor of 4, as determined by testing per ASTM E488.

2.08 FABRICATION

A. Fabricate railing system for compliance with structural requirements of applicable code.

B. Pre-assemble railings prior to shipping to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for re-assembly and for coordination with shop drawings.

C. Stainless steel tubing cuts shall be square, without burrs and where exposed, rounded to produce smooth rigid and hairline joints.

PART 3 -- EXECUTION

3.01 EXAMINATION

A. Examine the areas and conditions under which work of this Section will be performed.

B. Correct conditions detrimental to timely and proper completion of the Work.

C. Do not proceed until unsatisfactory conditions are corrected.

D. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

Provide information on fastening point locations for posts where necessary to relevant parties.

3.03 INSTALLATION

A. Installation shall be by HDI Railing Systems or a qualified, authorized representative of the manufacturer.

B. Installation must be in accordance with standard or non-standard, yet applicable details (instructions) included on installation/shop drawings provided by HDI Railing Systems.

C. Install components plumb and in-line, accurately fitted, free from distortion or defects and securely anchored to structure.

D. Provide anchors, plates, angles, etc., necessary for connecting railings to structure.

E. Any and all field welding shall be by a certified welder.

F. Access for anchors that require through bolting either vertically or horizontally to be made available through General Contractor.

3.04 ERECTION TOLERANCES

A. Maximum variation from plumb shall be 1/4".

B. Maximum offset from true alignment for every 50-foot of railing shall be 1/4", non-accumulative.

3.05 PROTECTION AFTER INSTALLATION

General contractor to provide protective covering on handrails and guardrails if construction is not yet finished in the area where the railings are installed.

3.06 MAINTENANCE AND CLEANING

A. Railings shall be cleaned, including infill panels, by contractor to the satisfaction of the owner.

B. Wipe with moistened cloth only. Do not use cleaning agents with abrasive or acid/alkaline content.

3.07 CORRECTION OF DEFICIENCIES

All deficiencies in work and/or items not meeting specified requirements shall be corrected in order to meet specification requirements at no additional cost to owner.

*****END OF SECTION*****

SECTION 06100

ROUGH CARPENTRY

PART 1 -- GENERAL

1.01 SUMMARY

Division 0, Contract requirements and Division 1, General Conditions apply to this section.

1.02 SCOPE OF WORK

Work of this Section includes everything necessary for and incidental to completing all Rough Carpentry and its fasteners and supports as indicated on the Drawings and designated herein.

1.03 QUALITY CONTROL

A. Field Inspection:

1. At site, verify all conditions affecting work of this Section, taking required field measurements. Report any discrepancies between Drawings and field dimensions to the Architect before beginning work. Commencing work shall indicate acceptance of conditions and surfaces underlying or adjacent to work of this Section.

2. Field Measurements shall be required to ascertain precise configurations and quantities required.

B. Delivery and Storage:

1. Deliver and store lumber on sills and cover for protection.

C. 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 the work of this Section.

D. Reference Standards:

1. UBC -- All work shall conform or exceed the standards set forth in the current edition of the Uniform Building Code.

2. CBC: Work shall conform to California Code Amendments, current edition.

3. ICBO -- All rough hardware products shall be as approved by the International Conference of Building Officials for the use indicated.

4. ASTM -- Designation as specified in the materials paragraph hereinafter.

5. OSHA: Equipment used in work of this Section shall comply with the requirements established by the Occupational Safety and Health Administration.

6. Structural and Framing Lumber and plywood shall be graded in accordance with "Standard Grading and Dressing Rules No. 16" of West Coast Lumber Inspection Bureau.

E. Grade Marking: Each piece of structural and framing lumber and plywood must bear official grade mark of association under whose rules it was graded.

1.04 CLOSEOUT

A. Upon completion of work of this Section, the Subcontractor shall remove all equipment, excess material, and waste products from the site.

B. Provide (1) one-year warranty.

1.05 SUBSTITUTIONS

Substitutions will be considered per Article 5 of the General Conditions, Project Manual Section 00700.

1.06 SUBMITTALS

In accordance with Article 5 of the General Conditions, Project Manual Section 00700.

PART 2 -- PRODUCTS

2.01 MANUFACTURERS

A. Products shall be all new, bearing grade markings and shipped in quantities sufficient to maintain proper job progress.

B. Lumber shall be from a single source when they are similar in usage to avoid minor discrepancies in finished dimension and quality.

C. Fasteners shall be as manufactured by:

1. Timber Connectors:

Simpson Company

220 North Palm Street

Brea, CA 92621 (714) 871-8873

2. Power Driven Pins and Wedge Anchors:

Hilti Fastening Systems

P.O. Box 45400

Tulsa, OK 74145 (918) 627-9711

3. Bolts and Anchors: Any source conforming to the requirements designated herein.

D. Acceptable alternate manufacturers are subject to Architect's approval based upon conformance with the specified products functional properties and compatibility with other project materials.

2.02 MATERIALS

A. General:

1. Sizing: Provide S4S Lumber, dressed to standard sizes of association under which it is graded.

2. Moisture Content:

a. Lumber: Dry to approximately same moisture content as anticipated when in service, maximum 19% moisture content for rough carpentry lumber and 12% for finish lumber.

b. Treated Lumber: Dried before and after treatment to maximum 15% moisture content.

3. Glue Laminated Beams: Re-sawn yellow cedar Architectural grade for exterior use; to have concealed connections with countersunk bolts.

B. Usage: Use various grades as follows, unless otherwise noted on the drawings:

1. Grades as follows for studs and vertical framing unless otherwise shown or specified on structural drawing, nonstructural furring, concealed blocking and stripping, and miscellaneous nailers and backing.

Size:	Grade:
1 inch boards	"Construction"
2x4 studs, sills, plates, etc.	No. 2 or better
Other framing lumber, 2 x 4 up to 4 x 12	No. 2 or better
Beams 5 inches and over in least dimension	No. 1 or better
Post & Columns 5 inches and over in least dimension	Select Structural
Miscellaneous blocking, bridging, etc.	"Construction"
Sill plate	Redwood # 1 Foundation Grade
All other framing lumber not noted	No. 1

2. Plywood Sheathing: Structural 1, Douglas Fir plywood complying with "Product Standard PS-1-95, issued by U.S. Department of Commerce, grade marked by Douglas Fir Plywood Association or grade marked and stamped "Teco Tested Douglas Fir Plywood" or "Pittsburgh Testing Laboratory Analysis Inspection", thickness as indicated on drawings. Furnish in 48" x 96" sheets. Grade C.D., Exterior glue all locations except as noted otherwise on Drawings -- "C" face where exposed.

3. Fire Retardant: Chemically treated and pressure impregnated; capable of providing a maximum flame spread/fuel contribution/smoke development rating of 25; Provide UL approved identification on fire resistant treated materials.

C. Fasteners:

1. Timber Connectors: Manufactured from galvanized steel conforming to ASTM A525, ASTM A526 and ASTM A527. Plate material shall conform to ASTM A36.

2. Power driven pins shall conform to the designated manufacturers production specifications.

3. Screws: Standard domestic manufacture, bright steel. Galvanized for exterior use. Brass, bronze, aluminum or stainless when used to fasten items made of those metals.

4. Galvanizing shall be performed by the hot dip process after fabrication in as large sections as practicable.

5. Common Nails: Commercial Standard, 16d unless otherwise specified. Galvanized for exterior work.

6. Threaded Nails: "Screw-Tite", "Stronghold", or equal, either spiral-thread or annular-grooved; "Common" type for framing; "underlay floor nails" for plywood underlayment over sub-flooring; "sinker" type for plywood sub-flooring and risers.

7. Bolts: Standard mild steel square head machine bolts with square nuts and malleable iron or steel plate washers or carriage bolts with square nuts and cut washers as indicated. Bolts, nuts and washers wholly or partially exposed on exterior shall be galvanized. Conform to ASTM A307 and A325-F.

8. Steel Plates and Angles: ASTM A-36, galvanized after fabrication except at stage of building #300 use corrosion preventive primer.

9. Lag Screws, Shear plates, Split Ring Connectors: As per National Forest Products Association, "National Design Specification for Stress-Grade Lumber and its Fastenings."

10. Framing Anchors, Joist Hangers, Etc.: As made by Simpson Company, or similar devices as approved by Architect, as indicated on Drawings.

11. Miscellaneous Clips, Steel Assemblies: As per ASTM A-36.

12. Glue to meet APA A-FG-01 Specifications.

13. Washers: malleable round plain iron washers by Industrial thread Products (800) 976-BOLT. Paint to match stain finish of Trellis. Conform to ASTM A307 and A325.

D. Wood Backing and Nailing Strips:

1. Provide all wood backing, furring or blocking indicated or required for proper installation and attachment of Work of other trades. Form lumber that has been cleaned and is in sound condition may be used, unless other material is indicated.

2. Provide wood stripping where indicated for attachment of finish materials to wood surfaces.

E. Sheathing Paper: Shall be 15-pound asphalt impregnated building paper.

1. Install sheathing paper on exterior wall sheathing, lay horizontally starting at bottom; lap edges and ends 6" and extend back of window casings and other finish work.

2. Provide two layers at all locations over plywood sheathing.

F. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 -- EXECUTION

3.01 EXAMINATION

A. Examine the areas and conditions under which work of this Section will be performed.

B. Correct conditions detrimental to timely and proper completion of the Work.

C. Do not proceed until unsatisfactory conditions are corrected.

D. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

A. Supervision: Perform rough carpentry work under the direction of a capable, experienced foreman. Cooperate with other tradesmen doing work. Carefully plan and layout work of construction.

B. Cutting: Under this Section, have skilled mechanics do cutting and framing of wooden members required to accommodate structural members, routing of piping, conduit, ducts and installation of mechanical, electrical, or other apparatus or equipment. Cutting must be approved by the Architect and as indicated on the structural drawings.

C. Framing: Provide necessary shoring, bracing, or temporary structural units as required. Accurately saw-cut lumber and timber framing and fit into respective positions and securely nail, spike, lag screw, or bolt together as indicated, or specified.

D. Nailing: Conform to nailing schedule in the UBC and California Code Amendments 1995 except as shown on drawings. Follow more stringent requirements in each case.

E. Storage: Store in dry, ventilated, covered location. Re-dry any wet lumber to maximum specified moisture content before installing.

F. Coordinate work with related trades to prevent undue delay in job progress.

G. Provide materials in sufficient quantities on job site to complete work and to accommodate minor unforeseen changes and additions in the scope of work.

3.03 INSTALLATION

A. General: Provide framing as shown and specified. Accurately cut and fit members; securely nail, bolt or anchor together as shown in such a manner to produce rigid substantial construction free of squeaks or other defects.

B. Rough Framing: Fit closely; set accurately to required lines and levels and secure rigidly in place. Set horizontal and inclined members with crown edge up. Do not cut, notch or bore structural members without specific approval, except for not more than one-fifth the depth of the member. Reinforce cut members as directed. Bolt, nail and spike thoroughly with not less than sizes and quantities indicated. Structural members shall provide full contact at all bearing surfaces.

1. Studs: Make exterior and separation walls of nominal 2x6 studs, 16 inches on center and remaining partition walls of 2x4 studs at 16" o.c. or as required, to be larger to accommodate mechanical or electrical equipment, piping and fixtures or the fixtures or equipment of any other trade. Unless otherwise indicated, all panels, valve covers, cleanouts, devices, access doors, recessed cabinet boxes, etc. shall be mounted flush with the adjacent wall surface. When any such item is of a depth where it is not practical to use solid studding to the full thickness of the wall, the wall shall be furred. When furring is required it shall extend the full width of the room on the wall in which it occurs and from floor to roof or ceiling joists. The studs comprising all interior partitions and the wall material affixed to them shall extend from floor to ceiling joist framing except as otherwise indicated.

2. Top plates in bearing partitions shall be doubled and lapped at each intersection with walls or partitions. Stagger joints in upper and lower members of top plate not less than 4 feet. Exception: where headers require top chords to be cut out, ties are required according to Plan.

3. Provide blocking not less than 2 inches in nominal thickness of same width as studs as shown on Drawings.

4. Frame corners solid where stud walls or partitions meet, or as indicated on Drawings.

C. Nailing: Drive nails not closer together than 1/2 their length unless driven in drilled holes, nor closer to edge of member than 1/4 its length; drill holes slightly smaller than nail diameters when necessary to prevent splitting. Penetrate second or farther member not less than 1/2 length of nail.

D. Bolts and Nuts: American Standard with malleable or cut steel washers under heads and nuts except where bearing on steel plates or other steel attachments. Clamp members together and bore holes of same diameter as bolts, true to line, drive bolts in place and draw nuts up tight. Immediately prior to enclosing with finish or, if left exposed, and upon completion of other work, draw bolts tight again.

E. Connectors: Types shown and where not shown, of types most suitable for substantial concealed construction. Nail per manufacturer's recommendations.

F. Grounds: Provide and set wood grounds at points where trim occurs and where shown. Douglas Fir S1S, thickness and location required. Set plumb or level and true-to-line. Securely nail to wood backing at each stud or bearing.

G. Nailing, Strips and Plates: Provide and securely fasten in place wood nailing strips, plates, blocking, etc., indicated or required to complete work. Bolt nailing strips in connection with metal work as indicated.

H. Wood Backing: Provide wood backing to receive electrical fixtures and equipment, bases, cabinets, door stops and plates and other fixed equipment, as required to complete the work, securely nailed to frame work. Provide backing at 7'-6" typical in all classroom areas.

I. Install all fasteners and supports as required on the Drawings as specified herein.

***** END OF SECTION *****

SECTION 06200

FINISH CARPENTRY

PART 1 -- GENERAL

1.01 SUMMARY

Division 0, Contract requirements and Division 1, General Conditions apply to this section.

1.02 SCOPE OF WORK

Supply and install complete Finish Carpentry Work as shown on Drawings and as specified herein. Provide hardware and attachment accessories as required for a complete and proper installation.

1.03 SHOP DRAWINGS

Per General Conditions, submit shop drawings of millwork at full size or large scale showing sizes, materials, grain run, methods of construction, connection to adjacent members and installation. Indicate all backing members for installations and all hardware.

1.04 MEASUREMENTS

Verify all dimensions shown on Drawings by taking field measurements; proper fit and attachment of all parts is required.

1.05 QUALITY CONTROL

Following standards apply to Work of this Section except where more stringent requirements are specified herein:

1. Architectural Woodwork Institute "Quality Standards".
2. Western Wood Products Association Manual.
3. American Wood Preservers Association Specifications.

1.06 SUBSTITUTIONS

Substitutions will be considered per Article 5 of the General Conditions, Project Manual Section 00700.

1.07 SUBMITTALS

In accordance with Article 5 of the General Conditions, Project Manual Section 00700.

PART 2 -- PRODUCTS

2.01 MATERIALS

A. Douglas Fir: West Coast Lumber Inspection Bureau "Standard Grading and Dressing Rules" and Western Wood Products Association, graded "C" and better, flat grain grade marked by WCLIB or WWPA.

B. Douglas Fir Plywood: U.S. Product Standard PS-1, American Plywood Association, grade trademarked "C-D", plugged, exterior glue, sanded.

C. Blocking, Furring, etc.: Standard Grade Western White Pine, Construction grade Douglas Fir or other equally sound softwood, as graded by WCLIB or WWPA.

D. Softwood Lumber: PS 20; custom grade in accordance with AWI maximum moisture content of 6%; of quality capable of transparent finish.

E. Hardwood Lumber: FS MM-L-736; custom grade in accordance with AWI; maximum moisture content of 6% of quality capable of transparent finish.

2.02 ACCESSORIES

A. Nails, bolts, nuts, washers, blind fasteners, lags and screws, size and type to suit application.

B. Wood Filler: oil base, tinted to match surface finish color.

C. Shelf Standards and Rests: Knape and Vogt #255 & #256 for recessed application. Provide two hold down clips for each shelf in the slot above

D. Closet Hanger Bars and Supports: Knape and Vogt #770, #660, #734, #735, and #1195. Provide intermediate support of spans over 6'-0".

2.03 SHOP TREATMENT OF WOOD MATERIALS

A. Shop pressure treat wood materials requiring UL fire rating or preservations.

1. Provide UL approved identification on fire retardant treated material.

B. Wood Preservative (PT type) Wolmanized, Pressure Treated Lumber, manufactured by Osmose Wood Products or approved equal.

C. Fire Retardant (FR-S Type) chemically treated, and pressure impregnated, capable of providing a maximum rating of 25; manufactured by Demose Wood Products. Dricon FRT or approved equal.

PART 3 -- EXECUTION

3.01 EXAMINATION

A. Examine the areas and conditions under which work of this Section will be performed.

B. Correct conditions detrimental to timely and proper completion of the Work.

C. Do not proceed until unsatisfactory conditions are corrected.

D. Beginning of installation means acceptance of conditions.

E. Verify that surfaces and openings are ready to receive work and field measurements are as shown on Shop Drawings and instructed by the fabricator.

F. Verify that mechanical, electrical, and building items affecting work of this Section are placed and ready to receive this work.

3.02 PRIMING

Back paint all wood surfaces inaccessible and unexposed after installation before delivery with an approved linseed oil and aluminum primer.

1. Prime coat all unfinished metal parts.

2. Prime paint surfaces of items or assemblies to be in contact with cementitious materials.

3.03 FINISH CARPENTRY INSTALLATION

A. Use only hot dip galvanized or aluminum finish or casting nails. Set nails for putty stopping in surface members. Hammer marks not acceptable on any exposed finished surface and may be cause rejection of Work by Architect.

B. Make all end splices exposed in finished members bevel splices and not square butted. Install members in as long lengths as possible.

C. Install Work to details shown, plumb, level and to line and securely anchored per AWI custom quality standard. Make scribes where required accurate. Miter corners of trim.

D. Provide and install other miscellaneous millwork items and related Work required to complete Work of this Section.

E. Prepare all woodwork installed hereunder by cleaning and sanding as required to receive finishes specified in Section "Painting and Finishing".

F. Install all doors and frames; finish hardware and bathroom accessories per manufacturer's recommendation.

G. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth and site finish.

***** END OF SECTION *****

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SECTION 06410

CUSTOM CASEWORK

PART 1 -- GENERAL

1.01 SUMMARY

Division 0, Contract requirements and Division 1, General Conditions apply to this section.

1.02 SCOPE OF WORK

A. Furnish all: labor, materials, equipment and services necessary and/or reasonably incidental to the proper execution of cabinetwork, including hardware as shown on Drawings and specified herein.

B. Work includes counters, shelving, countertops and cabinetry.

1.03 STANDARDS OF WORKMANSHIP

Quality of millwork and fabrication shall conform to:

1. Woodwork Institute of California (WIC)
2. National Kitchen Cabinet Association (NKCA)
3. American Woodworkers Institute (AWI)

1.04 SUBSTITUTIONS

Substitutions will be considered per Article 5 of the General Conditions, Project Manual Section 00700.

1.05 SUBMITTALS

A. In accordance with Article 5 of the General Conditions, Project Manual Section 00700.

B. Submit:

1. Submit Shop Drawings, include materials, component profiles, fastening methods and schedule of finishes.
2. Submit samples of finishes.

1.06 WARRANTY

Contractor Guarantee: Contractor guarantees the work covered by the specification against all defects in material and workmanship for a period of not less than two (2) years from the date the Owner records Notice of Completion.

PART 2 -- PRODUCTS

2.01 MATERIALS

A. Softwood plywood: PS-1 graded per AWI. Application: 3/4" for cabinets -- plastic laminated.

B. Plastic Laminate: high pressure laminated plastic conforming to NEMA LP-3, 0.50" thickness for tops, and 0.028" thickness for vertical surfaces.

1. All splashes shall be 4" high; provide end splashes with sq. bottom joints.
2. Interiors: Low Pressure Melamine.
3. Backing Sheet: LD-3-BK 20 backing grade undecorated plastic laminate.

C. Wood particleboard: Per AWI standard, composed of wood chips, made with waterproof resin binders, sanded faces, application 3/4" for countertops.

D. Hardboard: PS-58: pressed wood fiber with resin binder, tempered grade, smooth two sides for drawer bottoms.

E. Hardwood Lumber: Grade in accordance with AWI; maximum moisture content of 6%; application.

F. Plastic Edge Trim: Same as face finish -- plastic laminate.

G. Adhesive - Type II adhesive -- an approved thermosetting-on-contact adhesive.

H. Doors and drawer fronts shall be 3/4" plywood with edges veneered or plastic laminate finish.

I. Hardware: Cabinet hardware shall be concealed self-closing hinges, drawer slide, shelf-standards and clips as manufactured by Blum, Knape & Voigt or equal.

J. Drawer Slides for Drawers 24" wide or less: 100 pound load rated, full extension, ball bearing. Accuride 3832.

Drawer Slides for File, Paper Storage and Heavy Duty Drawers 42" wide or less: 150 pound load rated, over travel extension, ball bearing. Accuride 4034.

2.02 FABRICATION

A. Assemble casework in Shop for delivery to site in units easily handled and to permit passage through building openings.

B. Apply plastic laminate finish in full-uninterrupted sheets consistent with manufactured sizes. Make corners and joints hairline. Locate counter butt joints minimum 2' from sink cutouts.

C. Mechanically fasten splash backs to countertops with steel brackets 16" o.c.

D. Countertop edges and splashes to have radius corners.

E. Outside corners of force standing desks to be radiused per plans.

F. Apply laminated backing sheet to reverse side of plastic laminate finish surfaces.

G. Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures and fittings. Verify locations of cutouts from on-site dimensions. Seal contact surface cut edges.

H. On items to receive transparent finishes, use wood filler that match surrounding surfaces. Apply wood filler in exposed nail and screw indentations. Sand work smooth.

PART 3 -- EXECUTION

3.01 EXAMINATION

A. Examine the areas and conditions under which work of this Section will be performed.

B. Correct conditions detrimental to timely and proper completion of the Work.

C. Do not proceed until unsatisfactory conditions are corrected.

D. Beginning of installation means acceptance of conditions.

E. Verify that surfaces and openings are ready to receive work and field measurements are as shown on Shop Drawings and instructed by the fabricator. Verify dimensions for work of other trades incorporated into the casework.

F. Verify that mechanical, electrical, and other building items affecting work of this Section are placed and ready to receive this work.

3.02 INSTALLATION

A. All parts shall be precision machined to close tolerances, accurately fitted and assembled with appropriate fastening and adhesives required to produce first quality fixtures, square, true, plumb and level.

B. Carefully scribe casework that is against other building materials, leaving gaps of 1/32" maximum. Do not use additional overlay trim for this purpose.

C. Anchor securely to wall and floor with all anchorage devices required. Coordinate to allow anchorage devices to be set with other work as applicable. Provide temporary protection over finish work as required during construction to protect the work from damage.

D. Installation shall be complete including continuous bases. All work shall be installed by skilled workmen under the control and supervision of personnel trained in the handling and installation of this cabinetwork and equipment.

E. Install and adjust cabinet hardware to correct operations.

***** END OF SECTION *****

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SECTION 06600

PLASTIC SURFACING MATERIALS

PART 1 -- GENERAL

1.01 SUMMARY

Division 0, Contract requirements and Division 1, General Conditions apply to this section.

1.02 DESCRIPTION

Provide factory-finished Surface Materials, and similar items where shown on the drawings, as specified herein, and as needed for a complete and proper installation. Work may include, but is not limited to:

1. Standard Decorative Laminates.
2. Solid Surfacing.
3. Marker Board Laminate.

1.03 REFERENCES

A. ASTM D 638 - Standard Test Method for Tensile Properties of Plastics.

B. ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

C. ISO 4586-2 - High Pressure Decorative Laminates; International Organization for Standardization.

1.04 SUBSTITUTIONS

Substitutions will be considered per Article 5 of the General Conditions, Project Manual Section 00700.

1.05 SUBMITTALS

A. In accordance with Article 5 of the General Conditions, Project Manual Section 00700.

A. Samples:

1. Selection Samples: Submit actual samples of surfacing materials to illustrate full range of colors, patterns, and finishes available.
2. Verification Samples: Submit two samples, each 12 inches square, illustrating each selected surfacing material in specified color, pattern, and finish.

B. Manufacturer's Instructions:

1. Submit manufacturer's printed installation instructions for each product.
2. Submit manufacturer's Safety Data Sheets (M.S.D.S.) for each adhesive.

PART 2 -- PRODUCTS

2.01 MANUFACTURERS

Acceptable Products: Wilsonart International, Dupont Corian, Avonite, LG Hi-Macs.

2.02 STANDARD DECORATIVE LAMINATES

A. Acceptable Products: Wilsonart Laminate, Formica, Pionite, Nevamar.

B. Product Description: Decorative surface papers, impregnated with melamine resins, bonded under heat and pressure to kraft papers impregnated with phenolic resins.

C. Standard Decorative Laminate – General Purpose Type: having the following physical characteristics:

1. Sheet thickness: 0.048-inch (1.219 mm) plus/minus 0.005-inch (0.127 mm).
2. Exceeding performance requirements of NEMA LD 3-1995 Grade HGS.
3. Surface burning characteristics in accordance with ASTM E 84; unbonded: Flame spread 55; Smoke developed 30.
4. Patterns and Finishes: Selected from manufacturer's full range of available selections, as selected and approved by Architect.

2.03 SOLID SURFACING MATERIAL

A. Acceptable Product: Wilsonart Gibraltar Solid Surfacing, Type 051, or approved equal.

B. Product Description: Homogenous sheet material composed of acrylic resins, fire-retardant filler materials, and coloring agents.

1. Nominal sheet thickness: 0.50 inch (13 mm).
2. Surface burning characteristics in accordance with ASTM E 84: Flame spread less than 25; Smoke developed less than 25.
3. Liquid Absorption, ISO 4586-2, for 1/2-inch material thickness: 0.4 percent after 2 hours boiling water.

C. Izod Impact, ASTM D 256, Method A: 0.2 foot pounds per inch.

1. Tensile Modulus, ASTM D 638 Nominal: 1.7 million pounds per square inch.
2. Thermal Expansion, ASTM D 696: 0.000019-inch per inch per degree F, maximum.
3. Hardness, ASTM D 2583, Barcol Impressor: 59.
4. Flexural Modulus, ASTM D 790: 1.6 million pounds per square inch.
5. Deflection Temperature under load, ASTM D 648: 90 degrees C.
6. Stain Resistance: ANSI Z124.6 modified, Method 3.4: No effect.
7. Boiling Water Resistance, NEMA LD 3-1995, Method 3.5: No effect.
8. High Temperature Resistance: NEMA LD 3-1995, Method 3.6: No effect.
9. Radiant Heat Resistance: NEMA LD 3-1995, Method 3.10: No effect.
10. Light Resistance: NEMA LD 3-1995, Method 3.3: No effect.
11. Ball Impact Resistance, NEMA LD 3-1995, Method 3.8, one half pound ball, unsupported: 125 inches.
12. Specific Gravity: 0.977 ounces per cubic inch (1.69 grams per cubic centimeter).
13. Approximate weight: 4.2 pounds per square foot (20.5 kg/square m).
14. Weatherability: ASTM D 2565: Pass.
15. Fungus Resistance, ASTM G 21: Pass.
16. Bacterial Resistance, ASTM G 22: Pass.
17. Pittsburgh Protocol Toxicity: 66.9 grams.
18. Patterns and Finishes: Selected from manufacturer's full range of available selections, selected and approved by Architect.
19. Impact Resistance NEMA LD3-1995 (1/2 lb. Ball) SSV bonded to substrate*** Method 3.08 modified. 125" (No Failure)

20. Tensile Toughness ASTM D 638. 21 (in. – lb./in. ^{3})

21. Tensile Modulus ASTM D 638 Nominal. 1.7 x 10^{-5} lb./in.^{3}

22. Density 1.60 gram/cm^3

23. Approximate weight 4.2 lbs./ft^2

24. Pittsburgh Protocol Toxicity = 30 grams range

2.04 MARKER BOARD LAMINATES

A. Acceptable Product: Wilsonart Marker Board Laminate.

B. Product Description: Overlay saturated with melamine resins and decorative surface papers, impregnated with melamine resins, bonded under heat and pressure to kraft papers impregnated with phenolic resins.

C. Marker Board Laminate - Horizontal Grade Type: Type 136.

1. Sheet thickness: 0.050-inch plus/minus 0.005-inch (1.27 plus/minus 0.127 mm).

2. Exceeding performance requirements of NEMA LD 3-1995 Grade HGS.

3. Surface burning characteristics in accordance with ASTM E 84; unbonded: Flame spread 40; Smoke developed 115.

D. Marker Board Laminate - Vertical Grade Type: Type 336.

1. Sheet thickness: 0.030-inch plus/minus 0.003-inch (0.762 plus/minus 0.076 mm).

2. Exceeding performance requirements of NEMA LD 3-1995 Grade VGP.

3. Surface burning characteristics in accordance with ASTM E 84; unbonded: Flame spread 40; Smoke developed 70.

4. Colors: Selected from manufacturer's full range of available selections, as selected and approved by Architect.

E. Marker Board Laminate - Fire-Rated Type: Type 636.

1. Sheet thickness: 0.050-inch plus/minus 0.005-inch (1.27 plus/minus 0.127 mm).

2. Exceeding performance requirements of NEMA LD 3-1995 Grade HGF.

3. Surface burning characteristics in accordance with ASTM E 84; unbonded: Flame spread 25; Smoke developed 110.

4. Color: Selected from manufacturer's full range of available selections, as selected and approved by Architect.

PART 3 -- EXECUTION

3.01 EXAMINATION

A. Examine the areas and conditions under which work of this Section will be performed

B. Correct conditions detrimental to timely and proper completion of the Work.

C. Do not proceed until unsatisfactory conditions are corrected.

D. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

Surface preparation: Precondition surfacing materials and surfaces to receive surfacing materials in accordance with manufacturer's printed installation instructions.

3.03 APPLICATION

Install materials in accordance with manufacturer's printed instructions.

***** END OF SECTION *****

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SECTION 07210

THERMAL INSULATION

PART 1 – GENERAL

1.01 SUMMARY

Division 0, Contract requirements and Division 1, General Conditions apply to this section.

1.02 SCOPE OF WORK

A. Furnish and install Thermal Insulation indicated on the Drawings and as specified herein.

B. The principal items of work include:

1. Thermal Insulation within roof.
2. Thermal Insulation within exterior walls.
3. Thermal Insulation within interior walls.

1.03 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 the work of this Section.

B. Upon completion of this portion of the Work, complete and post a certificate of insulation compliance in accordance with pertinent requirements of governmental agencies having jurisdiction.

1.04 SUBSTITUTIONS

Substitutions will be considered per Article 5 of the General Conditions, Project Manual Section 00700.

1.05 SUBMITTALS

A. In accordance with Article 5 of the General Conditions, Project Manual Section 00700.

B. Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

1. Materials list of items to be provided under this Section.
2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
3. Manufacturer's recommended installation procedures which, when accepted by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the work.

1.06 GUARANTEE

Contractor Guarantee: Contractor guarantees the work covered by this specification against all defects in material and workmanship for a period of not less than two (2) years from the date the Owner records Notice of Completion.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Provide thermal insulation as indicated on Drawings. All insulation shall be inorganic glass fiber insulation. Insulation shall comply with ASTM Testing Standards. Fire Hazard

Classification, Flame Spread Index, Smoke Developed Index, Combustibility, and Fire Endurance Ratings as required by Code.

B. Insulation shall be as manufactured by Certain-Teed, Johns-Manville, Owens-Corning, or Architect approved equal.

PART 3 -- EXECUTION

3.01 EXAMINATION

A. Examine the areas and conditions under which work of this Section will be performed.

B. Correct conditions detrimental to timely and proper completion of the Work.

C. Do not proceed until unsatisfactory conditions are corrected.

D. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

A. Verify adjacent materials are dry and ready to receive installation.

B. Verify mechanical and electrical services within walls have been installed and tested.

3.03 INSPECTION

A. Before any installation is started, determine that the other work is suitable to receive insulation.

B. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

C. Remove or protect against projections in construction framing that may damage or prevent proper insulation.

3.04 INSTALLATION

A. All work shall be performed by licensed applicators, shall comply with the recommendations of the manufacturer and the National Association of Insulation Manufacturers.

B. Install insulation with factory applied membrane facing warm side of building spaces. Lap ends and side flanges of membrane over and between framing numbers. Secure in place. Tape seal butt ends and lapped side flanges. Tape seal tears or cuts in membrane.

C. Trim insulation neatly to fit spaces. Use batts free of damage. Install batt insulation, in wall spaces without gaps or voids.

D. Install Insulation in all indicated walls from floor to underside of roof. Secure insulation with 19-gage wire or 1" wide, 20 gage steel strips. Architect shall approve all insulation details, including methods of fastening, before commencement of the work.

3.05 CLEAN UP AND DISPOSAL

At frequent intervals during and again upon completion of work, remove from building and working premises tools and equipment, surplus materials, all rubbish and debris of whatever nature not caused by other trades, and leave the work in a clean, orderly and acceptable condition approved by the Architect.

***** END OF SECTION *****

SECTION 07220

ROOF AND DECK INSULATION

PART 1 -- GENERAL

1.01 SUMMARY

Division 0, Contract requirements and Division 1, General Conditions apply to this section.

1.02 DESCRIPTION

A. Work included: Provide roof and deck insulation where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Work:

1. Documents affecting work of this Section include, but are not necessarily limited to, Special Conditions, and Sections in Division 1 of these Specifications.

2. Roofing.

3. Section 07600: Flashing and Sheet Metal.

1.03 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 the work of this Section.

B. In addition to complying with all pertinent codes and regulations of governmental agencies having jurisdiction, comply with the following:

1. Roof and deck insulation shall be FM approved and U. L. Classified.

2. Conform to Federal Specifications HH-1-1972/Gen, HH-1-1972/1, 2.

3. Meet California Quality Standards Registry Number CA-7006 (UT).

1.04 SUBSTITUTIONS

Substitutions will be considered per Article 5 of the General Conditions, Project Manual Section 00700.

1.05 SUBMITTALS

In accordance with the Article 5 of the General Conditions, Project Manual Section 00700.

1.05 PRODUCT HANDLING

Comply with pertinent provisions of Section 01640.

PART 2 -- PRODUCTS

2.01 MATERIALS

A. Insulation System:

1. Provide tapered and non-tapered expanded polystyrene thermal roof insulation in flutes of metal roof decks with the following physical properties:

Property:	ASTM Test Method:	Specification:

Property:	ASTM Test Method:	Specification:
- Nom. Density LB/FT^3		2.0
Thermal Resistance/R-Value (1 inch thickness)	C177/C518	4.76 at 40° F 4.35 at 75° F
Compressive resistance	D1621	25 (minimum psi)
Density	C303/D1622	1.80 (min. lb./ft.^{3})
Flexural strength - Transverse	C203	55-75 (minimum psi)
Water absorption by volume	C272	< 2%
Water vapor permeability	E96	0.60-2.0 Maximum (perm-inch)
Dimensional stability	D2126	< 2% (% Linear change, max.)
Flame spread	E84	< 25

2. Acceptable manufactures - subject to compliance with requirements, provide products of one of the following:

   a. Cello Foam Type IX (800) 241-3634.

   b. Atlas ACFoam-II (800) 477-1476.

   c. NRG Barriers: PSI-25 (800) 343-1285.

B. Fastener System:

1. Provide a roof insulation fastener system for use in fastening insulation to steel decks. System shall be Factory Mutual approved for I-90 rating. Use manufacturer's recommendations as submitted and approved. Fastening shall be similar to:

2. Deck screws for metal deck applications shall be #12 gage and made of case-hardened carbon steel with gimlet point and Perma-Seal coated.

3. Stress plates shall be high-density polyethylene, 3-1/4" diameter, or G-90 galvanized steel, 3" square.

4. Acceptable Products: Rawl Deck Screw, and Rawl Stress Plates as manufactured by Rawlplug Company, Inc., New Rochelle, NY, or equal products of other manufacturers.

2.02 OTHER MATERIALS

Provide other materials not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the acceptance of the Architect.

PART 3 – EXECUTION

3.01 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed.

B. Correct conditions detrimental to timely and proper completion of the Work.

C. Remove or protect against projections in construction framing which may damage or prevent proper insulation.

D. Before roof insulation application is started, remove trash, debris, oil, water, moisture and

contaminates which may affect the attachment of the insulation to the surface. All depressions, holes, deformations, etc. shall be made smooth prior to the roof insulation application.

E. The deck shall be sufficiently rigid to support the roofers and mechanical equipment without deflection that will strain or rupture any of the roofing components or deform the deck.

F. Treated wood insulation stops, the same thickness as the insulation, shall be mechanically fastened at the edges of the deck and around all projection and openings through the deck.

G. Do not proceed until unsatisfactory conditions are corrected.

H. Beginning of installation means acceptance of conditions.

3.02 INSTALLATION

Install the work of this Section in strict accordance with the original design, requirements of governmental agencies having jurisdiction, and the manufacturer's recommended installation procedures as accepted by the Architect, anchoring all components firmly into position.

1. Deck screws shall penetrate metal deck a minimum of 1/2 inch.
2. Provide a minimum of one (1) fastener per 3 linear foot of surface area.
3. Cut insulation to fill flutes of metal deck prior to installation of roofing.

3.03 CLEANING

Remove trash and debris from the roof insulation surface prior to the application of the roofing membrane.

3.04 PROTECTION

A. Installed insulation shall not be left exposed to the weather. It shall be covered and waterproofed at once.

B. All exposed edges left at the end of a day's work shall be temporarily sealed by lapping roofing membrane over the exposed edge of the insulation and sealing it in place. Remove this membrane seal when work resumes. Installed insulation that becomes wet and/or damaged shall be removed and replaced with solid and dry materials.

C. Protect installed insulation and membrane from roof traffic damage and/or abuse by using surface protection such as plywood in areas where heavy and/or repeated traffic is anticipated both during and after installation.

***** END OF SECTION *****

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SECTION 07840

FIRE STOPPING

PART 1 -- GENERAL

1.01 SUMMARY

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 DESCRIPTION

A. Work included: Provide firestopping where indicated on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. It is the intent of this section of the specifications to establish a single, competent source to be responsible for providing all labor, materials, products, equipment and services, to supply and install the firestopping and smoke seal work for the entire project, at the following locations, as indicated on the drawings:

1. Openings in fire rated walls, floors and roofs both empty and those containing penetrations such as cables, conduits, cable trays, pipes, ducts and similar penetrating items.
2. Gaps between fire-rated floor slabs and exterior curtain walls.
3. Gaps between fire-rated walls and exterior curtain walls.
4. Gaps located within expansion joints.
5. Gaps between the tops of fire rated walls and underside of fire rated floor or roof assemblies.
6. Penetrations through smoke barriers and construction enclosing compartmentalized areas involving both empty openings and openings containing penetrating items.
7. Openings at each floor level in fire rated shafts or stairwells.

1.03 RELATED WORK

A. Openings through Floors and Walls:

1. Fire Rated: Metal sleeves for fire rated openings through floors and walls shall be provided under applicable mechanical and electrical specification sections.
2. Non-Rated: Non-rated openings through floors and walls shall be sealed under applicable mechanical and electrical specification sections.

B. Firestopping and smoke seals within mechanical (i.e. inside ducts, dampers) and electrical assemblies shall be sealed under applicable mechanical and electrical specifications sections and only in accordance with the equipment or device manufacturers' installation instructions. Firestopping and smoke seals around outside of such mechanical and electrical assemblies, where they penetrate fire rated separations, are the responsibility of this section.

1.04 REFERENCE STANDARDS/DOCUMENTS

A. ASTM E814 - Test Method of Fire tests of Through Penetration Firestops.

B. ANSI/UL 1479 - Fire Tests Of Through-Penetration Firestops

C. ANSI/UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems

D. UL: Fire Resistance Directory, Volume 2.

E. ITS: Directory of Listed Products.

F. Factory Mutual, Approvals Guide

1.05 SYSTEM DESCRIPTION

A. Firestopping Materials: Provide firestopping system(s) of sufficient thickness, width and density to provide and maintain a fire resistance rating, as indicated on drawings and in accordance with [UL], [WH], or [FM] design numbers.

B. Provide a seal completely filling all annular spaces to prevent the passage of flame, smoke and gases through the opening in the fire separation in which it is installed.

C. Material Compatibility: Provide materials which are compatible with all materials used in the system including materials used in or on penetrating items as well as all construction materials used in conjunction or contiguous with the system.

D. Accessories: Provide components for each firestopping system that are needed to install fill materials. Use only components specified by the firestopping manufacturer and approved by the qualified testing and inspecting agency for the designated fire resistance rated systems. Accessories include but are not limited to the following items:

1. Permanent forming/damming/backing materials
2. Temporary forming materials
3. Substrate primers
4. Collars
5. Steel sleeves

1.06 SUBSTITUTIONS

Substitutions will be considered per Article 5 of the General Conditions, Project Manual Section 00700.

1.07 SUBMITTALS

A. In accordance with Article 5 of the General Conditions, Project Manual Section 00700.

B. Manufacturer's Data: Submit manufacturer's specifications, installation instructions and product data for each material required. Include [UL], [WH], or [FM] tested systems or designs to show compliance with the Contract Documents.

C. Shop Drawings: Submit shop drawings showing typical installation details including reinforcement, anchorage, fastenings and method of installation for each type of firestopping condition.

D. Samples: If requested, submit samples of each type of firestopping systems, smoke seals and accessories. Indicate location where material/system shall be utilized.

1.08 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing products of this Section with minimum ten (10) years documented experience, and having a quality management system that is registered as conforming to the requirements of ISO9001.

B. Applicator: Company having a minimum of three (3) years experience in the installation of materials specified herein on projects comparable to this project. The firm shall have the written authorization of the firestopping material manufacturer (s).

1.09 REGULATORY REQUIREMENTS

A. Conform to applicable local Building Codes for fire resistance ratings.

B. Provide materials, accessories and application procedures which have been listed by [UL], [WH], [FM] or [tested by a nationally recognized independent testing agency] in accordance with [ASTM E814], [ANSI/UL 1479], or [ANSI/UL 2079] to achieve the required fire protection rating(s).

1.010 ENVIRONMENTAL REQUIREMENTS

A. Do not proceed with the installation of firestopping materials when temperatures or weather conditions exceed the manufacturer's recommended limitations for installation.

B. Ventilate solvent based and moisture-cure firestopping per firestopping manufacturer's instructions by natural means or, where this is inadequate, by forced air circulation.

1.011 DELIVERY, STORAGE AND HANDLING

Deliver materials to Site in manufacturer's sealed and labelled containers intact. Handle and store materials in accordance with manufacturer's instructions.

1.012 PROJECT/SITE CONDITIONS

Comply with manufacturer's recommended requirements for temperature, relative humidity and substrate moisture content during application and curing of materials.

1.013 SEQUENCING AND SCHEDULING

Do not install firestopping system(s) until Work within opening has been completed. Coordinate with other applicable Sections. Schedule work of other trades so that firestopping applications can be inspected prior to being covered by subsequent construction.

PART 2 -- PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

Provide firestopping silicone sealants, water-based sealants, intumescent sealant, mortars, or firestop devices from the following manufacturer:

A/D Fire Protection Systems Inc. or Architect approved equal.

2.02 MATERIALS

A. Provide a complete system of asbestos-free firestop systems capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of [ASTM E814], [ANSI/UL 1479], or [ANSI/UL 2079] and listed by [UL], [WH], or [FM] and in addition are approved by jurisdictional authorities and the Consultant.

B. A/D FIRE BARRIER Silicone Sealants: For use in: openings with penetrating items subject to high movement; multiple penetration systems; for combustible pipes up to 2-in. diameter; in control joints; in curtain wall joints; expansion joints; floor/wall joints; wall/wall joints; head of wall joints; and as a sealant for smoke barrier construction.

C. A/D FIRE BARRIER Intumescent Caulk: For general use as a firestop sealant with: insulated pipes; pipes; electrical cables and conduit; ducts.

D. A/D FIRE BARRIER Seal and Seal NS: Water based firestop sealants for use with: control joints; head of wall joints; floor/wall joints; wall/wall joints; multiple penetration systems; plumbing; mechanical; electrical; and where sprayed sealant application is required or desired.

E. A/D FIRE BARRIER Mortar: For use in: large openings; static non-moving penetrations such as cable trays; for multiple penetration systems; electrical and communication bundles; conduits; non-combustible sleeves; and insulated pipes.

F. A/D FIRE BARRIER Collars: For use in openings with single combustible pipe penetrations greater than 2-in. diameter.

G. A/D FIRE BARRIER Pillows: For use in openings with: cable tray; multiple cable penetrations; where retrofitting of penetrating items is anticipated, and as a temporary fire stop system.

H. Fire stop system ratings: Comply with applicable Building Code requirements for locations and ratings.

2.03 ACCESSORIES

A. Damming and backup materials, supports and anchoring devices: Non-combustible, to manufacturer's recommendations and in accordance with the tested system being installed as acceptable to jurisdictional authorities.

B. Primers: As required by firestopping manufacturer and compatible with selected system and contiguous materials.

C. Water: Potable.

D. Firestopping for vertical (wall) applications: Non-sag caulk or spray grade sealants, Mortar, Collars or Pillows.

E. Firestopping for horizontal (floor) applications: Non-sag caulk or self-levelling or spray grade sealants, Mortar, Collars or Pillows.

F. Firestopping for overhead applications: Non-sag caulk or spray grade sealants or Mortar.

G. Tape: Pressure sensitive masking tape as recommended by the firestopping manufacturer.

PART 3 -- EXECUTION

3.01 EXAMINATION

A. Examine the areas and conditions under which work of this Section will be performed.

B. Examine substrates, openings, voids, adjoining construction and conditions under which the Work is to be installed. Confirm compatibility of surfaces scheduled to receive firestopping.

C. Correct conditions detrimental to timely and proper completion of the Work.

D. Verify that penetrating elements are securely fixed and properly located with the proper space allowance between penetrations and surfaces of openings.

E. Do not proceed with Work until unsatisfactory conditions are corrected.

F. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

A. Surfaces to receive firestopping shall be free of dirt, dust, grease, oil, rust, loose materials, form release agents, frost, moisture or any other matter which would impair the bond of firestopping material to the substrate of penetrating item(s).

B. Prime substrates in accordance with manufacturer's written instructions or recommendations. Confine primers to areas of bond; do not allow spillage or migration onto exposed surfaces.

C. Do not apply firestopping and smoke seals to surfaces previously painted or treated with sealers, curing compounds, water repellent or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

D. Ensure that anchoring devices, back-up materials, clips, sleeves, supports and other related materials used in the actual fire tests are provided.

E. Mask where necessary to prevent firestopping materials from contacting adjoining surfaces that will remain exposed upon completion of Work. Remove tape as soon as it is possible to do so without disturbing firestopping seal with substrates.

F. Installation is not to proceed until submittals have been completed.

3.03 INSTALLATION

A. Manufacturer's Instructions: Comply with [UL], [WH] or [FM] Listings and manufacturer's instructions for the type of material and condition of opening in each case. Consult with the manufacturer's technical representative to determine proper procedure for conditions not fully covered by printed instructions. Record in writing any oral instructions received, with copy to manufacturer.

B. Install firestopping with sufficient pressure to properly fill and seal openings to ensure an effective smoke seal. Tool or trowel exposed surfaces. Remove excess firestopping material promptly as the Work progresses and upon completion.

C. Damming: Provide leak-proof dams as required to seal openings and contain liquid sealants, putty or mortar until cured. Install damming in accordance with manufacturer's instructions.

D. Damming Boards: Install forming/damming materials and other accessories of type required to support fill materials during their application and in the position needed to produce the shapes and depths required to achieve fire ratings of through-penetration fire stop systems.

1. Combustible Type: For temporary dams only. Remove after firestopping material has cured.

2. Non-Combustible Type: For temporary or permanent dams. Provide non-combustible type wherever damming material cannot be removed after applying firestopping materials.

E. Void Filler: Use materials recommended by the firestopping manufacturer to seal gaps created by non-combustible type damming boards and to seal around cables, conduits, pipes and where void filler material becomes part of the fire rated assembly.

F. Sealant: Install damming material or mineral wool as required. Apply sealant so air voids are not present and sealant is in full contact with penetrating items. Tool sealant to ensure substrate contact. Remove excess sealant in accordance with manufacturer's recommendations.

G. Mortar: Install damming material as required. Mix mortar in strict accordance with manufacturers instructions. Pump, trowel or hand pack mortar through openings to minimum thickness as recommended by manufacturer and as listed by [UL], [WH] or [FM], to achieve required fire rating.

H. Firestopping Mineral Wool: Install firestopping by compressing material to the minimum required by [UL], [WH] or [FM] listing. Apply firestopping in sufficient thickness, depth and density so as to achieve the required fire resistance rating. Use impaling clips to support and secure firestopping where required by tested system.

3.04 FIELD QUALITY CONTROL

A. Notify Consultant when completed installations are ready for inspection prior to concealing or enclosing an area containing firestopping materials.

B. Arrange for inspections by the Owners independent inspection and testing company, appointed and paid for by Owner.

C. Following field inspections, provide all repair as required to ensure compliance with the Contract Documents.

3.05 CLEANING AND PROTECTION

A. Upon completion of this work, remove all materials, equipment and debris from the site.

B. Leave work area and adjacent surfaces in a condition acceptable to the Consultant.

C. Leave installed work with sufficient protection to enable it to remain untouched until project turnover.

END OF SECTION

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SECTION 07900

CAULKING AND SEALANTS

PART 1 -- GENERAL

1.01 SUMMARY

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 DESCRIPTION

Work included: Throughout the work, seal and caulk joints where shown on the Drawings and elsewhere as required to provide a positive barrier against passage of moisture and passage of air.

1.03 QUALITY ASSURANCE

A. Conform to Sealant and Waterproofers Institute requirements for materials and installation.

B. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

C. 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 the work of this Section.

D. Warranty: Provide written warranty for all caulking and sealants against all defects of material or application for a period of five (5) 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 failures, be repaired or replaced with proper materials and labor as accepted by the Architect, at no additional cost to the Owner.

1.04 SUBSTITUTIONS

Substitutions will be considered per Article 5 of the General Conditions, Project Manual Section 00700.

1.05 SUBMITTALS

A. In accordance with Article 5 of the General Conditions, Project Manual Section 00700.

B. Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

1. List of items that will be provided under this Section.

2. Manufacturer's Data: catalog cuts, dimensioned drawings, and other data needed to prove compliance with the specified requirements.

3. Manufacturer's recommended installation procedures which, when accepted by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.

1.06 WARRANTY

A. The guarantee specified herein shall include warranties against leakage, hardening, cracking, crumbling, melting, running, shrinking or staining adjacent surfaces.

B. Contractor Guarantee: Contractor guarantees the work covered by this specification against all defects in material and workmanship for a period of not less than five (5) years from the date of Substantial Completion.

PART 2 -- PRODUCTS

2.01 SEALANTS

A. Except as specifically otherwise accepted by the Architect, use only the types of sealants described as follows:

1. One component polyurethane sealant, moisture curing, low modulus, FS TT-S-0023OC, Type II, Class A, ASTM-C-920, Class 25, for vertical and horizontal joints in connection with all building materials. Do not use in traffic areas. Minimum ¼" joint; maximum 1-1/4" x 3/8"d.

   a. Dymonic by Tremco

   b. Sonolastic NP1 by Sonneborn

2. One-part silicone sealant, moisture curing, low modulus, FS TT-S-0023OC, Type II, Class A, FS TT-S-001543A, Class A, for vertical and horizontal joints in connection with aluminum, glass and concrete materials which require greater movement capabilities. Do not use in traffic areas. Minimum joint ¼" x 3/16"d; maximum1" x ½"d.

   a. Spectrum 1 by Tremco

   b. Omniseal by Sonneborn

   c. Dow Corning 790

3. One-part silicone sealant, medium modulus, neutral cure, FS S-0023OC, Type II, Class A, FS TT-S-001543A, Type II, Class A, ASTM C920, Class 25, for vertical and horizontal joints in connection with non-porous surfaces such as aluminum, glass, tile, laminated plastic and concrete. Do not use in traffic areas.

   a. Spectrum 2 by Tremco

   b. Omni Plus by Sonneborn

   c. Dow Corning 795

   d. Construction 1200 by GE

4. Multi-Component polyurethane sealant, FS TT-S-00227E, Type I, Class A, ASTM C920 for horizontal joints in traffic areas. Minimum 3/8" wide, depth to be 3/8" to ½" - use primer.

   a. THC-900/901 by Tremco

   b. Chem. Caulk 950 by Bostick

5. One-part translucent silicone sealant, low modulus, moisture curing, FS TT-S-0023OC, Type II, Class A, FS TT-S-001543A, Type II, Class A, for vertical joints in connection with butt glazing.

   a. 895 Silicone by Pecora

   b. Silglaze N by GE

6. One-part mildew resistant silicone sealant meeting requirements of FDA Regulation 21 CFR 177.2600, for vertical and horizontal joints in connection with non-porous applications as sealing around bathroom fixtures, shower-tub enclosures, sinks and urinals.

   a. Dow Corning 786

   b. Sanitary 1700 by GE

7. One-part siliconized acrylic latex polymer caulk, ASTM C834-76, for interior horizontal and vertical joints in connection with window and door buck perimeters, interior wall surfaces, etc.

   a. AC-20 by Pecora

   b. Acrylic Latex by Tremco

8. Roof Penetrations: Use asphalt mastic conforming to ASTM D491.

9. For other services, provide products especially formulated for the proposed use and accepted in advance by the Architect.

B. Colors:

1. The Architect will select Colors for each sealant installation to match adjacent finishes from a standard color list normally available from the specified manufacturers.

2. Should a matching standard color not be available from the accepted manufacturer except at additional charge, the Contractor shall provide such colors at no additional cost to the Owner.

3. In concealed installations, and in partially or fully exposed installations where so accepted by the Architect, use standard gray or black sealant.

2.02 PRIMERS

Use only those primers that are: non-staining, have been tested for durability on the surfaces to be sealed, and are specifically recommended for this installation by the manufacturer of the sealant used.

2.03 BACKUP MATERIALS

A. Use only those backup materials that are specifically recommended for this installation by the manufacturer of the sealant used, which are non-absorbent, and which are non-staining.

B. Acceptable types include:

1. Closed-cell resilient urethane or polyvinyl chloride foam;

2. Closed-cell polyethylene foam;

3. Closed-cell sponge of vinyl or rubber;

4. Polychloroprene tubes or beads;

5. Polyisobutylene extrusions;

6. Oil-less dry jute.

C. Preformed support strips for ceramic tile control joint and expansion joint work: Use polyisobutylene or polychloroprene rubber.

2.04 BOND-PREVENTATIVE MATERIALS

Use only one of the following as best suited for the application, and as recommended by the manufacturer of the sealant used:

1. Polyethylene tape, pressure-sensitive adhesive, with the adhesive required only to hold tape to the construction materials as indicated;

2. Aluminum foil complying with MIL-A-148E;

3. Wax paper complying with Fed. Spec. UU-P-270.

2.05 JOINT PACKING

Shall be installed in all joints to receive sealant. Material shall be a resilient type such as closed cell PVC foam or as recommended by the manufacturer. Oakum or other types of absorptive materials shall not be used as packing material.

2.06 OTHER MATERIALS

A. For masking around joints, provide masking tape complying with Fed. Spec. UU-T-106c.

B. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the acceptance of the Architect.

PART 3 -- EXECUTION

3.01 EXAMINATION

A. Examine the areas and conditions under which work of this Section will be performed.

B. Correct conditions detrimental to timely and proper completion of the Work.

C. Do not proceed until unsatisfactory conditions are corrected.

D. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

A. Concrete and ceramic tile surfaces:

1. Install only on surfaces that are dry, sound, and well brushed, wiping free from dust.
2. At open joints, remove dust by mechanically blown compressed air if so required.
3. Use solvent to remove oil and grease, wiping the surfaces with clean rags.
4. Where surfaces have been treated, remove the surface treatment by sandblasting or wire brushing.
5. Remove laitance and mortar from joint cavities.
6. Where backstop is required, insert the approved backup material into the joint cavity to the depth needed.

B. Steel surfaces:

1. Steel surfaces in contact with sealant:
   a. Sandblast as required to achieve acceptable surface for bonding.
   b. If sandblasting is not practical, or would damage adjacent finish, scrape the metal or wire brush to remove mill scale.
   c. Use solvent to remove oil and grease, wiping the surfaces with clean rags.
2. Remove protective coatings on steel by sandblasting or by using a solvent that leaves no residue.

C. Aluminum surfaces:

1. Remove temporary protective coatings, dirt, oil, and grease.
2. When masking tape is used for protective cover, remove the tape just prior to applying the sealant.
3. Use only such solvents to remove protective coatings as are recommended for that purpose by the manufacturer of the aluminum work, and which are non-staining.

3.03 INSTALLATION OF BACKUP MATERIAL

A. Use only the backup material recommended by the manufacturer of the sealant used, and accepted by the Architect for the particular installation, compressing the backup material 25% to 50% to achieve a positive and secure fit.

B. When using backup of tub or rod stock, avoid lengthwise stretching of the material. Do not twist or braid hose or rod backup stock.

C. Interior and exterior joints where no backing has been provided or which is in excess of 3/4" deep shall be packed by this subcontractor with fiberglass or a suitable joint filler to reduce the depth to 1/2" maximum. Maximum movement: the width of the joint shall be at least four times its maximum movement.

3.04 PRIMING

A. Use only the primer recommended by the manufacturer of the sealant, and accepted by the Architect for the particular installation, applying in strict accordance with the manufacturer's recommendations as accepted by the Architect.

B. The priming of joints shall be by brush to reach all surfaces to which compound will be applied. Primer shall be provided on masonry, concrete and wood surfaces as recommended by sealant manufacturer. Primer shall not be applied to surfaces that will be exposed after caulking is completed.

3.05 BOND-BREAKER INSTALLATION

Provide an approved bond-breaker where recommended by the manufacturer of the sealant, and where directed by the Architect, adhering strictly to the installation recommendations as accepted by the Architect.

3.06 INSTALLATION OF SEALANTS

A. Prior to start of installation in each joint, verify the joint type according to details on the Drawings, or as otherwise directed by the Architect, and verify that the required proportion of width of joint to depth of joint has been secured.

B. Equipment:

1. Apply sealant under pressure with power-actuated or hand gun, or by other appropriate means.

2. Use guns with nozzle of proper size, and providing sufficient pressure to completely fill the joints as designed.

C. Thoroughly and complete mask joints where the appearance of sealant on adjacent surfaces would be objectionable.

D. Install the sealant in strict accordance with the manufacturer's recommendations as accepted by the Architect, thoroughly filling joints to the recommended depth.

E. Tool joints to the profile shown on the Drawings, or as otherwise required if such profiles are not shown on the Drawings.

F. Cleaning up:

1. Remove masking tape immediately after joints have been tooled.

2. Clean adjacent surfaces free from sealant as the installation progresses, using solvent or cleaning agent recommended by the manufacturer of the sealant used.

3. The excess material shall be cleaned from the surfaces adjacent to the joint, following the caulking operation and the top of the compound deposit shall be left with a smooth even finish. No material is permitted on the exposed face of aluminum sections.

***** END OF SECTION *****

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SECTION 08100

METAL DOORS AND FRAMES

PART 1 -- GENERAL

1.01 SUMMARY

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 DESCRIPTION

Work included: Provide metal doors and metal door frames which are not specifically described in other Sections of these Specifications, where shown on the Drawings, as specified herein, and as needed for a complete and proper installation. All the requirements of the Contract Documents apply to this Section.

1.03 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 the work of this Section.

B. Unless specifically otherwise accepted by the Architect, provide all products of this Section from a single manufacturer.

C. In addition to complying with pertinent codes and regulations of governmental agencies having jurisdiction, comply with:

1. SDI Grade II for Heavy Duty metal doors (Steel Door Institute).

2. HMMA Standard CHM-1-74 (Hollow Metal Manufacturers Association).

1.04 SUBSTITUTIONS

Substitutions will be considered per Article 5 of the General Conditions, Project Manual Section 00700.

1.05 SUBMITTALS

A. In accordance with Article 5 of the General Conditions, Project Manual Section 00700.

B. Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

1. List of items that will be provided under this Section.

2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

3. Shop Drawings showing details of each frame type, elevations of door designs, details of openings, and details of construction, installation, and anchorage.

4. Manufacturer's recommended installation procedures which, when accepted by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.

PART 2 -- PRODUCTS

2.01 MATERIALS

Doors and Frames shall be made of commercial quality, level cold rolled steel conforming to ASTM A-366, Latest Edition, and free of scale, pitting, or other surface defects. Face sheets and frames of exterior doors shall be zinc coated.

2.02 METAL DOORS

A. Type and design: Provide full-flush polystyrene insulated design, in dimensions and types shown on the Drawings, labeled or non-labeled as indicated on the Door Schedule in the Drawings, in 16 gage for interior doors and 16 gage for exterior doors, properly reinforced. SDI-111A shall be used as the standard for all frame details.

B. Finish: Pre-clean and shop prime each door with rust inhibitive primer for finish painting which will be performed at the job site under Section 09900 of these Specifications. Cleaning shall include a phosphate treatment for paint adhesion and all exposed surfaces shall have a rust inhibiting primer.

C. Acceptable products:

1. Steel Craft Type L Series typically. Type B where security door called out on Drawings, gage of door to be increased to 14.

2. Republic, DB Series typically. Security doors called out on plans to be increased to 14-gauge.

3. Equal products of other manufacturers when accepted in advance by the Architect.

D. Clearances: Provide single swing doors with not more than 1/8" clearance at jambs and heads, not more than ¼" clearance at meeting edges of pairs of doors (1/8" on fire doors) and not more than ¾" clearance at the bottom. Provide door bottom per hardware specifications. All clearance dimensions are nominal and subject to a tolerance of + 1/32". Lock edges of the door shall be designed to provide proper operating clearance conforming to dimensions noted above.

2.03 METAL FRAMES

A. Type and design: Provide frames of the types and dimensions shown on the Drawings, labeled or non-labeled as indicated on the Schedule and Types in the Drawings, in 16 gage for interior and exterior frames, properly reinforced. SDI-111A shall be used as the standard for all frame details.

B. Finish: Pre-clean and shop prime each door with rust inhibitive primer for finish painting which will be performed at the job site under Section 09900 of these Specifications. Cleaning shall include a phosphate treatment for paint adhesion and all exposed surfaces shall have a rust inhibiting primer.

C. Acceptable manufacturers: See Paragraph 2.02-C above.

D. Welded Frames. Secure headers and jambs at the corners either by internal welding of faces or by welded splice plates. Also secure joints at jambs and headers at the rabbet either by tack welding on the inside of the profile or by mechanical interlock. Form neat line joints at faces of frames at junction of head and jamb.

E. Frame Anchors:

1. Wall Conditions. Provide frames with a minimum of three anchors per jamb as required for the adjoining wall construction. Provide anchors of not less than 18 gage steel or 3/16" diameter wire adjustable.

2. Floor Anchors. Provide all frames with minimum 18 gage anchors for attachment to the floor.

2.04 DOOR LOUVERS

A. Fire-Rated Louver: Each fire-rated louver shall have the listing mark of Underwriter's Laboratories Inc. affixed to louver assembly.

All louvers in fire-rated doors shall be Model FLDL-UL, 16 gage cold rolled steel with stainless steel operating springs, as manufactured by Anemostat Products, Carson, California, or equal products of other manufacturers when accepted in advance by the Architect. Louvers shall be sight-proof per SDI-111C.

B. Fixed-Blade Louver

1. All fixed blade louvers shall be Model FDLS, 18 gage cold rolled steel with mitered and welded frames and countersunk mounting holes, as manufactured by Anemostat Products, or equal products of other manufacturers when accepted in advance by the Architect. Louvers shall be sight-proof per SDI-111C.

2. Provide insect screen where louver occurs in exterior door.

C. Finish

Finish shall be factory painted in color selected by the Architect.

2.05 FINISH HARDWARE

Secure templates from the finish hardware supplier, and accurately install, or make provision for, all finish hardware at the factory.

2.06 INSULATION

Provide polystyrene foam insulation core typically and at all 12" high horizontal mullions and sills. Insulation shall have a minimum R factor of 7.7.

2.07 GLAZING

Non-removable glazing stops shall occur on the outside of exterior doors and the secure side of interior doors. Glazing beads on the inside of glass and louver panels shall be removable. Miter of butt join beads at corners. Glazing beads may be either screw-on or snap-on type. Glazing systems shall be a minimum of 20-gage steel or .040" aluminum.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine the areas and conditions under which work of this Section will be performed.

B. Correct conditions detrimental to timely and proper completion of the Work.

C. Do not proceed until unsatisfactory conditions are corrected.

D. Beginning of installation means acceptance of conditions.

3.02 FABRICATION

A. Doors:

1. All doors shall be of types and sizes on the drawings, and shall be fully welded seamless construction with no visible seams or joints on their faces or vertical edges. Doors shall be strong, rigid and neat in appearance, free from warpage or buckle. Corner bends shall be true and straight and of minimum radius for the gauge of metal used.

2. Door faces shall be joined at their vertical edges by a continuous weld extending the full height of the door. All such welds shall be ground, filled and dressed smooth to make them invisible and provide a smooth flush surface.

3. Top and bottom edges shall be closed with a continuous recessed 16 gauge steel channel extending the full width and spot welded to both faces. Exterior doors shall have an additional flush closing channel at the top edge. Opening shall be provided in the bottom closer for escape of entrapped moisture.

4. Vertical edges of single acting swing doors shall be beveled 1/8" in 2".

5. Doors shall be mortised, reinforced, drilled and tapped at the factory for fully template hardware only. Where surface mounted hardware is to be applied, doors shall have reinforcing plates only, with drilling and tapping to be done in the field. Minimum gauge of hardware reinforcing shall be as follows:

   a. Hinge: 7-gauge

   b. Lock, flush bolts, concealed holders, and for all surface-mounted hardware: 12-gauge.

6. Allow 1/8" clearance between doors and frame at top rail and at lock and hinge stiles. At floors allow 1/2" clearance. At thresholds and curbs allow 1/4" clearance unless otherwise detailed.

7. The Face sheets of Exterior and Security doors shall be stiffened by continuous vertical formed steel sections occupying the full thickness of the interior space between door faces. These stiffeners shall be not less than 20 gauge, spaced not more than 6" apart and securely attached to both face sheets by spot welds not more than 4" o.c. Spaces between stiffeners shall be sound deadened and insulated the full height of the door with an inorganic non-combustible batt-type material.

B. Frames:

1. All door and louver frames shall be strong and rigid, neat in appearance, square, true and free of defects, warp and buckle. Molded members shall be clean cut, straight and of uniform profile and back-bends shall be as detailed.

2. Corner joints shall have all contact edges closed tight, with trim faces and stops mitered and continuously welded. All welds shall be ground, filled and dressed smooth to make them invisible and provide a smooth flush surface.

3. Hardware reinforcement shall be same as specified for door, with hinge and pivot reinforcement 1-1/2" x 10" minimum size.

4. Unit frames for installation in stud partitions shall be provided with steel anchors of suitable design for welding to steel studs. Anchors shall be not less than 16-gauge and shall be securely welded inside each jamb. Anchors are to be spaced at 24" on center.

5. Provide floor anchor of 14-gauge steel securely welded inside each jamb with two holes provided for floor anchorage.

6. Dust cover boxes of not less than 26-gauge shall be provided at all hardware mortises on frames to be set in masonry or drywall partitions. All frames shall be provided with a steel spreader attached to the feet of both jambs to serve as a brace during shipping and handling.

C. Finish: Finish shall consist of the following items:

1. Thoroughly clean all metal of rust, oil, and grease after fabrication.

2. Bonderize all metal with bonderite solution.

3. Baked-on coat of primer after bonderizing.

4. Additional coat of primer prior to shipping.

D. Labeled Doors and Frames: Labeled doors and frames shall be provided for those openings requiring fire protection ratings, as scheduled on the drawings. Such doors and frames shall be constructed as tested by the Underwriter's Laboratories, Inc., and shall bear their label for the required rating. Provide additional frame accessories as required to maintain the fire protection ratings once the frames are installed in the openings.

3.03 FIELD MEASUREMENTS

Verify all opening dimensions in the field prior to fabrication and assembly of frames.

3.04 INSTALLATION

Placing frames:

1. Where practicable, place frames prior to construction of enclosing walls and ceilings.
2. Set frames accurately into position, plumbed, aligned and braced securely until permanent anchors are set.
3. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.
4. At in-place wood stud construction, set frames and secure to adjacent construction with #12 self-tapping flathead wood screws and zee clips.
5. At in-place metal stud construction, set frames and weld anchorage devices to adjacent construction.
6. When installed in prepared openings in concrete construction, provide sealant between frame and concrete in accordance with provisions of Section 07900 of these Specifications.

3.05 ADJUST AND CLEAN

A. Final adjustments:

1. Check and readjust operating finish hardware items in hollow metal work just prior to final inspection.
2. Leave work in complete and proper operating condition.
3. Remove defective work and replace with work complying with the specified requirements.

B. Immediately after erection, sand smooth all rusted and damaged areas of prime coat, and apply touch-up of compatible air-drying primer.

***** END OF SECTION *****

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SECTION 08200

WOOD DOORS & FRAMES

PART 1 -- GENERAL

1.01 SUMMARY

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK

All of the requirements of the Contract Document apply to this Section. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified and as necessary to comply with the Contract Documents, as follows:

1. Solid and Hollow Core wood doors: fire-rated and non-rated per schedule.
2. Shop Drawings.
3. Samples.

1.03 QUALITY ASSURANCE

A. Provide a written guarantee in approved form that all defective materials or workmanship reported within a period of two (2) years after final acceptance will be promptly repaired or replaced to the Owner's satisfaction. Cover the following items specifically.

1. Delamination in any degree.
2. Warp or twist of 1/4" or more.
3. Telegraphing of core unit through face veneer to cause surface variation of 1/100" in any 3" span.
4. Any defect that may affect performance or appearance.

B. Provide materials and workmanship conforming to the Wood Work Institute of California. Provide "Certified Compliance" grade stamp on every doors - Premium grade. Shop Drawings shall bear the WIC Certified Compliance Label on the first page of each set of Drawings.

1.04 SUBSTITUTIONS

Substitutions will be considered per Article 5 of the General Conditions, Project Manual Section 00700.

1.05 SUBMITTALS

A. In accordance with Article 5 of the General Conditions, Project Manual Section 00700.

B. Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

1. List of items that will be provided under this Section;
2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
3. Shop Drawings showing details of each frame type, elevations of door designs, details of openings, and details of construction, installation, and anchorage.
4. Manufacturer's recommended installation procedures which, when accepted by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.
5. Samples, approximately 4" x 4" in size, of each of the proposed door face materials.

1.06 PRODUCT HANDLING

A. Delivery:

1. Deliver doors to site after plaster and cement are dry, and after the building has reached average prevailing relative humidity for its locality.

2. Deliver doors in manufacturer's original containers, clearly marked with manufacturer's name, brand name, size, thickness, and identifying symbol on its cover.

B. Storage:

1. Stack flat on 2" x 4" lumber, laid 12" from ends and across center.

2. Under bottom door and over top of stack, provide plywood or corrugated cardboard to protect door surfaces.

3. Store doors in area where there will be no great variations in heat, dryness, and humidity.

C. Lift and carry doors into position. Do not drag doors across one another.

PART 2 -- PRODUCTS

2.01 DOORS:

A. See Door Schedule for Types

B. Solid Core Doors:

1. 1-3/4" thick stave lumber core. Mineral core for 60 to 90 minute rated doors. Core complied with commercial std. LS-236.

2. Top and edge bands: Match face veneer.

3. BTM band: Hard or soft wood.

4. Glue: Use CS 35 Type II for bonding core, use Type 1 (fully waterproof) for all other work. Exterior doors to have only Type 1 adhesives used.

5. Finish:

a. Stain Finish: plain-sliced veneer with book-matched grain for transparent finish for interior doors only. See drawings for veneer and stain type. Use red oak veneer with a transparent finish if none is indicated on the drawings.

b. Paint Finish: medium density hardboard overlay for smooth paint finish. See Drawing for paint type or types.

C. Hollow Core Doors:

1. Cellular core include lock blocks, top and bottom rails.

2. Edge bands: match face veneer.

3. Face veneer: rotary cut red oak veneer matched grain for transparent finish.

4. Glue: Use CS35 Type II for bonding core, use Type I for all other work.

D. Solid Wood Stile and Rail Doors:

1. Top rail and stiles shall be minimum of 4-1/2" thickness with 9-1/2" minimum bottom rail on interior doors: exterior doors shall have 5-3/8" overall width with an 11-3/8" minimum bottom rail.

2. Doors shall be assembled with mortise and tenon or doweled joints. All adhesives shall be Type I exterior glue.

3. Glazing shall be safety glazing bedded in sealant squeezed out on both sides and secured in place with wood glazing beads or gasket.

4. Hardwood doors shall be veneered with rotary cut red oak and shall have all exposed edges veneered with matched grain.

E. Plastic Laminated Wood Doors:

1. Interior construction shall be the same as for Solid Core Wood Door.

2. On both faces except for Solid Wood Stile and Rail Doors, provide 1/8" thick "Dor-Surf", No. 117, manufactured by Wilsonart Division of Ralph Wilson Plastics, or an Architect approved equal:

a. See Drawings for colors and patterns.

b. If none are indicated, Architect will select from standard colors and patterns of the accepted manufacturer as a part of the Submittals.

3. On both vertical edges, provide matching laminated plastic.

4. On tops and bottoms of doors, provide a positive sealer applied after completion of machining and fitting.

5. Where transoms occur above doors, provide same type, design thickness, construction and label as door. Bottom edge of transom shall also receive matching laminated plastic finish.

F. Manufacturers:

1. Solid Core and Hollow Core Doors:

a. Weyerhaeuser (800) 869-3667

b. Or Architect approved equal.

2. Solid Wood doors

a. Sun-Dor-Co (316) 284-0044

b. Or Architect approved equal.

3. Fire-Rated Doors and Frames

a. Shall be a U. L. rated assembly.

2.02 DOOR LOUVER

A. Fire Rated Louver

1. All louvers in fire rated doors shall be Model FLDL-UL, 16 gage cold rolled steel with stainless steel operating springs, as manufactured by Anemostat Products, Carson, California. (213) 775-7441.

2. Each fire rated louver shall have the listing mark of Underwriter's Laboratories Inc. affixed to louver assembly.

B. Fixed Blade Louver

1. All fixed blade louvers shall be: Model CHDL-2F, 18-gauge cold rolled steel with mitered and welded frames and countersunk mounting holes, as manufactured by Anemostat Products.

2. Provide insect screen where louver occurs in exterior door.

C. Finish

1. Finish shall be factory painted in color selected by the Architect.

2.03 VISION FRAME

A. Fire Rated Doors:

1. Vision frames for fire rated doors shall be FGS-75 with veneer to match door finish and 3/16" clear Firelite as manufactured by Anemostat Products, Carson, California in accordance with the standards set forth by NFPA-80 and bear the listing mark of Underwriter's Laboratories, Inc. or approved equal.

2. Provide sizes and designs shown on the Drawings.

B. Unlabeled Doors: Provide Model FGS-75 or 38, as applicable, as manufactured by Anemostat Products in sizes and designs shown on the Drawings.

C. All vision frames shall be constructed of 18-gage cold rolled steel and shall have mitered and welded corners with countersunk mounting holes.

D. Finish: Finish shall be factory painted in color selected by the Architect.

PART 3 -- EXECUTION

3.01 EXAMINATION

A. Examine the areas and conditions under which work of this Section will be performed.

B. Correct conditions detrimental to timely and proper completion of the Work.

C. Do not proceed until unsatisfactory conditions are corrected.

D. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

A. Verify dimensions and surfaces are ready to receive work of this Section.

B. Beginning of work signifies acceptance of surface by installer.

3.03 INSTALLATION

A. Fitting and machining doors:

1. Using measurements obtained in the field from installed frames, machine the doors at the factory to fit the prescribed frames with proper clearance at top, bottom, and vertical edges.

2. Adjust for smooth and balanced door movement. Replace or re-hang doors which are hinge-bound and do not swing or operate freely.

3. Install in accordance with ANSI/AWMA requirements.

B. Install frames level and plumb - shim as required.

C. Receive and retain custody of finish hardware furnished under Section 08700, if included, of these Specifications for the work of this Section and in accordance with ANSI/AWMA requirements.

3.04 ADJUST AND CLEAN

Upon completion of the installation, inspect each component.

1. Verify that each item has been fabricated and installed in accordance with the specified requirements.

2. Make necessary adjustments.

3. Touch-up as necessary to make surface blemishes permanently invisible to the unaided eye.

SECTION 08400

ALUMINUM ENTRANCE & FRAMING SYSTEMS

PART 1 -- GENERAL

1.01 SUMMARY

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK

Furnish materials and perform labor required to execute this work as indicated on the drawings, as necessary to comply with the Contract Documents, including, but not limited to, these major items:

1. Aluminum framing systems.
2. Aluminum framed doors including push-pull bars, seals and cylinder locks for use during construction only. Verify size of opening with hardware supplier.
3. Sealant around all exterior aluminum frames.

1.03 SUBSTITUTIONS

Substitutions will be considered per Article 5 of the General Conditions, Project Manual Section 00700.

1.04 SUBMITTALS

A. In accordance with Article 5 of the General Conditions, Project Manual Section 00700.

B. Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

1. Materials list of items proposed to be provided under this Section:
2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
3. Shop Drawings showing details of each frame type, elevations of door designs, details of openings, and details of construction, installation, and anchorage.
4. Manufacturer's recommended installation procedures which, when accepted by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.
5. Samples of material, approximately 4" x 4" in size, of each of the proposed materials.

1.05 PRODUCT HANDLING

Lift doors and carry them into position. Do not drag doors across one another.

1.06 WARRANTY

A. Aluminum Anodized Finish: Two year warranty shall be required to cover all defects including but not limited to the following:

1. Fading
2. Pinholing
3. Blistering
4. Changes in surface appearance and characteristic

B. Exterior storefronts: Warrant entire installation including glazing and caulking to remain watertight, airtight, and weathertight for two (2) years.

C. Entrance Doors: Warrant against sagging or twisting as a result of normal usage for the lifetime of this installation.

1.07 GUARANTEE

Contractor guarantees the work covered by this specification against all defects in material and workmanship for a period of not less than two (2) years from the date the Owner records Notice of Completion.

PART 2 -- PRODUCTS

2.01 MATERIALS

A. All door and frame sections shall be extruded aluminum AA-6063-T5 alloy; aluminum sheet used to complement the framing system shall be of proper alloy to receive anodic treatment and match the job finish.

B. Finishes: All exposed surfaces shall be smooth and free of distracting scratches and blemishes. Color shall conform to Aluminum Association Standards of Architectural Class I anodic coding and shall be designated as Premium (Custom) color to be specified by Architect.

2.02 ALUMINUM STOREFRONT FRAMES

A. Construction and Design: All mullions shall have a 2" face dimension x 4-1/2" depth and be designed for exterior glazing. At sill and intermediate horizontal locations, members shall be of two-piece constructions: a basic base member with a snap-in glass stop to facilitate glazing. Vertical mullions shall be have one or two-piece construction, located within the framing system so as to have the deep glazing pocket of the adjacent mullion. Jambs are to be open-back mullions. Continuous aluminum flashing shall be installed under all sill members. Seals shall be provided for weathertight installation of frames and doors.

B. All frames shall be Trifab II 451 for dual paned glazing as manufactured by Kawneer Company, Inc. or approved equal.

2.03 ALUMINUM ENTRANCE

A. All aluminum entrances shall be the 190-entrance door as manufactured by Kawneer, with 2-1/8" vertical style, 2-1/4" top rail and 12" bottom rail.

B. Weathering shall be Kawneer, Sealair polymeric weathering system. The bottom rail shall be weathered with EPDM blade gasket sweep strip.

C. Door shall be equipped with Panic Guard astragal with Paneline II concealed rod exit device mounted in cross-rail, unless indicated otherwise in the Hardware Specification. The cylinder mounting in the style plate to be in such a way that removal with door closed is impossible.

D. Provide LCN 2030 concealed overhead closure with hold open, unless indicated otherwise in the Hardware Specification. Door supplier to be responsible for complete installation of all hardware on the storefront system.

E. All vertical and horizontal door sections shall be installed so as to receive infill thicknesses as dictated in the glass and glazing sections of the Specifications. Square aluminum horizontal, snap-in glass stops and sloping, aluminum vertical snap-in glass stops, with a lock-in vinyl system, shall be provided to accommodate specified infill thickness (1" thick glazing).

F. Hardware coordination:

1. The finish hardware cylinder shall be coordinated with the hardware supplier.
2. Provide a ½" x 6-3/4" aluminum finish threshold unless indicated otherwise in the Hardware specification.
3. Hardware information shall be received prior to fabrication to insure proper detailing and scheduling.

PART 3 -- EXECUTION

3.01 EXAMINATION

A. Examine the areas and conditions under which work of this Section will be performed.

B. Correct conditions detrimental to timely and proper completion of the Work.

C. Do not proceed until unsatisfactory conditions are corrected.

D. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

A. Verify wall openings and adjoining air and vapor seal materials are ready to receive work of this Section.

B. Field Conditions: Verify drawing dimensions with actual field conditions prior to fabrication. Report any condition, which would prevent proper execution of this contractor's work to the project manager.

3.03 INSTALLATION OF ENTRANCE AND WINDOW FRAMING

A. Accurately cut and install all aluminum and glass in accordance with manufacturer's instructions and with applicable requirements of "Glazing Manual", issued by Flat Glass Manufacturer's Association.

B. Use anchorage devices to securely attach frame assembly to structure.

C. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work (0.03" per foot max. or 0.25" per 30 feet, whichever is less).

D. Installation of structural silicone and backing materials shall be in accordance with silicone manufacturer's requirements. All joints between framing and the building structure shall be sealed in order to secure a watertight installation.

E. Coordinate attachment and seal of air and vapor barrier materials. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

F. Install hardware and glass per other sections of these Specifications.

3.04 CLEANING AND POLISHING

A. Care and Maintenance: It will be the responsibility of the Contractor to protect material from mortar, paint, plaster, terrazzo, etc., during construction, and to thoroughly clean doors and frames before the Owner takes possession.

B. Remove protective material from pre-finished surfaces using a solution of mild detergent in warm water, applied with soft clean wiping cloths.

C. Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.

D. Final cleaning and polishing shall be done prior to final inspection.

END OF SECTION

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SECTION 08500

ALUMINUM WINDOWS

PART 1 -- GENERAL

1.01 SUMMARY

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK

All the requirements of the Contract Documents apply to this section.

1.03 RELATED WORK

A. Moisture Protections: Perimeter Caulking and Sealants

B. Glass and Glazing

1.04 QUALITY ASSURANCE

A. Air Infiltration: With one set of sash closed and in a locked position, air infiltration shall not exceed.15 cfm per foot of sash perimeter with the sash in the closed and locked position under a static pressure drop of 1.56 psf (equivalent to 25 mph wind velocity) when tested in accordance with ASTM-E283.

B. Water Resistance Test: With one set of sash in a closed and locked position the windows shall be subjected to a water resistance test in accordance with ASTM-E-331. When a static pressure differential of 10 pounds per square foot is stabilized, apply a water spray per the standard. No water shall pass interior face of window frame.

C. Thermal Performance ("U" Value): When tested in accordance with AAMA-1503.1 the Conductive thermal transmission shall not exceed Class U60.

D. Condensation Resistance Factor (CRF): When tested in accordance with AAMA-1502.7 on an exact size window of 6'-0" x 4'-0", the CRF shall not be less than 50.

1.05 SUBSTITUTIONS

Substitutions will be considered per Article 5 of the General Conditions, Project Manual Section 00700.

1.06 SUBMITTALS

A. In accordance with Article 5 of the General Conditions, Project Manual Section 00700.

B. Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

C. Before proceeding with the manufacturing of the windows, the window contractor shall submit complete shop drawings showing installation details for Architect's approval. These drawings shall also show elevations of windows, full-sized details of all sections of windows, collateral materials, details of anchorage and hardware. Supplemental data shall contain calculations of moments of inertia on frames and mullion connections plus instructions for storage, handling and erection of windows.

D. Submit current certified test reports to verify performance according to section 1.03.

1.07 WARRANTY

A. The manufacturer shall guarantee his work against material defects in manufacture for a period of two (2) years. If a defect is found and brought to the attention of the manufacturer, the defect will be corrected at no cost to the owner for a period of two (2) years.

B. The manufacturer shall provide the Architect, upon request, a financial statement indicating net worth. Inability to show sufficient financial capacity to fully execute any warranty requirements in the judgment of the Architect and his consultants is grounds for rejecting a proposed supplier for material required in this Section.

PART 2 -- PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

All aluminum fixed windows shall be:

1. Kawneer 8425T-fx.
2. Milco Series W-21T
3. Vista wall

2.02 MATERIALS

A. All principle frame, sash, or ventilator window sections shall be of special extruded aluminum shapes produced from Architectural Grade homogenized aluminum primary billet.

B. Material: Frame, sash and screen members shall be aluminum alloy 6063-T5 or T6 per job requirements. All extrusions shall have a minimum nominal wall thickness of .062".

C. Exterior Panning Trim: Shall be extruded aluminum alloy 6063-T6 with a minimum thickness of .078" in primary walls and a minimum of .062" in the sealing flange. Panning shall be designed to seal against the exterior window frame at the head and jambs and extend under the windowsill to form a water barrier. Exterior panning trim shall be secured at corners with screws into integral screw ports and all corner joints back sealed before erection. A sealant tape shall be applied in the sealing flange before the window is installed in the panning. No sealant between window and panning is to be exposed.

D. Thermal Barrier: The thermal barrier shall be a tongue and groove fit with both halves of the frame securely locking them though not inhibiting the expansion and contraction of either part. The frame thermal barrier shall be no less than 1/4" wide. A bead of sealant compatible with the thermo-barrier material shall be applied to the complete frame perimeter to insure that water does not enter the wall cavity. Thermal barrier material shall meet or exceed ASTM Spec. D-638.

E. Screens: Screens shall be available for all windows and shall consist of 18 x 16 mesh aluminum wire (or as specified) secured to tubular extruded aluminum frames with reusable vinyl spline. Screen frame shall have a minimum dimension of 5/16" x 1-1/4". Half screens shall be removable to inside without pushing to outside of building.

F. Weather-stripping: Sash shall be double weather-stripped at head, jamb and sill using woven pile type with central fin so their is no metal to metal contact between frame and operating sash. Vinyl weather-stripping will not be accepted.

G. Glazing: Horizontal rolling sash shall be factory glazed with adapters for 1" insulated glass as per Section 08800 Glass and Glazing. Glass shall be glazed with a reusable vinyl channel. Sash corner screws to be removable for glazing.

2.03 FABRICATION

A. Construction-Frames: The frame shall be a minimum of 4-1/4" deep. Frames shall be constructed of continuous extrusions, square cut at corners and precision machined. Window frame shall consist of two separate units having a continuous non-conductive rigid vinyl thermal barrier between them, which shall be a tongue and groove fit with each half securely locking both units together. Corners fastened with minimum of four stainless steel screws. Sills shall be tubular and weeped to prevent the accumulation of moisture or debris in the sill. The weepage system shall allow drainage of all water from all cavities in sill and

shall be clear through from the outside to inside. Sill section shall also have provisions for anchorage without bridging the thermal barrier.

B. Construction-Sash: All sash members shall be hollow tubular extrusions to resist twist and deflection. Inner and outer sash shall have the same section modulus. Sash members shall be square cut and milled to allow telescoped joints at each corner for maximum strength and weather tightness. All sashes shall operate on rollers. All screws, axles and pins shall be stainless steel. All sashes shall be removable from inside, without tools, for cleaning.

2.04 FINISH

Exposed surfaces of all aluminum windows and trim shall have an Architectural Class I (0.7 mil minimum thickness) coating. Provide custom color finish as indicated on the drawings or as follows, selected by Architect as a part of the submittal:

1. Class I:
   a. For etched or clear anodized: (215-R1) AA-M10C22A41.
   b. For bronze or black: (215-R1) AA-M10C22A44 (ANOLOK 500).
2. DURANAR finish coating for extruded aluminum and aluminum sheet shall be a factory applied, oven baked finish based on KYNAR 500 (polyvinylidene fluoride - PVF) as supplied by PPG Industries or equal. The DURANAR finish coatings cannot be field applied. Application of the DURANAR finish based on KYNAR 500 shall be performed under specifications issued by PPG and by an applicator specifically approved by PPG. Said applicator shall provide written notification of approval by PPG prior to application of the DURANAR finish. The DURANAR coating system shall be applied to properly cleaned and pretreated aluminum. The pretreatment shall meet ASTM D-1730-67, Type B, Method 5 or Method 7. Processing shall conform to ASTM B-449-67 (1972) Section 5. Conversion coating weight shall be between 30-100 milligrams per square foot. DURANAR shall meet the requirements of AAMA Specifications 605.1-1975. The primer coat shall be an inhibitive PPG primer with dry film thickness average .2 mils to .3 mils. The DURANAR color coat shall have a minimum dry film thickness of 1.0-mil. The total minimum dry film thickness of the DURANAR System shall be 1.2 mils. Recessed, unexposed areas such as inside corners and channels are to be visually covered to the extent possible.

PART 3 -- EXECUTION

3.01 EXAMINATION

A. Examine the areas and conditions under which work of this Section will be performed.

B. Check openings for correct size and irregularities.

C. Correct conditions detrimental to timely and proper completion of the Work.

D. Do not proceed until unsatisfactory conditions are corrected.

E. Beginning of installation means acceptance of conditions.

3.02 INSTALLATION

A. Windows, mullions and trim shall be installed by experienced workmen in exact accordance with the manufacturer's instructions and approved shop drawings.

B. After installation, metal surfaces of windows and trim shall be cleaned of all mortar, plaster, paint and other contaminants.

C. The Contractor shall be responsible for protection of the work from damage by other trades and final cleaning.

3.03 SEALANTS

A. Seal joints between windows and surrounding construction.

B. Joints and surfaces to receive sealants shall be clean, free from loose material, free of efflorescence or mortar leaking and dry. Sealants shall not be applied when temperature is below manufacturer's recommendations.

C. Clean joints and surfaces before sealing or priming in conformance with manufacturer's instructions.

D. Prime joints in conformance with material manufacturer's instructions.

E. Provide joint backing in all joints where a suitable back stops to receive sealant is otherwise not available.

1. Pack joints with joint backing to provide depth of 1/2 the width but not less than 1/4" not more than 1/2" unless recommended otherwise by the manufacturer.

***** END OF SECTION *****

SECTION 08800

GLAZING

PART 1 -- GENERAL

1.01 SUMMARY

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK

All of the requirements of the Contract Documents apply to this Section.

1.03 REFERENCES

A. SIGMA No. 64-7-2 -- Specification for Sealed Insulating Glass Units.

B. FGMA -- Glazing Manual, Glazing Sealing Systems Manual.

1.04 QUALITY ASSURANCE

Conform to Flat Glass Marketing Association (FGMA) for glazing installation methods.

1.05 SUBSTITUTIONS

Substitutions will be considered per Article 5 of the General Conditions, Project Manual Section 00700.

1.06 SUBMITTALS

A. In accordance with Article 5 of the General Conditions, Project Manual Section 00700.

B. Provide structural, physical and environmental characteristics, size limitations, and special handling or installation requirements.

C. Provide data on glazing sealant. Identify colors available.

D. Submit two samples, illustrating glass unit and coloration.

1.07 GUARANTEE

A. Contractor shall guarantee the work covered by this specification against all defects in material and workmanship for a period of not less than two (2) years.

B. Include coverage of sealed glass units from seal failure, interpane dusting or misting, and replacement.

PART 2 -- PRODUCTS

2.01 ACCEPTABLE GLASS MANUFACTURERS

A. Insulated, Laminated, and Spandrel Glass: PPG Industries, Inc.

B. Security Glazing: Nippon Electric Glass Company (800) 426-0279.

C. Clear Fire-Rated Window Glazing: Pyrobel by Interedge (877) 376-3343.

D. Clear Fire-Rated Door/Sidelight Glazing: PyroEdge or Pyrobel by Interedge (877) 376-3343.

2.02 GLASS MATERIALS (As indicated on the Window Schedule):

A. General: Exposed "tong" marks are not acceptable.

B. Interior Tempered Glass: Clear, Tempered ¼" thick. Grade B (tempered), Style I (uncoated), Type I (float or plate).

C. Insulated Glass Units: Double pane ¼" units with edge seal; interpane ½" space purged with dry hermetic air; total unit thickness of 1 inch. Tempered as required by Code and indicated on drawings. Tinting as indicated on Window Schedule - tinted on inside of outer layer only. PPG Solarban 60 (2) or (3) or equal low e coating. Performance values based on tinted product selected.

D. Interior Wired Glass: 1/4" clear wire glass.

E. Interior laminated glazing - one way: Two pieces of 1/8" clear float glass, tempered as required by code, laminated with .030 in. polyvinyl butyl plastic interlayer conforming to 16CFR 1201 Category II for one-way glazing.

F. Security Glazing: 11/16" thick, glazing assembly consisting of two outer lights of 1/8" clear chemically strengthened glass with a core of two 1/8" polycarbonate sheets laminated with four inter-layers of .50 inch thick urethane.

G. Ballistic Glazing:

15/16" thick glazing assembly certified for level-A ballistics consisting of two outer lights of 1/8" clear chemically strengthened glass with a core of two 1/8" and 1/4" polycarbonate sheets laminated with four inter-layers of .50-inch thick urethane.

H. Clear Fire Glazing: Model as required for required Fire-Rated Assembly.

2.03 GLAZING COMPOUNDS

A. Glazing Compound: Modified oil type, non-hardening, knife grade consistency.

B. Butyl Sealant: Single component; Shore-A hardness of 10-20; black color; non-skinning.

C. Acrylic Sealant: Single component, solvent curing, cured Shore hardness, non-bleeding.

D. Silicone Sealant: Single component, non-bleeding, non-staining; Capable of water immersion without loss of properties.

2.04 GLAZING ACCESSORIES

A. Setting Blocks: Neoprene; 80-90 Shore A durometer hardness; 4 inch minimum long x 1/4 inch thick.

B. Spacer Shims: Neoprene; 40-50 Shore A durometer hardness; 4 inch long on 18 inch centers for wet-glazed systems.

C. Glazing Clips: Manufacturer's standard type.

PART 3 -- EXECUTION

3.01 EXAMINATION

A. Examine the area and conditions under which work of this Section will be performed.

B. Coordinate work with other trades as needed to assure that proper substrate are provided to receive work of this Section.

C. Verify surfaces of glazing channels or recesses are clean, square in plane, free of obstructions, and ready for work of this Section.

D. Verify weep holes in exterior frame are provided.

E. Correct conditions detrimental to timely and proper completion of the Work.

F. Do not proceed until unsatisfactory conditions are corrected.

G. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

A. Clean contact surfaces with solvent and wipe dry.

B. Seal porous glazing channels or recesses.

3.03 EXTERIOR WET METHOD (SEALANT AND SEALANT)

A. Place setting blocks at 1/4 points and install glass pane.

B. Install removable stops with pane centered in space by inserting spacer shims both sides at 18-inch intervals, 1/4 inch below sightline.

C. Fill gap between pane and stops with sealant to depth equal to bite of frame on pane, but not more than 3/8 inch below sightline.

D. Apply sealant to uniform line, flush with sightline. Tool or wipe sealant surface with solvent for smooth appearance. Security Glazing to be sealed with security sealant as recommended by manufacturer.

E. Drain or weep the sill of each opening to the outdoors at three points using 3/8-inch diameter weep holes or the equivalent.

3.04 INTERIOR COMBINATION METHOD (TAPE AND SEALANT)

A. Cut glazing tape to length and install against permanent stops, project 1/16 inch above sightline.

B. Place setting blocks at 1/4 points.

C. Rest glass on setting blocks and push against tape to ensure full contact at perimeter of pane.

D. Install: removable stops, spacer shims between glass, and applied stops at 18-inch intervals 1/4 inch below sightline.

E. Fill gap between pane and applied stop with sealant to depth equal to bite of frame on pane to uniform and level line.

F. Trim protruding tape edge.

3.05 INTERIOR WET METHOD (COMPOUND AND COMPOUND)

A. Install glass resting on setting blocks. Install applied stop and center pane by use of spacer shims at 18-inch centers, kept 1/4 inch below sightline.

B. Locate and secure glass pane using glaziers' clips.

C. Fill gaps between pane and stops with glazing compound until flush with sightline.

3.06 CLEANING

A. After installation, mark pane with an "X" by using plastic tape or removable paste.

B. Remove glazing materials from finish surfaces.

C. Remove labels after work is completed.

D. Clean glass with solvent and normal wash. Final cleaning and polishing shall be done prior to final inspection.

E. Remove and replace broken, scratched, chipped or otherwise defective glass with new materials and leave the entire installation in a neat, clean, and acceptable condition.

***** END OF SECTION *****

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