

**REQUEST FOR PROPOSALS**  
**BID NO.: 092210-1 CENTRAL HEIGHTS AUDITORIUM REMODEL**

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Note: All Addendums must accompany submitted proposal.

**ADDENDUM NO. 2**

Addendum No. 2 is a continuation of the specifications in bid documentation for the Central Heights Auditorium Remodel. These specifications are hereby incorporated into the bid document for the project.

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**SUMMARY OF WORK**

**DEFINITIONS**

- A. Furnish: To purchase and deliver.
- B. Install: To place into final position and connect.
- C. Provide: To furnish and install.
- D. "As shown", "as detailed", as indicated" or words of similar importance mean as indicated on the drawings.
- E. The words Architect and Owner shall mean the County.
- F. "As selected", "as approved" or words of similar importance mean as selected by, as approved by, or as accepted by the County.
- G. "Approved equal", "or equal" shall mean as approved and accepted by the County.
- H. "Shall" means mandatory.
- I. "As required" means as required by the contract documents.
- J. "As necessary" means essential to the completion of the work.

- K. "Concealed" means not visible in the finished work.
- L. "Exposed" means visible in the finished work.
- M. "Days" means calendar days.
- N. Substantial Completion: That stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the County can occupy or utilize the Work for its intended use.

#### PERMITS, FEES AND NOTICES

All permits shall be paid for and/or provided by the County.

The Contractor shall secure and pay for the building permit and for other permits and governmental fees, licenses and inspections necessary for the proper execution and completion of the Work which are customarily secured after execution of the Contract and which are legally required at the time the bids are received or negotiations concluded. This shall include, but not be limited to:

1. Building Permit from Gila County
2. Inspections and Certificates from State Fire Marshall and County Health Department if required.

The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and lawful orders of public authority bearing on the performance of the work. If the Contractor performs work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the County, the Contractor shall assume full responsibility therefore and shall bear attributable costs.

#### SPECIAL SITE CONDITIONS

The Contractor shall be completely responsible for protecting the existing buildings from damage and/or injury due to the work and shall repair at his expense and to the County's satisfaction, all areas damaged as a result of his work.

Utility Outages and Shutdown: Interruption of utility services to the existing building(s) is not permitted.

#### APPROVED APPLICATORS

Where specific instructions in the Specifications require that a particular product and/or material be applied and/or installed by an "approved applicator" it shall be the Contractor's responsibility to insure that any Subcontractor used for such work is in fact currently certified by the particular manufacturer for this type of installation or application.

## APPROVED MANUFACTURERS

Included is a list of manufacturers who equipment is acceptable as to manufacture, subject to conformance with the contract documents. Careful checking must be made by the Contractor and the manufacturer or equipment supplier to verify that the equipment will meet all capacities, requirements, space allocations and is suitable to the intended purpose.

## REFERENCE DATA

Reference data made available to the contractor is for the contractor's information only. The County does not assume responsibility for the contractor's conclusions.

For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

Should reference standards conflict with Contract Documents, requires clarification from the County before proceeding.

ACI	American Concrete Institute	<a href="http://www.aci-int.org">www.aci-int.org</a>	212-642-4900
AI	Asphalt Institute	<a href="http://www.asphaltinstitute.org">www.asphaltinstitute.org</a>	859-288-4960
AIA	American Institute of Architects	<a href="http://www.aia.org">www.aia.org</a>	800-242-3837
AISC	American Institute of Steel Construction	<a href="http://www.aisc.org">www.aisc.org</a>	312-670-2400
AISI	American Iron & Steel Institute	<a href="http://www.steel.org">www.steel.org</a>	202-452-7100
AMG	Arizona Masonry Guild	<a href="http://www.azmasonryguild.org">www.azmasonryguild.org</a>	602-265-5999
ANSI	American National Standards Institute	<a href="http://www.ansi.org">www.ansi.org</a>	212-642-4900
ARI	Air-Conditioning & Refrigeration Institute	<a href="http://www.air.org">www.air.org</a>	703-524-8800
ASHRAE	American Society of Heating, Refrigeration & Air Conditioning Engineers	<a href="http://www.ashrae.org">www.ashrae.org</a>	800-527-4723
ASME	American Society for Mechanical Engineers	<a href="http://www.asme.org">www.asme.org</a>	800-843-2763
ASTM	American Society for Testing & Materials	<a href="http://www.astm.org">www.astm.org</a>	610-832-9716
DHI	Door & Hardware Institute	<a href="http://www.dhi.org">www.dhi.org</a>	703-222-2010
GA	Gypsum Association	<a href="http://www.gypsum.org">www.gypsum.org</a>	202-289-5400
ICBO	International Conference of Building Officials	<a href="http://www.icbo.org">www.icbo.org</a>	800-423-6587 #3252
MAG	Maricopa Association of Governments	<a href="http://www.mag.maricopa.gov">www.mag.maricopa.gov</a>	602-254-6300
NCMA	National Concrete Masonry Association	<a href="http://www.ncma.org">www.ncma.org</a>	703-713-1900
NEMA	National Electrical Manufacturers Association	<a href="http://www.nema.org">www.nema.org</a>	703-841-3200

NFPA	National Fire Protection Association	<a href="http://www.nfpa.org">www.nfpa.org</a>	800-344-3555
NRCA	National Roofing Contractors Association	<a href="http://www.roofonline.org">www.roofonline.org</a>	847-299-9070
SMACNA	Sheet Metal & Air Conditioning	<a href="http://www.smacna.org">www.smacna.org</a>	703-803-2980
TCA	Tire Council of MERICA, INCL	<a href="http://www.tileusa.com">www.tileusa.com</a>	864-646-8453
UL	Underwriters' Laboratories, Inc	<a href="http://www.ul.com">www.ul.com</a>	800-704-4050
WDMA	Window & Door Manufacturing Association	<a href="http://www.wdma.com">www.wdma.com</a>	800-223-2301

## CUTTING AND PATCHING

- A. Cutting, fitting and patching, including attendant excavation and backfill with like material or new as required to complete Work, and for:
1. Making several parts fit together properly.
  2. Uncovering portions of Work to provide for installation of ill-timed Work.
  3. Removing and replacing defective and non-conforming Work.
  4. Removing samples of installed Work required for testing, as directed by Architect.
  5. Providing routine penetrations of non-structural surfaces for installation of piping and electrical conduit.
  6. Attaching new materials to existing remodeling areas.
  7. Removing any and all existing above and underground materials which may interfere with the installation of any and all new work as required in the construction documents. Such removal of materials may or may not be indicated on the construction documents. The contractor's bid amount will include such work as required.
- A. In advance of executing any cutting or alterations, submit written request to Architect requesting consent to proceed with cutting which affects:
1. Work of Owner or other trades.
  2. Structural value or integrity of any element of Project.
  3. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.
  4. Efficiency, operational life, maintenance or safety of operational elements.
  5. Visual qualities of sight-exposed elements.
- B. Include in request:
1. Identification of Project.
  2. Description of affected Work.
  3. Necessity for cutting, alteration or excavation.
  4. Effect of Work of Owner or other trades, or structural or weatherproof integrity of Project.
  5. Description of proposed Work:
    - a. Scope of cutting, patching, alteration, or excavation.
    - b. Trades which will execute Work.
    - c. Products proposed to be used.
    - d. Extent of refinishing to be done.
  6. Alternatives to cutting and patching.
  7. Cost proposal, when applicable.
  8. Written permission of trades whose Work will be affected.
- C. Submit written notice to Architect designating time Work will be uncovered to provide for observation.

## **PRODUCTS**

### **MATERIALS**

- A. Provide for replacement of Work removed. Comply with Contract Documents for type of Work standards and Specification requirements for each specific product involved.

### **EXECUTION**

#### **INSPECTION**

- A. Inspect existing conditions of Work, including elements subject to movement or damage during cutting and patching, and excavating and backfilling. After uncovering Work, inspect conditions affecting installation of new products and verify procedures with Architect.
- B. Report unsatisfactory or questionable conditions in writing to Architect/Engineer. Do not proceed with Work until further instructions are received.

#### **PREPARATION**

- A. Provide shoring, bracing and supports as required to maintain structural integrity of Work.
- B. Provide devices and methods to protect other portions of Work from damage, including elements which may be exposed by cutting and patching Work. Maintain excavations free from water.

#### **ERECTION, INSTALLATION AND APPLICATION**

- A. Performance:
  - 1. Execute fitting and adjustment of products to provide finished installation to comply with and match specified tolerances and finishes.
  - 2. Execute cutting and demolition by methods which prevent damage to other Work to provide proper surfaces to receive installation of repairs and new Work.
  - 3. Execute excavating and backfilling by methods which prevent damage to other Work and settlement as specified in Section 02300.
- B. Employ original installer or fabricator to perform cutting and patching for:
  - 1. Weather-exposed surfaces and moisture-resistant elements such as roofing, sheet metal, sealants and waterproofing.
  - 2. Sight-exposed finished surfaces.
- C. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes as shown on Drawings and as

specified.

- D. Fit Work airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces. Conform to fire code requirements for penetrations and maintain integrity of fire walls and ceilings.
- E. Restore Work which has been cut or removed. Install new products to provide completed Work in accordance with requirements of Contract Documents and as required to match surrounding areas and surfaces.
- F. Refinish entire surfaces as necessary to provide an even, matching finish as follows:
  - 1. Painted Walls or Ceilings: To nearest intersection with another finish or corner.
  - 2. Where Applied Finishes Occur (i.e wallcovering, tile, wood paneling): To nearest intersection of finish without damage to adjacent material. Where match of pattern, grain, texture, or similar finish cannot be made, refinish area to intersection with other finish or corner.
  - 3. Manufactured or Shop Fabricated Materials: Replace entire affected surface or material.

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## STRUCTURAL METAL FRAMING

### SUMMARY

- A. Section Includes: Structural steel framing including, but not limited to:
1. Columns
  2. Beams
  3. Lintels
  4. Anchor Bolts
  5. Shelf Angles
  6. Bearing Plates,
  7. Miscellaneous Structural steel items.

### SUBMITTALS

- A. Shop Drawings: Submit shop and erection Drawings clearly showing each piece required for fabrication and erection. Drawings shall include material grade, camber, holes and other pertinent data. Indicate welds by standard AWS symbols showing size, length, and type of each weld.
- B. Test Reports: Submit reports for welded connection tests.
- C. Submit anchor setting drawings clearly showing location of all anchor bolts and embedded plates to be anchored in concrete and masonry construction. Provide templates for anchor bolts.

### QUALITY ASSURANCE

- A. Welding:
1. Performed by certified welders in compliance with AWS D.1 Structural Welding Code.
  2. Welders shall be duly qualified (test passed in the preceding 12 months) in the position in which they are to weld and the qualifications and Specifications for workmanship shall comply with the AWS requirements "AWS Structural Welding Code - Steel."
- B. Certifications:
1. Prior to fabrication or shipment of material to the job site, furnish certification of the Manufacturer of the structural steel that material furnished meets or exceeds requirements of ASTM standards specified or noted on Drawings, for each type of material.
  2. Prior to site welding operation, submit welders' written certifications and qualifications.
- C. Tolerances: All steel exposed to view shall be architectural steel, and tolerances as a minimum shall comply with section 10 of AISC code of standard practice.

### DELIVERY, STORAGE AND HANDLING

- A. Exercise care during unloading, storage and erection to avoid damage. Dumping on the ground is not permitted.

- B. Support material stored at the site completely free of the ground, and cover to avoid damage from the elements.

## PRODUCTS

### MATERIALS

- A. General: Materials shall be new, of uniform quality, suitable and without defects affecting the strength or service of the structure.
- B. Structural Steel: ASTM A572 or A992, except angles, channels and plates shall be ASTM A36 (Fy = 36ksi).
- C. Steel Pipe Columns: ASTM A53 Grade B or ASTM A501 (Fy = 36,000 psi).
- D. Steel Tube Columns: ASTM A500, Grade B.
- E. Bolts:
  - 1. Machine Bolts: ASTM A307, unless otherwise indicated.
  - 2. High Strength Bolts: ASTM A325.
- F. Welded Anchors and Shear Connectors: ICBO approved, as manufactured by KSM or Nelson.
- G. Welding Rods: AWS A5.0, E70 series, low hydrogen type.
- H. Metal Primer: VOC compliant
  - 1. Interior Steel: Zinc alkyd, high-solids primer, conforming to FS TT-P-645b.
  - 2. Exterior Steel (exposed): 2-component, moisture-cured zinc-rich primer conforming to SSPC-PS12.01.

### FABRICATION

- A. Workmanship and details of construction (except as otherwise indicated or specified) shall be in conformity with applicable articles of the latest AISC Manual, Parts 1 through 4; AISC Specifications; except Section A7 (Design Documents) and Chapter N (Plastic Design); and the applicable building codes. Sections 3.1, 3.4 and 4.2 of AISC code of Standard Practice are specifically excluded from this work.
  - 1. Sections shall be of dimensions, weight and design as indicated, assembled complete at the shop, with base plates and other detailed materials attached.
  - 2. Furnish 1/4 inch thick leveling plates at columns where base plates are shop fabricated to columns.
  - 3. Make connections as indicated or detailed, on the Drawings and the reviewed shop and erection Drawings.
  - 4. Exposed steel shall have smooth, clean surfaces with no identifying trade marks, names etc., exposed to view.
  - 5. Leave in condition for finish painting.
- B. Bolted connections shall be as detailed or shall conform to AISC standard bolted connections with maximum number of 3/4-inch diameter bolts. See Framed Beam Connections Tables II, III, or IV of AISC Manual of Steel Construction
- C. No slotted holes permitted at steel connections unless shown on Drawings or approved by Structural Engineer.

- D. Where bolt holes in steel members are enlarged to more than 1/16 inch diameter oversize, provide 3/16 inch x 2-1/2 inch x 2-1/2 inch plate washers to steel members with 3/16 inch fillet weld all around.
- E. Loose Steel Lintels: Provide loose structural steel shape lintels for openings and recesses in masonry walls and partitions, as shown. Weld adjoining members together to form a single unit. Provide not less than 4 inch bearing at each side of openings, unless otherwise shown.
- F. Shelf Angles: Provide structural steel shelf angles of sizes shown for attachment to concrete framing. Provide slotted holes to receive 3/4 inch bolts, spaced not more than 6 inches from ends and not more than 24 inches o.c., unless otherwise shown.
- G. Loose Bearing Plates: Provide loose bearing plates for steel items bearing on masonry or concrete construction, made flat, free from warps or twists, and of required thickness and bearing area. Drill plates to receive anchor bolts and for grouting as required.

#### SHOP FABRICATION FOR USE OF HIGH STRENGTH BOLTS

- A. Joint surfaces, including those adjacent to the bolt heads, nuts or washers, shall be free of loose mill scale, burrs, or any foreign material (including paint). Field paint these areas with the specific shop paint after erection and completion.
- B. Joints using high strength bolts shall be inspected by a representative of an independent testing laboratory acceptable to the Owner's Representative.
  1. Inspection shall be accomplished by the use of a properly calibrated torque wrench.
  2. Calibration shall be by the procedure specified in the Specifications for structural joints using ASTM A325 or A490 bolts, under Section 9, inspections (pp. 6-276) Ninth Edition, AISC Manual of Steel Construction.
  3. Check a minimum of 20 percent of the bolts in each connection.
  4. If one or more of the bolts checked in any connection is below the minimum tension, check all of the bolts in that connection.
  5. Bolts which cannot be properly tensioned will be rejected.
- C. Check calibrated wrenches individually for accuracy at least once daily for actual conditions of application.
- D. The Inspector shall check to insure that bolt threads are eliminated from the shear planes. Submit copies of the torque reading for each connection directly to the Architect in the form of a report, along with the minimum torque values required to reach the specified tensions and the calibration procedures.
- E. The use of load indicator washers or twist-off spline type of fastener requires specific prior approval of the Architect.

#### SHOP WELDING

- A. Make welds by the electric-arc process.
- B. Grind exposed welds smooth.
- C. Where weld size is not indicated, it shall develop full strength of member and connection.

#### PAINTING - SHOP COAT

- A. Items of steel and iron Work indicated or specified to be encased in concrete or receive spray fireproofing shall not be painted.
- B. Clean steel Work by wire brushing, or by other means selected by the fabricator, of loose mill scale, loose rust, accessible weld slag, or flux deposit, dirt and other matter. Remove oil and grease deposits by solvent.
- C. After cleaning, give steel Work one coat of metal primer. Apply primer thoroughly and evenly to dry surfaces by brush, spray, roller coating, flow coating or dipping at the selection of the fabricator.
- D. Apply primer at a rate of 350 sq. ft. per gallon to provide a wet film of 4.5 mils.
- E. Paint erection marks on painted surfaces. Touch-up surfaces where welding, grinding of welds, joints, etc. are done in the field.
- F. The paint shall be thoroughly dry before the members are handled or loaded.

#### SOURCE QUALITY CONTROL

- A. Tests: Where a welded splice is fabricated in beams or columns other than those detailed, fabricator shall have splice connection tested using one of the following methods: magnetic particle, radiographic, or ultrasonic. Testing shall be conducted by an independent testing laboratory and a report submitted to the Architect. The costs of this testing shall be borne by the fabricator.

#### EXECUTION

##### EXAMINATION

- A. Verification of Conditions:
  - 1. Verify anchor bolt locations, grouting and elevation of base and setting plates, and other material set by other Trades before commencing Work.
  - 2. Notify Architect of Work set by others which does not comply with specified tolerances. Do not erect material upon such Work until it has been satisfactorily corrected.
  - 3. Start of Work implies acceptance of Work of other Trades affecting structural frame erection.

##### ERECTION

- A. Erect Work to the proper lines and levels, plumb and true, and in correct relation to other Work maintain this condition to completion.
- B. Connections:
  - 1. Machine Bolting:
    - a. Fair-up holes with pins to align holes before bolting.
    - b. Ream unfair holes to obtain alignment or drill new holes.
    - c. Enlargement of holes with drift pins or burning of new holes is not permitted.
    - d. Draw bolts up tight after members are aligned and leveled, and set or deform threads to prevent loosening.
  - 2. Welding:
    - a. Weld by shielding arc method per AWS standard code for arc and gas welding in building construction.

- b. Submit certification that welders have passed AWS code qualification tests.
  - c. Certification must be dated no earlier than 3 months prior to beginning of Project.
  - d. Refer to Shop Drawings for weld size and dimensions.
  - e. Close joints exposed to weathering with continuous 1/8 inch weather welds.
  - f. Grind smooth exposed welds, but grinding shall not reduce weld strength or required cross section.
  - g. Protect finish material from damage due to welding.
  - h. Remove unsatisfactory welds by chipping or arc air method.
3. Connect members temporarily and align completely before making permanent connections.
- a. Temporary conditions shall consist of bolts in no less than 1/3 of the holes and in no case less than 3 bolts in any single connection.
  - b. Surfaces in contact shall be thoroughly clean when assembled
  - c. Provide necessary temporary bracing and guying to align the structure properly for permanent connections, and safely resist erection, dead load and wind stress.
  - d. Take particular care to have the Work plumb and level (maximum tolerance 1 to 500 for interior members, 0 to 1000 for exterior members) before making permanent connections.
  - e. Remove bracing and guys only after permanent alignment and assembly and structure is capable of completely sustaining design and temporary construction loads.

C Exposed Steel:

- 1. Verify the condition of exposed steel after erection.
- 2. Exert particular care to provide a neat, accurate installation with members straight and true, corners and edges square, sharp and free from burrs and irregularities, adjacent members perfectly matched and no bolts or rivets exposed.
- 3. Remove erection bolts and seats and plug weld and grind holes smooth.

D. Field Painting:

- 1. Spot paint abrasions, field bolts and field welds with same paint used for shop coat.
- 2. Remove temporary guys, bracing and bracing clips, and grind flush remaining burrs, before painting. Remove welding slag, spatter, rust and burnt paint and wire brush clean welds before touch-up.

CLEANING

- A. During the course of the Work and on completion of the Work, remove excess materials, equipment and debris and dispose of away from premises.
- B. Leave Work ready to receive fireproofing when applicable.



## METAL FABRICATIONS

### GENERAL

#### SUMMARY

- A. Section Includes: Metal fabrications, including items fabricated from iron and steel shapes, plates, bars, strips, tubes, pipes and castings which are not a part of structural steel or other metal systems in other Sections of these Specifications. Types of metal items include, but are not limited to, the following:
1. Carpenter's ironwork.
  2. Steel gratings and frames.
  3. Steel pipe guards.
  4. Steel pipe bollards.
  5. Ladders at roofs and elevator pits.
  6. Miscellaneous framing and supports.
  7. Miscellaneous steel trim.
  8. Support for folding and operable partitions.
  9. Support for overhead suspended toilet partitions
  10. Enclosure gates and hardware.
  11. Other items as indicated.

#### SUBMITTALS

- A. Shop Drawings: Submit Drawings for the fabrication and erection of assemblies of items which are not completely shown by the Manufacturer's data sheets.
1. Include plans and elevations at not less than 1 inch to 1'-0" scale, and include details of sections and connections at not less than 3 inches to 1'-0" scale.
  2. Show anchorage and accessory items.

#### QUALITY ASSURANCE

- A. Standards: Comply with the following, except as otherwise shown and specified:
1. AISC "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings."
  2. AISI "Specifications for the Design of Cold-Formed Steel Structural Members."
  3. AWS "Structural Welding Code-Steel."
  4. ASTM A6 "General Requirements for Rolled Steel Plates Shapes, Sheet Piping and Bars for Structural Use."
- B. Qualifications: Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure."

#### DELIVERY, STORAGE AND HANDLING

- A. Exercise care during unloading, storage and erection to avoid damage. Dumping on the ground is not permitted.
- B. Support material stored at the site completely free of the ground, and cover to avoid damage from the elements.

#### PROJECT/SITE CONDITIONS

- A. **Field Measurements:** Take field measurements prior to preparation of Shop Drawings and fabrication, where possible, to ensure proper fitting of the Work. Allow for trimming and fitting wherever the taking of field measurements before fabrication might delay the Work.

## PRODUCTS

### MATERIALS

- A. **Wide Flange Steel Sections:** ASTM A572 or A992 (Fy = 50 ksi).
- B. **Steel Shapes, Plates, Rod, Bars and Bar-size Shapes:** ASTM A36.
- C. **Steel Tubing (Not-formed, Welded or Seamless):** ASTM A500, Grade B (Fy = 46 ksi).
- D. **Cold-Finished Carbon Steel Bars:** ASTM A108, Grade as selected by fabricator
- E. **Hot-rolled Carbon Steel Sheets and Strips:** ASTM A568 and ASTM A569, pickled and oiled
- F. **Cold-rolled Carbon Steel Sheets:** ASTM A611.
- G. **Hot-dip Galvanized Steel Sheets:** ASTM A653, with G90 zinc coating
- H. **Cold-drawn Steel Tubing:** ASTM A512, sunk drawn, butt welded, cold-finished and stress-relieved.
- I. **Steel Pipe:** ASTM A53, type as selected; Grade A. Black finish unless galvanizing is required. Standard weight, Schedule 40, unless otherwise shown or specified.
- J. **Anchors:**
1. **Masonry Anchorage Devices:** Expansion shield, FS FF-S-325.
  2. **Toggle bolts:** Tumble-wing type, FS FF-B-588; type, class and style as required.
  3. **Chemical Type Anchors:** 2-component chemically curing anchors for concrete or masonry construction, capsule or injection type, designed to accept manufacturer's galvanized anchor rod.
  4. **Threaded-type concrete inserts:** Galvanized ferrous castings, internally threaded to receive 3/4 inch diameter machine bolts; either malleable iron complying with ASTM A47 or cast steel complying with ASTM A27; hot-dip galvanized in compliance with ASTM A153.
  5. **Wedge-type concrete inserts:** Galvanized box-type ferrous castings, designed to accept 3/4 inch diameter bolts having special wedge-shaped heads, either malleable iron complying with ASTM A47 or cast steel complying with ASTM A27; hot-dip galvanized in compliance with ASTM A153.
  6. **Provide carbon steel bolts having special wedge-shaped heads, nuts washers and shims; all galvanized in compliance with ASTM A153.**
  7. **Slotted-type concrete inserts:** Galvanized 1/8 inch thick pressed steel plate complying with ASTM A283. Box-type welded construction with slot designed to receive 3/4 inch diameter square head bolt and with knockout cover. Hot-dip galvanized in compliance with ASTM A123.
- K. **Fasteners:** Provide zinc-coated fasteners with galvanizing complying with ASTM A153 for exterior use or where built into exterior walls. Select fasteners for the type, grade and class required for the installation of miscellaneous metal items.
1. **Bolts and nuts:** ASTM A307, Grade A, regular hexagon head.

2. Bolts, hexagon and square: ANSI B-18.2.1.
3. Bolts, round head: ANSI B-18.5.
4. Lag bolts: Square head type.
5. Wood screws: ANSI B-18.6.1, flat head carbon steel.
6. Plain washers: ASTM F844 helical spring type carbon steel.

L. Paint:

1. Metal Primer: VOC compliant.
  - a. Interior Steel: Zinc alkyd, high-solids primer, conforming to FS TT-P-645b.
  - b. Exterior Steel (exposed): 2-component, moisture-cured zinc-rich primer conforming to SSPC-PS12.01.
2. Galvanizing repair paint: High zinc dust content; MIL-P-21035 (Ships).

ACCESSORIES

- A. Inserts and Anchorages: Furnish inserts and anchoring devices to be set in concrete or built into masonry for installation of Miscellaneous Metal Work. Provide setting Drawings, templates, instructions and directions for installation of anchorage devices.
- B. Concrete Fill (for concrete filled pipe bollards): Comply with requirements of Section 03300 for normal-weight, air-entrained, ready-mix concrete with a minimum 28-day compressive strength of 3000 psi.

FABRICATION

- A. General: For fabrication of Miscellaneous Metal Work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness. Remove such blemishes by grinding or by welding and grinding, prior to cleaning, treating and application of surface finishes, including zinc coatings.
- B. Shop Assembly: Preassemble items in shop, when possible, to minimize field splicing and assembly of units at the site. Disassemble units only to extent necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.
- C. Workmanship:
  1. Use materials of the size and thickness shown, or if not shown, of the required size and thickness to produce adequate strength and durability of the finished product for the intended use. Work to the dimensions of fabrication and support. Use type of materials shown or specified for various components of Work.
  2. Form exposed Work true to line and level with accurate angles, surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32 inch unless otherwise shown. Form bent-metal corners to the smallest radius possible without causing grain separation or otherwise impairing the Work.
  3. Weld corners and seam continuously and in accordance with the recommendations of AWS. Grind exposed welds smooth and flush to match and blend with adjoining surfaces.
  4. Form exposed connections with hairline joints which are flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of the type shown, or if not shown, use Phillips flat-head (countersunk) screws or bolts.
  5. Provide for anchorage of type shown, coordinated with supporting structure and the progress schedule. Fabricate as required to provide adequate support for the intended use of the Work.
  6. Cut, reinforce, drill and tap Miscellaneous Metal Work as may be required to

- receive finish hardware and similar items of Work.
7. Use hot-rolled steel bars for Work fabricated from bar stock, unless Work is indicated to be fabricated from cold-rolled, or cold-finished stock.
- D. **Carpenter's Iron Work:**
1. Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels and other miscellaneous steel and iron shapes as required for framing and supporting woodwork, and for anchoring or securing woodwork to concrete or other structures. Straight bolts and other stock rough hardware are specified in Division 6 Sections.
  2. Manufacture or fabricate items of sizes, shapes and dimensions required. Furnish malleable iron washers for heads and nuts which bear on wood structural connections; elsewhere, furnish steel washers.
- E. **Ladders:**
1. Fabricate ladders for the locations shown, with dimensions, spacings, details and anchorages as required. Comply with requirements of ANSI A14.3, except as otherwise shown.
  2. Fit rungs into punched holes in centerline of side rails, plug weld and grind smooth on outer rail faces.
  3. Support each ladder at top and bottom and at intermediate points spaced not more than 5 feet o.c. Use welded or bolted steel brackets, designed for adequate support and anchorage, and to hold the ladder 6 inches clear of the wall surface and other obstructing construction. Extend rails 42 inches above top rung, and return rails to wall or structure unless other secure handholds are provided. If the adjacent structure does not extend above the top rung, gooseneck the extended rails back to the structure to provide secure ladder access.
  4. Provide non-slip surfaces on the top of each rung, either by coating the rung with aluminum oxide granules set in epoxy resin adhesive, or by using a type of manufactured rung which is filled with aluminum oxide grout.
  5. Exterior ladders shall have hot-dipped galvanized finish.
- F. **Loose Bearing Plates:** Provide loose bearing plates for steel items bearing on masonry or concrete construction, made flat, free from warps or twists, and of required thickness and bearing area. Drill plates to receive anchor bolts and for grouting as required.
- G. **Loose Steel Lintels:** provide loose structural steel shape lintels for openings and recesses in masonry walls and partitions, as shown. Weld adjoining members together to form a single unit. Provide not less than 4 inch bearing at each side of openings, unless otherwise shown.
- H. **Miscellaneous Framing and Supports:**
1. Provide miscellaneous steel framing and supports which are not a part of the structural steel framework, as required to complete Work.
  2. Fabricate miscellaneous units to sizes, shapes and profiles shown, or if not shown, of the dimensions required to receive adjacent grating, plates, doors or other Work to be retained by the framing. Except as otherwise shown, fabricate from structural steel shapes and plates and steel bars of all welded construction using mitered corners, welded brackets and splice plates, and a minimum number of joints for field connection. Cut, drill and tap units to receive hardware and similar items to be anchored to the Work.
  3. Equip units with integrally welded anchor straps for casting into concrete or building into masonry wherever possible. Furnish inserts if units must be installed after concrete is poured. Except as otherwise shown, space anchors 24 inches o.c., and provide minimum anchor units of 1-1/4 inch x 1/3 inch x 8 inch

steel straps.

- I. Toilet Partition Ceiling Suspension:
  - 1. Steel channels with threaded rod hangers and nuts as required.
  - 2. Coordinate locations of hanger channels and spacing of holes in channels for installation of partition hanger bolts with toilet partition submittals.
- J. Enclosure Gates: Fabricate to sizes and shapes indicated using galvanized steel tubing and shapes with minimum 18 gauge galvanized steel plate skin as detailed. Fabricate with continuously welded joints, and smooth exposed edges. Miter corners and use concealed field splices wherever possible.
  - 1. Hinges: Provide heavy duty galvanized steel butt hinges sized as required for weight of gate. Weld hinges to frame.
  - 2. Latching Mechanism: Provide plunger style cane-bolts with pipe receiver set into paving, size as indicated.
- L. Fabricate pipe bollards from steel pipe of diameter indicated on Drawings.
- M. Miscellaneous Steel Trim: Provide shapes and sizes as required for the profiles shown. Except as otherwise noted, fabricate units from structural steel shapes and plates and steel bars, with continuously welded joints and smooth exposed edges. Use concealed field splices wherever possible. Provide cutouts, fittings and anchorages as required for coordination of assembly and installation with other Work.
- N. Shelf Angles: Provide structural steel shelf angles of sizes shown for attachment to concrete framing. Provide slotted holes to receive 3/4 inch bolts, spaced not more than 6 inches from ends and not more than 24 inches o.c., unless otherwise shown.

#### FINISHING

- A. Galvanizing: Comply with ASTM A123 and A153 for the hot-dip process after fabrication.
- B. Shop Painting:
  - 1. Shop paint Miscellaneous Metal Work, except those members or portions of members to be embedded in concrete or masonry, surfaces and edges to be field welded, and galvanized surfaces, unless otherwise indicated.
  - 2. Remove scale, rust and other deleterious materials before shop coat of paint is applied. Clean in accordance with SSPC SP-2, SP-3, or SP-7, as required. Remove oil, grease and similar contaminants in accordance with SSPC SP-1.
  - 3. Apply one shop coat of metal primer paint to fabricated metal items, except apply 2 coats of paint to surfaces which are inaccessible after assembly or erection.
  - 4. Immediately after surface preparation, brush or spray on metal primer paint in accordance with Manufacturer's instructions, and to provide a uniform dry film thickness of 2 mils for each coat.

#### EXECUTION

#### EXAMINATION

- A. Verification of Conditions: Examine subsurfaces to receive Work and report detrimental conditions in writing to Architect. Commencement of Work will be construed as acceptance of subsurfaces.

- B. Coordination: Coordinate with other Work which affects, connects with, or will be concealed by this Work.

#### PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply items required to be cast into concrete or embedded in masonry with setting templates to appropriate Trades.
- C. Set sleeves in concrete with tops flush with finish surface elevations. Protect sleeves from water and concrete entry.

#### INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Allow for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Field weld components indicated on Shop Drawings
- D. Perform field welding in accordance with AWS D1.1.
- E. Install pipe bollards in concrete footings plumb and level, accurately fitted, free from distortion or defects. Provide adequate bracing as required to hold bollard in position until concrete has been placed and cured.
  - 1. Fill bollards solidly with concrete and mound top surface to shed water.
- F. Obtain Architect approval prior to site cutting or making adjustments not scheduled.
- G. After erection, prime welds, abrasions, and surfaces not shop primed and galvanized members, except surfaces to be in contact with concrete.

#### ERECTION TOLERANCES

- A. Maximum Variation from Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset from True Alignment: 1/4 inch

#### CLEANING

- A. During the course of the Work and on completion, remove and dispose of excess materials, equipment and debris away from premises.

## EXPANSION CONTROL

### GENERAL

#### SUBMITTALS

- A. **Product Data:** Submit manufacturer's specifications, design data and installation instructions.
- B. **Shop Drawings:** Submit drawings showing layout, dimensions and construction details.
- C. **Samples:** Submit samples showing aluminum finish.

#### DELIVERY, STORAGE AND HANDLING

- A. **Packing and Shipping:** Deliver materials to site in manufacturer's original unopened packaging with labels intact.
- B. **Storage:** Adequately protect against damage while stored at the site.
- C. **Handling:** Comply with manufacturer's instructions.

### PRODUCTS

#### MANUFACTURERS

- A. Furnish products of one of the following manufacturers, except as approved by the Architect, subject to compliance with specifications requirements:
  - 1. Balco Metalines, Div. of Balco, Inc. [www.balcousa.com](http://www.balcousa.com)
  - 2. Construction Specialties, Inc. [www.roofbid.com](http://www.roofbid.com)
  - 3. MM Systems Corp. [www.mmsystemscorp.com](http://www.mmsystemscorp.com)

#### MATERIALS

- A. **Aluminum:** 6063-T5 alloy extrusions and 6061-T5 plate.
- B. **Aluminum Finish:**
  - 1. Roofs: Mill
  - 2. Other Locations: Clear anodized.
- C. **Steel:** Galvanized, 26 gage.
- D. **Resilient Material:** Neoprene or EPDM.
- E. **Backing Paint:** Asphaltic type.
- F. **Sealant:** As recommended by manufacturer.
- G. **Fasteners:** Non-corrosive.

#### COMPONENTS

- A. General: Expansion-joint cover assemblies shall be complete with intersections, splices, end caps, and accessories required for a complete, watertight installation.
- B. Exterior Expansion-Joint Covers:
  - 1. Roof-to-roof:
    - a. Type 1: Balco Metalines Type LPR-220 or as approved; low rise, with continuous vinyl water barrier and drain.
    - b. Type 2: Manville "Expand-O-Flash" Style CF, or as approved, with 26 gage galvanized steel flanges and EPDM bellows.
  - 2. Roof-to-Wall:
    - a. Type 1: Balco Metalines, Type LPR-225 or as approved; low rise with standard continuous vinyl water barrier.
    - b. Type 2: Metalines Type FR525, or as approved, medium rise.
    - c. Type 3: Manville "Expand-O-Flash" Style CF-EJ or as approved, with 26 gage galvanized steel flanges and EPDM bellows.
  - 3. Wall-to-Wall:
    - a. Type 1: Balco Metalines, Type FCWW-series or as approved, with standard continuous vinyl water barrier.
- C. Interior Expansion-Joint Covers:
  - 1. Wall-to-Wall: Metalines, Type 75FWG-2 or as approved, flush mount
  - 2. Wall-to-Wall: Metalines Type 75FWG-1, or as approved, flush mount.
  - 3. Ceiling: Metalines, Type C1W1, snap-in or as approved.

## EXECUTION

### EXAMINATION

- A. Verification of Conditions:
  - 1. Examine subsurfaces to receive Work and report detrimental conditions in writing to Architect.
  - 2. Commencement of Work will be construed as acceptance of subsurfaces.
  - 3. Verify, before proceeding with this Work, that required inspections of existing conditions have been completed.
- B. Coordination: Coordinate with other work which affects, connects with, or will be concealed by this Work.

### INSTALLATION

- A. Install expansion-control devices in accordance with the manufacturer's directions, true to line.
- B. Upon completion of installation, components shall be flexible and waterproof.
- C. Miter joints at turns and install end caps at exposed ends.

### CLEANING

- A. During the course of the Work and on completion, remove and dispose of excess materials, equipment and debris away from premises. Leave Work in clean condition.

## ROUGH CARPENTRY

### GENERAL

#### SUMMARY

- A Section Includes: Rough carpentry including, but not limited to:
1. Dimensional Lumber Framing
  2. Furring
  3. Sheathing
  4. Beams
  5. Posts and Columns
  6. Telephone Backer Boards
  7. Miscellaneous Blocking

#### SUBMITTALS

- A. Product Data: Submit technical data for wood preservative and fire retardant products

#### QUALITY ASSURANCE

- A. Identify each piece of lumber or plywood used for structural framing with grade and trade mark of a lumber grading organization. Trade mark of manufacturer shall also appear on each piece.
- B. Grading Rules: Conform with applicable requirements of American Lumber Standards "Simplified Practice Recommendation R-16" and to grading rules of manufacturer's association under whose rules the lumber is produced.
- C. Standards: Conform with requirements of The Engineered Wood Association, U. S. Dept. of Commerce Commercial Standards and American Wood Preservers Association Standards, as they apply.

#### DELIVERY, STORAGE AND HANDLING

- A. Packing and Shipping: Deliver materials to site in manufacturer's original unopened packaging with labels intact.
- B. Storage: Store off ground to assure adequate ventilation, and protect against damage while stored at the site.
- C. Handling: Comply with manufacturer's instructions.

#### PROJECT CONDITIONS

- A. Environmental Requirements: Store materials for which a maximum moisture is specified in areas where humidity can be controlled.

### PRODUCTS

#### LUMBER MATERIALS

- A. Species: Douglas Fir – Larch, Hem Fir graded in accordance with Standard Grading and Dressing Rules of WCLIB. Framing lumber shall be stress grade. All sides shall be surfaced.
- B. Lumber Grades: As follows unless noted differently on the Structural Drawings:
  - 1. One inch boards: Construction.
  - 2. 2 x 4 studs, sills, plates, etc.: Stud Grade.
  - 3. Other framing lumber, 2 to 4 inches thick: Number 2 or better.
  - 4. Beams, 5 inches and over in least dimension: Number 1 or better.
  - 5. Beams, where so noted on Drawings: Select Structural.
  - 6. Posts and columns, 5 inches and over in least dimension: Select Structural.
  - 7. Misc. blocking, bridging, etc: Utility.
  - 8. Grounds and furring: Construction Grade Douglas Fire or No. 2 White Pine.
- C. Moisture Content:
  - 1. Lumber shall be air-dried or kiln-dried.
  - 2. At time of installation, moisture content, expressed as a percentage of the weight of the oven-dry wood, shall not exceed 19 percent for lumber of up to two inches nominal thickness and 15 percent for exterior trim and siding.
  - 3. Moisture content of lumber over two inches nominal thickness shall conform to the rules of the association under which it is graded

#### SHEATHING MATERIALS

- A. General:
  - 1. Panel thickness and identification index shall be as shown on the Drawings and as specified and shall also be stamped on each piece of sheathing.
  - 2. Design of project is based upon plywood sheathing, however, OSB Board may be substituted for plywood if it conforms to all requirements for plywood installed in like locations.
  - 3. Plywood (or OSB Board if allowed) which has an edge or surface permanently exposed to the weather shall be exterior type.
  - 4. Provide rough sawn surface where indicated on Drawings.
- B. Plywood: Each panel of softwood plywood shall be identified with the APA grade-trademark and shall meet the requirements of PS-1-83 for softwood plywood.
- C. Plywood Backing Panels: For mounting of telephone and electrical equipment, provide Grade C-D Exposure 1 plywood panels, 15/16 inch thick, unless otherwise indicated.
- D. OSB Board:
  - 1. Raw materials used in panel shall be manufactured from wood products conforming to ANSI A201.1.
  - 2. Each piece shall be stamped in accordance with American Plywood Associations (APA) grade rules and shall meet requirements of latest edition of U.S. Product standard for Softwood Plywood.
  - 3. Provide Grade 2-M-W or 2-M-F as required for thickness and application.
  - 4. OSB Panels used as floor sheathing or in any location which would leave board exposed to weather, shall have Structural 1, Exposure 1 rating.
- E. T-1-11 Siding:
  - 1. APA Texture 1-11 303 Siding, Douglas Fir panel with shiplapped edges and parallel grooves 1/4 inch deep, 3/8 inch wide; grooves 6 inches on center.
  - 2. Thickness: 5/8 inch.
  - 3. Surfaces: Scratch-sanded.

## FACTORY WOOD TREATMENT

- A. **Preservative Treatment:**
  - 1. Wood sillplates and ledgers bolted in direct contact with concrete or masonry, located at or below grade only shall be pressure treated lumber. Hoover Treated Wood Products, Inc. "Wolman CCA".
  - 2. Blocking occurring on top of or above the roof deck, including the nailer beneath the flashing at parapet caps, shall be treated lumber.
- B. **Fire-Retardant Treatment:** Hickson Corp. Dricon FRTW in accordance with UL label.
  - 1. Where required by code, wood studs, plates, sheathing, blocking, etc. shall be pressure treated.
  - 2. Dimensioned lumber shall be kiln dried to a maximum moisture content of 18 percent before and after milling and fire protective treatment.

## ACCESSORIES

- A. **Nails:**
  - 1. Common wire, galvanized for exterior Work, meeting FS FF-N-101 of the sizes indicated on the Drawings.
- B. **Screws:** Standard domestic manufacture, bright steel, except galvanized for exterior use and of brass, bronze, aluminum or stainless steel when used to attach items made of those materials. Screws used for attaching interior trim and finish to drywall partitions shall be Type S self-drilling, self-tapping anodized steel drywall screws of required lengths as specified in Section 09250.
- C. **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.
- D. **Structural Bolts:** Machine bolts, or carriage bolts, of structural grade steel with square nuts, conforming to ASTM A307.
- E. **Steel plates and angles:** ASTM A36, galvanized after fabrication.
- F. **Lag screws, shear plates and split ring connectors:** Conform to requirements of the "National Design Specifications for Stress Grade Lumber and its Fastenings" of National Forest Products Association.
- G. **Framing anchors and joist hangers:** Simpson Company products or similar devices as approved by Structural Engineer through Architect and noted on Drawings.
- H. **Power driven inserts:** Ramset, or as approved by Structural Engineer through Architect meeting FS GGG-D-777a. Install as per manufacturer's printed directions. Charge shall be powerful enough to prevent spalling of concrete.
- I. **Galvanizing:** ASTM A653.
- J. **Toggle Bolts:** FS FF-B-588.
- K. **Fabricated Connections:**
  - 1. Sheet metal galvanized of size and type shown on Drawings.
  - 2. Structural Steel: ASTM A36. Welding by qualified welders in conformance with AWS D1. One shop coat of paint per Federal Specification TT-P-86, Type II to

parts not embedded.

## EXECUTION

### FRAMING

- A. Contractor's Option: Drawings and specifications are based upon the use of metal framing as specified in Section 09100 for interior partitions. If approved by Architect, Contractor may use wood for framing in lieu of metal framing
- B. Coordination: Install wood framing making proper provisions for Work of other trades. Cut wood required to accommodate plumbing, heating and ventilating, electrical and other trades. Fit neatly around exposed items, as outlet boxes, conduit, pipes and ducts. Protect adjacent Work. Before proceeding with rigid sheathing, make certain required inspections have been made by Building Official.
- C. Structural Members: No cutting, notching or drilling without prior approval of the Structural Engineer through the Architect.
- D. Wood Backing: Provide wood backing, furring, stripping or blocking indicated or required for installation and attachment of work of other trades. Provide fire-proofed wood backing approved by Building Official where required by Code in noncombustible or fire-rated construction.
- E. Connections: Subdrill where necessary to avoid splitting.
- F. Bolts: Drill bolt holes 1/32 inch larger than bolt diameter. Use square plate or malleable iron washers under heads and nut where they bear against wood. Re-tighten bolts immediately prior to concealing with finish materials. Re-tighten exposed bolts immediately prior to final inspection by Building Official.
- G. Lag Screws and Screws: Subdrill, use square plate or malleable iron washer under lag screw heads when they bear on wood.
- H. Exterior base plates or sills resting on concrete: Bed in cement mortar to obtain a continuous bearing. Mortar shall consist of one part cement to three parts sand. Mix mortar in small quantities so that it can be used promptly. Size plates or sills and set level and true to line. Bolt down with bolts of size, length and spacing indicated with a bolt not more than 9 inches from the end of any piece.
- I. 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. Reinforce cut members as directed by Structural Engineer through Architect. Bolt, nail and spike in a thorough manner with not less than the sizes and quantities indicated or specified. Structural members shall provide full contact at bearing surfaces.
- J. Studs: Wall and partitions shall be nominal 2x4 and 2x6 studs 16 inches on center unless otherwise noted or unless they are required to be larger to accommodate mechanical or electrical equipment, piping and fixtures or equipment of any other Trade. Unless otherwise detailed, 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, then the wall shall be furred. When furring is required, it shall extend the full width and from floor to roof or ceiling joists. The studs comprising interior partitions and the wall material affixed thereto shall extend from floor to roof or

ceiling joist framing except as shown. Staggered stud walls shall be constructed where shown on plans and as detailed.

- K. 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.
- L. Provide blocking not less than 2 inches in thickness of same width as stud as follows:
  - 1. Stud partitions or walls more than 8 feet, but not more than 14 feet in height: One row of blocking fitted snugly and nailed into mid-height of stud.
  - 2. Walls or partitions over 14 feet in height: 2 or more rows of blocking. Locate rows of blocking so that in no case will the distance between sole or top plates and blocking or between lines of blocking exceed 8 feet.
  - 3. Provide solid fire blocking at ceiling line at dropped ceilings.
- M. Frame corners solid where stud walls or partitions meet or as shown on the Structural Drawing.
- N. Provide double joists under partitions parallel to joists, and for headers and side members at openings larger than 4 feet in dimension.
- O. Joist framing into headers and header joists shall be supported on joist hangers.
- P. At roofs: Provide crickets, cants, equipment curbs, wood saddles, cant strips, curbs for plywood at parapet walls; other miscellaneous backing, blocking, curbing, and wood nailers bolted to tops of concrete or masonry and at expansion joints, as specified or required.
- Q. Provide treated lumber at built-up roofs, with concrete or masonry parapets. Install 1/2 inch treated plywood from the roof deck to 16 inches maximum above the roof deck or insulation, whichever is higher, mechanically fastened to the wall. Install 1/2 inch treated plywood nailer at sides of non-nailable skylights, roof hatches, equipment and other roof penetrations.

#### PLYWOOD SHEATHING

- A. Install roof sheathing with long dimension perpendicular to joints. Thickness per structural documents.
- B. Install wall sheathing with long dimension vertical.
- C. Sheathing shall have edges blocked and nailed for diaphragm or shear wall stresses as shown on the Drawings.
- D. Subflooring shall be glued and nailed.
- E. Install with the "C" or best face on exposed side.
- F. At non-tongue and groove sheathing, provide plywood clips at 24 inches O.C. maximum at unsupported or unblocked edges.

#### PLYWOOD BACKING PANELS

- A. Plywood Backing Panels: Install with the "C" or best face on exposed side

## **CLEANING**

- A. During the course of the Work and on completion, remove excess materials, equipment and debris and dispose of away from premises.

## WOOD CHORD METAL JOISTS

### GENERAL

#### SUBMITTALS

- A. Shop Drawings: Submit shop drawings showing dimensions for fit and placement, and loads. Conform to the design load criteria shown on the Drawings.

#### QUALITY ASSURANCE

- A. Design: Open web joists shall be custom designed to fit the dimensions and loads indicated on the plans. Designs shall be in accordance with allowable values assigned by the applicable building code.
- B. Complete design calculations showing interval layout, member forces and stress control points are to be available upon request for each truss joist design. Design of the truss joists shall be under the supervision of a registered professional Engineer.
- C. Fabrication: Joists shall be manufactured in a plant approved for fabrication by the building code.

#### DELIVERY, STORAGE AND HANDLING

- A. Joists shall be stored in a vertical position, in a dry place, completely protected from the weather. Handle with care to prevent damage.

#### PROJECT CONDITIONS

- A. Verify dimensions shown on Drawings by taking field measurements to assure proper fit and attachment of members.

### PRODUCTS

#### ACCEPTABLE MANUFACTURERS

- A. Furnish products of one of the following manufacturers, except as approved by the Architect, subject to compliance with specifications requirements:
  - 1 Trus Joist Corporation [www.tjm.com](http://www.tjm.com)
  - 2 Web Joist Corporation [www.webjoist.com](http://www.webjoist.com)

#### MATERIALS

- A. Trusses shall be factory manufactured with tubular steel webs, true pin connections and structural wood chords.
- B. Structural wood chord members shall be of machine stress rated lumber of approved Trus Joist grade and kiln dried to a maximum moisture content of 19 percent. End joints shall be finger joints conforming to details approved by the building code.
- C. Steel web members shall be accurately die stamped from electrically welded, cold rolled

steel tubing having a minimum yield strength of 45,000 p.s.i.

- D. Connecting pins and bearing details shall be of material and size as required by design.

## **EXECUTION**

### **ERECTION**

- A. Coordinate with other trades whose Work relates to truss joist member installation.
- B. Erect joists in accordance with the drawings and fabricators installation suggestions. Temporary construction loads which cause member stresses beyond design limits are not permitted.
- C. Install erection bracing and blocking in addition to bridging, to keep the joists straight and plumb, and to assure adequate lateral support for the individual joists and the entire system until the sheathing material has been applied.
- D. Contractor shall notify the Architect prior to enclosing joists to allow for inspection of the installation.
- E. Temporarily removing web members, drilling or cutting chords or webs will not be permitted without written permission from Architect.

### **CLEANING**

- A. After erection, remove unused materials, tools, scaffolding and debris and leave broom clean.

## FINISH CARPENTRY

### GENERAL

#### SUBMITTALS

- A. **Samples:** When requested by Architect, submit two samples of each species of exposed wood to receive transparent finish at the site. Samples shall be 12 inches by 12 inches in size.
- B. **Shop Drawings:** Indicate materials, components profiles, fastening methods, jointing details and accessories to a minimum scale of 1-1/2 inch to 1'-0".
- C. **Product Data:** Provide data on fire retardant treatment materials and application instructions

#### REFERENCES

- A. **Reference Standards:** Following standards apply to Work of this Section except where more stringent requirements are specified:
  - 1. Architectural Woodwork Institute (AWI) "Architectural Woodwork Quality Standards Illustrated" 7th Edition, Version 1.2 (1999).

#### QUALITY ASSURANCE

- A. **Applicable Standard:** Perform work in accordance with AWI "Architectural Woodwork Quality Standards Illustrated".
  - 1. Provide Premium when not otherwise indicated.
  - 2. Affix Quality Grade Stamp to each unit of product (e.g. each case; each panel; each bundle of trim, etc.).
- B. **Fabricator Qualifications:** Company specializing in fabricating the products specified in this section with minimum of 5 year documented experience.
- C. **Regulatory Requirements:** Conform to applicable code requirements for fire retardant treated wood as noted on the Drawings.

#### DELIVERY, STORAGE AND HANDLING

- A. **Packing and Shipping:** Deliver materials to site in Manufacturer's original unopened packaging with labels intact. Protect finished surfaces with removable wrapping or coating which will not bond when exposed to sunlight.
- B. **Storage:** Adequately protect against damage while stored at the site.

#### PROJECT CONDITIONS

- A. **Environmental Requirements:** Provide humidity conditions which will not damage woodwork.
- B. **Measurements:** Verify dimensions shown on Drawings by taking field measurement; proper fit and attachment of parts is required.

## PRODUCTS

### MATERIALS

- A. Softwood Lumber: Graded in accordance with applicable standard specified herein under "Quality Assurance," for grade of work specified, Douglas Fir species, plain sawn, moisture content of 6-8 percent, with flat grain, of quality suitable for transparent finish. Thicknesses as indicated on Drawings.
- B. Softwood Plywood: Graded in accordance with applicable standard specified herein under "Quality Assurance," for grade of work specified, Douglas Fir face species, rotary cut, exterior glue (APA Marine Grade where subject to moisture), sanded finish. Thicknesses as indicated on Drawings.
- C. Hardwood Plywood: HPVA HP Graded in accordance with applicable standard specified herein under "Quality Assurance," for grade of work specified, veneer core, type of glue recommended for application, face species and cut as indicated on Drawings. Thicknesses as indicated on Drawings.
- D. Wood Particleboard: ANSI A208.1, Type 1; NPA standard, composed of wood chips, medium density, made with water resistant adhesive of grade to suit application; sanded faces. Thicknesses as indicated on Drawings.
- E. Hardboard: ANSI A135.4, pressed wood fiber with resin binder, tempered grade, 1/4 inch thick, smooth one sides.
- F. Base, Moldings and Trim:
  - 1. Stain Finish: AWI Grade I Natural Birch.
- G. Grounds, Blocking and Furring Strips: #2 White Pine, construction grade Douglas Fir or other sound softwood. Fire treated lumber as required by codes or construction type.
- H. Shelving: Douglas Fir, surfaced (S4S).
- I. Plastic Laminate:
  - 1. Standard: In accordance with NEMA LD3.
  - 2. Type(s):
    - a. Flat surfaces: GP50.
    - b. Curved surfaces: PF42.
  - 3. Color: As indicated on Drawings.
  - 4. Finish: As indicated on Drawings.
  - 5. Pattern: As indicated on Drawings.
  - 6. Provide laminated backing sheet conforming to NEMA LD3 BK 20 on the reverse surface of plastic laminate components to maintain dimensional stability and reduce warping of the core material.
  - 7. Adhesive: Type recommended in accordance with applicable standard specified herein under "Quality Assurance" and laminated manufacturer to suit application.
- J. Fasteners:
  - 1. Size and type: To suit application, galvanized finish in concealed locations and stainless steel finish in exposed locations.
  - 2. Concealed joint fasteners: Threaded steel.
- K. Shelf and Rod Supports: Knapen and Vogt Mfg. Co. No. 1195. [www.knapenandvogt.com](http://www.knapenandvogt.com)
- L. Wood Treatment Processes:

1. Fire Retardant: Chemically treated and pressure impregnated; capable of providing flame spread/smoke developed ratings required by Building Code in accordance with ASTM E84.
2. Wood preservative treatment: Provide the following as applicable.
  - a. Pressure treatment type: AWPA Treatment C2 using waterborne preservative with 0.25 percent retainage.
  - b. Repellent treatment by dipping: 0.25 percent retainage.
  - c. Surface application: Clear.

#### FABRICATION

- A. Fabrication shall be in accordance with applicable standard specified herein under "Quality Assurance," for grade of work specified.
- B. Shop assemble finish carpentry, when possible, for delivery to site in units easily handled and to permit passage through building openings.
- C. Shop prepare and identify components for matching during site erection.
- D. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.
- E. Plastic Laminate:
  1. Apply plastic laminate finish in full, uninterrupted sheets consistent with manufactured sizes.
  2. Fabricate components so that corners and joints hairline will have hairline fit; for attachment with concealed fasteners.
  3. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.

#### SHOP FINISHING:

- A. Sand work smooth and set exposed nails and other fasteners.
- B. Apply wood filler in exposed nail and fastener indentations. On items to receive transparent finishes, use wood filler that matches surrounding surfaces and types recommended for applied finishes.
- C. Finish work in the factory in accordance with finish system in accordance with AWI "Architectural Woodwork Quality Standards Illustrated" Section 1500 - "Factory Finishing."
- D. Seal surfaces in contact with cementitious materials.

#### EXECUTION

##### EXAMINATION

- A. Verify adequacy of backing and support framing.
- B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

##### PREPARATION

- A. Priming: Back-prime wood surfaces inaccessible and unexposed after installation before delivery with an approved linseed oil and aluminum primer. Prime coat unfinished metal parts prior to installation.

#### INSTALLATION

- A. Installation shall be in accordance with applicable standard specified herein under "Quality Assurance," for grade of work specified.
- B. Set and secure materials and components in place, plumb and level.
- C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.
- D. Use only hot-dip galvanized or aluminum finish or casing nails. Set nails for putty stopping in surfaced members. Hammer marks not acceptable on exposed finished surface and are subject to rejection of member by Architect.
- E. Make end splices exposed in finished members bevel splices and not square butted. Install members in as long lengths as possible.
- F. Provide and install other miscellaneous millwork items and related items required to complete the Work.
- G. Prepare woodwork installed by cleaning and sanding as required to receive finishes specified in Section 09900.

#### CLEANING

- A. During the course of the Work and on completion, remove and dispose of excess materials, equipment and debris away from premises. Leave Work in clean condition.

## STEEL DOORS AND FRAMES

### GENERAL

#### SUBMITTALS

- A. Shop Drawings: Submit Drawings showing elevations of each door and frame type, typical and details of construction, location and installation requirements for hardware, size and thickness of material.
- B. Fire Rated Doors and Frames:
  - 1. Installation Instructions: Door and frame manufacturer shall clearly identify the hardware products, other materials and work requirements necessary to maintain compliance with UL 10(c) (positive pressure testing as required by 1997 UBC for fire Tests of Door Assemblies.
  - 2. Certification: Submit certification that fire rated doors (including frames and hardware as a unit) will comply with UL 10(c) (positive pressure testing) as required by 1997 UBC for Fire Tests of Door Assemblies.

#### DELIVERY AND STORAGE

- A. Deliver welded frames with spreaders and doors with wrappers.
- B. Store doors and frames under protective cover in dry, enclosed spaces at the site. Place doors and frames on non-staining blocking Raise bottoms of doors at least 4 inches high and provide 1/4 inch air space between stacked doors to avoid metal to metal contact and permit air circulation.

### PRODUCTS

#### MANUFACTURERS

- A. Furnish steel doors and frames from one of the following Manufacturers subject to compliance with Specification requirements:
  - 1. Steelcraft Manufacturing Co.
  - 2. Curries Company
  - 3. The Ceco Corporation
  - 4. The Kewanee Corp.
  - 5. Republic Builders Products
  - 6. Security Metal Products
  - 7. Three G Industries, LLC
- B. Doors and frames shall be furnished by the same Manufacturer.

#### MATERIALS

- A. Doors: ANSI/SDI-100 Grade II, Model 2, flush seamless 18 gauge honeycomb core. Core shall be as allowed by UL 10(c) for fire rated doors.
- B. Frames: ANSI/SDI 100, 14 gauge steel.
- C. Glazing Beads: Minimum 20 gauge steel.

- D. Steel: ASTM A366 cold-rolled or ASTM A569 hot-rolled. Electrolytic zinc-coated meeting ASTM A591, Class B for exterior openings.
- E. Paint: Non-lifting, rust-inhibitive grey primer meeting ANSI A224.1, compatible with field finish specified in Section 09900, applied after bonderizing.

#### FABRICATION- DOORS

- A. Construct hollow metal doors, flush and vision lite types as scheduled on Drawings, in accordance with ANSI/SDI-100 with core as specified above. Reinforce top and bottom of doors horizontally by [16 gauge] [14 gauge] steel channels, full width, spot welded to each face at least 3 inches on center. Bevel edge of lock stile.
- B. Joints at the edges of doors shall be mechanically interlocked or shall have a channel continuously welded where face sheets meet.
- C. Where heavy duty hinges have been specified, provide 8 gauge reinforcing at hinge cut outs. Coordinate with hardware schedule.
- D. Reinforce openings in doors for lites and vents on all sides with 14 gauge steel channel.
- E. Provide double doors with one-piece astragals of 14 gauge steel. Provide solid drip cap at top of exterior out-swinging doors.
- F. Accurately mortise doors for locks and hinges. Provide adequate box type reinforcement with steel plates welded to the interior reinforcing channels and drilled and tapped. Provide reinforcement for all other items of hardware.
- G. Doors with glass lite openings shall have trim recessed from the face of the door, beveled and attached with screws.
- H. Louvers: Provide sightproof louvers inserted into the panels. Form louver frames of minimum 20-gauge steel. Weld or tenon minimum 24 gauge blades to frame and fasten the entire assembly to the door with moldings. The moldings, when used, shall be an integral part of the louver.
- I. Fire-Rated Doors: Provide fire rated doors investigated and tested as fire door doors, complete with type of hardware to be used. Identify each fire door with recognized testing laboratory labels, indicating applicable fire rating of steel doors. Doors required to meet smoke and draft control assembly requirements shall have labels that identify that the door has been tested and approved for smoke and draft control assemblies (S-label). Construct doors to comply with NFPA Standard No. 80.

#### FABRICATION - FRAMES

- A. Construct to shapes and sizes shown, meeting various wall thicknesses in accordance with ANSI/SDI-100.
- B. Back weld corners (inside face) and grind outside face to remove material that comes through seam.
- C. Mortise, reinforce, drill and tap for standard weight, full mortise template hinges and template strike.
- D. Provide not less than three 18 gauge anchors per jamb, or as shown on Drawings, spaced for maximum stiffness. Provide adjustable 18 gauge floor clips at each jamb,

welded to back face of jamb, punched for securing to floor with two spaced anchors.

- E. Make cutouts for required hardware specified under Section 08710, from templates furnished. Reinforce butt cutouts with minimum 8 gauge thick steel plate drilled and tapped and welded in place. When heavy duty hinges are specified, provide high frequency reinforcing at frames for hinges. Coordinate with hardware vendor. Provide strike stops of frames with holes for three rubber door silencers; on double door frames, provide for two silencers per door at head.
- F. For openings over 42 inches wide and at double openings, reinforce head members full length with a matching profile of 12 gauge steel. Provide anchor at midpoint of door, if practical.
- G. Construct frames for UL labeled doors in accordance with UL requirements and label as scheduled. Frames required to meet smoke and draft control assembly requirements shall have labels that identify that the frame has been tested and approved for smoke and draft control assemblies (S-label).

#### FABRICATION - GLAZING FRAMES

- A. Construct in accordance with applicable parts of door frame Specification and as detailed. Extend partition frames around all four sides of openings.
- B. Provide glazing stops, removable one side and integral from the other side, secured with countersunk flat head Phillips screws spaced at not more than 16 inches on center and 2 inches from corners. Miter stops at corners.

#### PAINTING

- A. Bonderize and prime doors and frames with one shop coat of rust inhibitive primer.

#### EXECUTION

#### INSTALLATION

- A. Install metal door frames plumb, level and rigidly secure in place. Properly brace until built in. Follow recommendations of SDI-100.
- B. Fill backs of frames solid with mortar at concrete and masonry construction.
- C. Install fire doors and frames to comply with NFPA 80 and in accordance with manufacturer's printed instructions.

#### FIELD QUALITY CONTROL

- A. Manufacturer's representative shall inspect fire rated doors (including frames and hardware as a unit) and verify compliance with UL 10C (positive pressure testing) as required by 1997 UBC for Fire Tests of Door Assemblies. Fire rated doors (including frames and hardware as a unit) which do not comply with UL 10C (positive pressure testing) as required by 1997 UBC Fire Tests of Door Assemblies shall be removed and replaced at no additional cost to Owner.

#### CLEANING

- A. During the course of the Work and on completion of the Work, remove excess materials,

equipment and debris and dispose of away from premises. Leave Work in clean condition.

## WOOD DOORS

### GENERAL

#### SUBMITTALS

- A. Shop Drawings: Submit Drawings showing schedule of door sizes and types, door details and elevations. Note discrepancies between the Drawings and door schedules, and the requirements of regulatory and testing agencies.
- B. Product Data: Submit Manufacturer's data showing door construction.
- C. Samples: Before fabrication, submit sample of each type of door to be furnished, showing face, edge, core construction and factory finish for each type specified.
- D. Fire Rated Doors:
  - 1. Installation Instructions: Door manufacturer shall clearly identify the frame, hardware products, other materials and work requirements necessary to maintain compliance with UL 10(c) (positive pressure testing as required by 1997 UBC for fire Tests of Door Assemblies).
  - 2. Certification: Submit certification that fire rated doors (including doors, frames and hardware as a unit) will comply with UL 10(c) (positive pressure testing) as required by 1997 UBC for Fire Tests of Door Assemblies.

#### QUALITY ASSURANCE

- A. Coordination: Contractor shall be responsible for coordinating and obtaining necessary information from Hardware and Metal Frame Manufacturers. Door Manufacturer shall be responsible for coordinating necessary information received by Contractor from Hardware and Metal Frame Manufacturers in order that doors shall be properly prepared to receive hinges and hardware. Contractor shall provide door supplier with approved frame schedule, hardware schedule, and hardware templates. Furnish to door supplier 60 days prior to desired delivery date of doors.
- B. Regulatory Requirements: Fire doors shall be listed and labeled by a nationally recognized testing and certification agency, in accordance with applicable building codes. Doors required to meet smoke and draft control assembly requirements shall have labels that identify that the door has been tested and approved for smoke and draft control assemblies (S-label). The listed doors shall meet or exceed ASTM E152, [UL-10(b).] UL-10(c) (positive pressure testing), Category A and NFPA 252. Provide fire labels from Warnock-Hersey International (WHI), or Underwriters Laboratories (UL).
- C. Certification: Provide each fire rated and sound rated door with a label permanently attached at eye level, to the hinge stile, indicating the testing agency's approval for the rating required.

#### DELIVERY, STORAGE AND HANDLING

- A. Prior to delivery, seal door edges with an approved clear sealer, compatible with finish specified.
- B. Delivery:
  - 1. Deliver doors to the jobsite only when proper storage site is available.
  - 2. Store doors in an area having controlled temperature and humidity as

- recommended by NWWDA, and the door manufacturer.
3. Store doors flat on factory pallets, or three full 2 x 4's, one centered and the other two 12 inches from each end. Do not stack doors on end, or on their vertical edge.
  4. Protect wood doors from construction activity, dirt, and exposure to sunlight.

C. Handling:

1. Always handle doors with clean hands or gloves.
2. Do not drag doors across one another.
3. Maintain factory packaging or other means of protection on doors, until date of Substantial Completion.

## WARRANTY

A. Special Warranty: Furnish the following warranty to Owner:

1. Warrant doors from the date of installation against defects in materials and workmanship. Periods of warranty after date of installation:
  - a. Interior solid core and mineral core: Life of installation.
  - b. Exterior solid core: 5 years.
  - c. Interior hollow core: 5 years.
2. Replacement under warranty shall include removal of the defective door, hanging, installation of hardware, and finishing.

## PRODUCTS

### MANUFACTURERS

A. Doors shall be products of one of the following Manufacturers:

1. Algoma
2. Buell Door Company
3. Eggers Industries
4. Marshfield Door Systems
5. Lambton
6. Vancouver Architectural Doors

### FLUSH DOORS

A. Cores:

1. Solid Core: Shall conform to ANSI A208.1 1LD2, 32 lbs. per cubic foot density.
2. Hollow Core: Expanded honeycomb made of corrugated fiberboard. Meet or exceed the requirements of NWWDA Industry Standards I.S.1 Series.

B. Edge Bandings:

1. Stiles (Dimensions given are minimum sizes allowed after factory trimming to booksize or prefitting).
  - a. Particleboard Core: 1-1/2 inch double banded laminated hardwood stile (no finger joints allowed) in inner and outer band to be at least 1/2 inch wide same species lumber as face veneer with the exception of birch doors which will have hard maple stiles.
  - b. Hollow Core: Stile shall be 1-1/2 inch minimum.
2. Rails (Dimensions given are minimum sizes allowed after factory trimming to booksize or prefitting).
  - a. Particleboard Core: 1-1/4 inch minimum mill option hardwood rail.
  - b. Hollow Core: 1-1/4 inch minimum mill option wood.

C. Face Veneers, Crossbands and Backers: When wood veneer or medium density overlay

faces are specified, doors shall be 5 ply, made up of a face veneer, crossbanding and a core unit, all securely bonded together utilizing type 1 (fully waterproof) adhesive and the hot press assembly technique. All plies must be placed at right angles to adjacent plies. Face veneers shall have a minimum thickness of 1/50 after factory sanding and the individual pieces of veneer forming the face veneer must be spliced or edge glued together.

1. Veneer:
  - a. Face veneer: A Grade Select White Birch.
  - b. Veneer cut: Plain sliced.
  - c. Veneer match: Book match.
2. Cross banding shall be thoroughly dried hardwood extending full width and height of door with grain at right angles to face and back veneer.
3. Plastic laminate faced doors shall be a minimum 3-ply construction for particle core doors and minimum 5-ply construction for mineral core doors. Laminate shall be NEMA LD-3, .050 inch, General Purpose Type, selected from Manufacturer's available sources. Stile edges and outer wood trim shall be mill option hardwood stained or painted to match or mill option hardwood faced with matching plastic laminate. Same species hardwood may be specified in a matching or contrasting transparent finish.
4. Paint Grade: Furnish Medium Density Overlay for paint grade doors. MDO shall meet PS1-74. Overlay shall be factory primed, readily sandable, weatherproof, and carry a Class "B" Fire Rating. Paint grade Birch hardwood and hardwood surfaced doors shall not be considered as meeting this Specification.

D Glue: Type 1 for interior and exterior doors.

#### LABELED FLUSH DOORS

- A. Mineral core flush veneered doors, 5-ply, shall be made up of face veneers, crossbanding, and a core unit securely bonded together utilizing Type I (fully waterproof) adhesive and the hot press assembly technique. Provide matching transom panels where scheduled.
- B. Face Veneers and Crossbanding: Same as specified for non-labeled doors.
- C. Core Unit: Asbestos free, noncombustible mineral composite with a minimum of 28 pounds per cubic foot ) density when tested in accordance with ASTM C303, with 10 percent maximum absorption by weight with core in equilibrium at 90 percent relative humidity and 70 degrees F.. Provide flame resistant blocking as required by the hardware schedule. The door listing shall not limit the size or location of such blocking.
  1. Provide one lock block 5 inches x 12 inches when a bored unit or mortise lock is to be used and two lock blocks when the door is equipped with an exit device.
  2. For doors with closers include 6 inch top rail. Provide wide bottom rails for exit, manual and automatic flush bolts and automatic door bottoms.
- D. Rails: Top 15/16 inch, bottom 1-7/8 inches rail (one or two piece) of flame resistant material - salt free. Securely glue rails to core.
- E. Stiles: Manufacturer's standard for receiving a full mortise hinge. No salt treated components shall be used. UL or WH approved for labeled doors meeting the following performance criteria:
  1. Split Resistance: Average of ten test samples shall be not less than 900 load pounds when tested in accordance with "Test Method to Determine Split Resistance of Hinge Edges of Composite Type Fire Doors."
  2. Direct Screw Withdrawal: Average of ten test samples shall be not less than 650

load pounds when tested for direct screw withdrawal in accordance with ASTM D1037; using a No. 12 x 1-1/4 inch steel thread-to-the-head wood screw of the cadmium plated or rust-resistant type. Drill 5/32 inch pilot hole, approximately 1/8 inch beyond the length of the screw.

3. Cycle/Slam: 200,000 cycles with no loose hinge screws or other visible signs of failure when tested in accordance with the requirements of ANSI A151.1, Section 2.5.
- F. Vision Frames: Provide one of the following.
1. Furnish metal vision frames primed for field painting for doors with lites. Frames shall meet [AWI] [WIC] standard, UL, or WHI approved.
  2. Furnish Marshfield Door Systems "Trim-lite" 20 minute wood molding system with flush or lipped bead moulding profile as selected by Architect, or Algoma Veneer wrapped wood bead, fire-rated for 45, 60 and 90 minutes.
- G. Manufacture labeled doors to the required size so as to provide proper clearances without field trimming. Machining of labeled doors must be completed before label is applied to assure the full thickness of the edge bands. Machine fire doors to meet NFPA 80 requirements. Provide channels for concealed exit devices specified in Section 08710 and in conformance with UL requirements.
- H. Meeting edges on pairs of labeled doors:
1. Treated stiles at pairs of 20 minute doors.
  2. Metal edge and astragal at pairs of 45, 60 and 90 minute doors not used in conjunction with surface mounted vertical rods on each leaf.
  3. Metal edge at pairs of 45, 60 or 90 minute door used in conjunction with surface mounted vertical rods on each leaf.
  4. No metal edge or astragal at pairs of 45, 60 or 90 minute door. Furnish "Pair Guard" door as manufactured by Marshfield Door Systems with surface mounted vertical rods on each leaf, or as approved.

#### STILE AND RAIL DOORS

- A. Meet AWI 1400 Premium Grade for transparent finish and Custom Grade for opaque finish.
- B. Veneer: Birch.

#### LOUVERS

- A. Material: Match face veneer species, with round edge, flat slat blade and 50 percent free area.

#### FACTORY FINISHING

- A. Clear Finish: AWI Section 1500 System TR-6 Catalyzed Polyurethane, in 35 gloss, applied using the following steps.
  1. Finish sanding.
  2. Burnish.
  3. Sealer application. Sealer to be catalyzed polyurethane coating or modified catalyzed polyurethane coating.
  4. Curing.
  5. Sealer denibbing.
  6. Topcoat application. Topcoat to be catalyzed polyurethane coating or modified catalyzed polyurethane coating.
  7. Curing.

- B. Stain Finish: [AWI Section 1500 System TR-6] [WIC Section 5 System #5] Catalyzed Polyurethane applied using the following steps.
1. Finish sanding.
  2. Burnish.
  3. Stain application. Stain to color as selected by Architect from manufacturer's standard and custom colors.
  4. Curing.
  5. Sealer application. Sealer to be thermosetting polyester amino modified conversion coating.
  6. Curing.
  7. Sealer denibbing.
  8. Topcoat application. Topcoat to be catalyzed polyurethane coating or modified catalyzed polyurethane coating.
  9. Curing.

## EXECUTION

### EXAMINATION

- A. Examine door frames to assure that jambs are true and plumb. Correct frames which are not true and plumb before doors are hung.

### INSTALLATION

- A. Doors shall be hung true and plumb with standard bevel and with uniform 3/32 inch clearance at jambs and head, and 1/2 inch bottom clearance, unless otherwise required. Mortise, drill or otherwise prepare doors for finish hardware specified in Section 08700, Finish Hardware.
- B. Doors that are cut or planed for fitting shall be immediately resealed with a transparent wood sealer. Doors shall operate freely without sticking or binding, without hinge-bound conditions and with hardware installed, properly adjusted and functioning.
- C. Install fire doors and frames to comply with NFPA 80 and in accordance with manufacturer's printed instructions.
- D. Field Finish: Provide as specified in Section 09900 and in accordance with Door Manufacturer's written instructions.

### FIELD QUALITY CONTROL

- A. Manufacturer's representative shall inspect fire rated doors (including frames and hardware as a unit) and verify compliance with UL 10C (positive pressure testing) as required by 1997 UBC for Fire Tests of Door Assemblies. Fire rated doors (including frames and hardware as a unit) which do not comply with UL 10C (positive pressure testing) as required by 1997 UBC for Fire Tests of Door Assemblies shall be removed and replaced at no additional cost to Owner.

### CLEANING

- A. During the course of the Work and on completion of the Work, remove excess materials, equipment and debris and dispose of away from premises. Leave Work in clean condition.



## FINISH HARDWARE

### GENERAL

#### SUMMARY

- A. This section specifies materials, products and their installation, all to be provided by the prime bidder. The following text refers to various parties, (architect, contractor, sub-contractor, supplier, installer) as a guide for potential sub-bidders. If a different separation of responsibilities is desired, the prime bidder should clarify for the benefit of the sub-bidders.
- B. Provide finish hardware necessary for doors on the door schedule as specified and listed herein. Installation of the finish hardware is specified in Part 3 of this section.
- C. Coordination with the following related sections is a requirement of this section. Each must be evaluated with all related sections for omissions, compatibility, duplications and necessary reinforcement.

Submittals	01330
Quality Control	01400
Materials and Equipment	01600
Contract Closeout	01770
Rough Carpentry	06100
Joint Sealers	07900
Hollow Metal	08100
Wood Doors	08215
Metal Support Systems	09100
Painting	09900

#### REFERENCES

- A. The finish hardware and its installation is to comply with the latest editions and relevant standards and codes that are in effect at the time of construction:

ADA	Americans with Disabilities Act
ANSI	American National Standards Institute
AWI	Architectural Woodwork Institute
BHMA	Builders Hardware Manufacturers Association
DHI	Door & Hardware Institute
NFPA	National Fire Protection Agency
SDI	Steel Door Institute
UBC	Uniform Building Code
UL	Underwriters Laboratories

#### QUALITY ASSURANCE

- A. This section sets a standard or general level of duty rating, performance and quality. Requests for products equal in durability, as measured in ANSI cycles, will be received up to 10 days prior to bid date. Include direct, item-for-item comparisons, accompanied with complete product data on proposed substitutes.
- B. The hardware supplier must be regularly engaged in contract hardware for commercial projects and have on staff a certified Architectural Hardware Consultant to direct detailing, application and coordination of the finish hardware.
- C. All hardware to be warranted against defects in materials and workmanship by the manufacturer for a period of one year from the date of occupancy. Provide extended warranty for following products:

Pivots .....	2 years
Mechanical panic devices ....	3 years

Electrified closers .....	2 years
Manual closers .....	10 years
Power operators .....	2 years

**SUBMITTALS**

- A. The supplier shall provide formal submittals as required in section 01330 within 14 calendar days after receipt of signed order from the contractor. Include a description of operation and a diagram for each electronic system that requires electronic hardware.
- B. Submittals to follow the form outlined for vertical schedules in DHI "Sequence & Format for the Hardware Schedule".
  - a. Include degree of opening for each door leaf.
  - b. Coordinate closer mounting with room types, hinge width, jamb type, jamb depth, frame placement, wall conditions and type of stop. Notify architect of any contradictions.
  - c. State specific closer mounting application when doors are scheduled for a closer. The submittal must clearly state the mount for the installer.
- C. Include product data sheets with each copy, with data limited to only the products listed in the submittal.
- D. Provide a list of required templates, correlated to each hardware item, with each submittal copy.
- E. Submit a keying schedule after communication with the owners keying representative. The format and nomenclature as outlined in DHI "Keying Terminology".
- F. Upon completion of the project, provide one owners manual consisting of a copy of the final hardware schedule with approved keying schedule, installation instructions, operating instructions, manufacturers addresses, maintenance data and any special tools required for the project hardware.

**PRODUCTS**

**APPROVED MANUFACTURERS**

Hinges .....	Hager (HAG), Stanley, McKinney
Panic devices .....	Von Duprin (VON)
Locksets .....	Best (BES)
Pivots, Closers .....	LCN (LCN)
Stops, Holders .....	Glynn-Johnson (GLY), Hager, Ives (IVE), Trimco
Coordinators, Flush Bolts ...	Glynn-Johnson (GJ), Hager, Ives (IVE), Trimco
Trim .....	Ives, Hager, Trimco
Weatherstrip .....	Pemko (PEM), NGP, Reese,

Products of manufacturers not listed are subject to prior approval by the architect per para.1.03.A and section 01600. A formal request for substitutions must be submitted. Only the approvals acknowledged in a formal addendum prior to bid date will be authorized.

**MATERIALS**

- A. Fasteners
  - 1. Screws and fasteners provided by the manufacturer shall be used without substitution.
  - 2. Generally, all visible screws shall be Phillips flat or oval head, finished to match the hardware. Screw applied weatherstrip and seal may be attached with Phillips pan head screws as furnished by manufacturer.
  - 3. Note special requirements on trim plates (pull, push, stretcher, armor, kick, mop and edge).
- B. Pivots

1. All aluminum doors and doors that weigh 200 pounds or more are to have 0.75" offset pivot sets. Set to include top pivot and bottom pivot for doors up to 60" in height with an intermediate pivot for each additional 30" of door height or fraction thereof. When required by door swing, provide center-hung pivots. All pivots to comply with the following:
    - a) Bottom pivots to be floor-mounted.
    - b) All pivots to be heavy-duty Grade 1, all with bearings either ball, needle or roller. Bushings will not be permitted.
    - c) The weight rating of each pivot set to be a minimum of 200% of the door weight.
- C. Hinges
1. Doors not on pivots to have template hinges of 5-knuckle design with ball bearings, sized:
    - a) 4.5" wide for 1.75" thick doors, 5" wide for doors greater than 1.75" to 2" thick and wider if conditions require
    - b) Heavy weight (0.190" th.) 4-bearing x 5" in height for doors over 36" wide
    - c) Heavy weight (0.180" th.) 4-bearing x 4.5" in height for high frequency doors up to 36" wide
    - d) Standard weight (0.134" th.) 2-bearing hinges x 4.5" in height for low frequency doors up to 36" wide
    - e) NRP feature at locked, out-swinging doors
    - f) Provide two hinges for doors up to 60" in height with an additional hinge for each additional 30" of height or fraction thereof.
  2. Gate hinges to be heavy-weight 6" x 6" full mortise.
- D. Panic Devices
1. All panic devices to be UL listed per UL 305. Panic devices for fire-rated openings must be listed and labeled as "Fire Exit Hardware". Fire-rated devices must be provided complete with all components as tested and listed by UL.
  2. All panic devices to be certified by independent testing service for 1 million cycles per ANSI A156.3.
  3. Devices to be push-pad type with integral push pads. Comply with all codes and requirements for push pad width. No exposed cavities when operated.
  4. Provide 3/4" throw deadlocking latchbolts. Mechanism to be field-selectable for function.
  5. Provide lever type outside trim. Through-bolted directly to inside device case. All extra-heavy duty with forged brass or bronze escutcheon with breakaway feature on lever mechanism. Breakaway mechanism to have initial breakaway force of at least 25 ft/lbs., maintaining at least 80% of original value after 5000 breakaway cycles. Lever travel during breakaway must be restricted from crossing the edge of the door to allow egress through other door leaves. Provide easy reset of lever to proper operating position.
  6. Provide mullions with key-removable feature complete with storage fixture.
- E. Locksets
1. Mortise locks and latches to be heavy-duty ANSI A156.13 Grade 1, with steel case and through-bolted spring cages. Stainless steel 3/4" throw latch bolts with anti-friction cam. Stainless steel 1" throw deadbolts when called for by function. Sectional trim with solid forged brass, cast bronze or stainless steel levers and wrought roses.
  2. Cylindrical locks and latches to be heavy-duty ANSI 156.2, Grade 1. Mounted with concealed screws and through-bolted mechanism. Spring cage to have heavy duty cast mounting plate with heavy duty compression springs. Retractor to be roller bearing anti-friction movement.
- F. Closers
1. Extra heavy-duty, certified by independent testing service for 10,000,000 full load cycles per ANSI A156.4. Fully hydraulic, rack and pinion action with hi-strength cast iron cylinders and 1-piece steel pistons. High efficiency, low friction pinion bearings with 11/16" dia. pinion shaft, double heat-treated.
  2. All closers at exterior out-swinging doors to have extra heavy-duty arms with forged steel main and forearms. Assemble main-to-forearm joints with 11/16" diameter shoulder bolt in bronze bushing.

3. Power adjustable for size and adjustable to minimum force and timing requirements of ADA/ANSI 117.1.
4. Provide all closers with separate adjusting valves for closing speed, latch speed and backcheck. When specified in sets, provide a fourth valve for advanced backcheck to start at approximately 45 degrees. All valves to be v-slot, non-critical screw valves.
5. All closers shall utilize a stable fluid that will provide for proper closing without seasonal adjustments for temperatures from -30°F. to 120°F. Fluid for fire-rated closers to also comply with UL 10C and UBC Standard 7-2 (1997).
6. Closer finish to be a powder coat finish to exceed a minimum 100 hour salt spray test per ASTM B117 and ANSI A156.4.

**G. Flushbolts**

1. Manual flushbolts are to be mortise flush extension bolts per ANSI 156.16 with included rod length to place mechanism no higher than 80" above finish floor. Provide one top and one bottom with included dust proof strike for each leaf scheduled for flushbolts.
2. When automatic or semi-automatic flushbolts are required, provide reduced-activation-force bolts. Furnish as sets, also with dust proof strikes.
3. At low-security, high-traffic openings, provide top bolt only. Less bottom bolt option when fire-rated.

**H. Coordinators**

1. Provide bar type, soffit-mounted coordinators with safety release mechanism, tested a minimum of 100,000 cycles by an independent laboratory. Furnish complete with filler bars and brackets when required.
2. Coordinators at in swinging mechanical room and store room doors may be face-mounted type.

**I. Door trim**

1. Pulls to be 3/4" diameter round x 8" c-c height mounted on plate of 0.125" minimum thickness, beveled 4 edges mounted on door with flat-head through bolts and drilled and countersunk for oval head perimeter edge screws. Verify that hollow doors are specified to be reinforced with box type reinforcing to support through bolts.
2. Provide pushplates of minimum 0.125" thickness, beveled 4 edges, drilled and countersunk with oval head perimeter screws.
3. Protective plates of minimum 0.050" thickness x 12" height x 2" LDW, beveled 4 edges, drilled and countersunk with oval head perimeter screws. Armor plates to be 36" high.

**J. Stops and Holders**

1. Provide a stop for each door leaf. If conditions prohibit the use of a wall or floor stop, furnish an overhead stop.
2. Overhead stops and holders are to have field-interchangeable functions and offset jamb brackets. All metal components with no plastic or composite parts. All to have stainless steel arms and jamb brackets.
3. Provide silencers at all openings (except where scheduled for stop applied seal). Provide three for each single door frame and two for each double door frame.

**K. Thresholds and seals**

1. Furnish thresholds with screws and rawl plugs.
2. Provide sweeps of 1-1/4" extruded aluminum with 1/8" thick closed-cell neoprene seal.
3. Jamb seal to be self-adhesive bulb, UL listed where applied to fire-rated doors.

**FINISHES**

**A. Finishes specified are ANSI/BHMA finishes as defined in ANSI 156.18.**

Hinges.....	652
Panics, locks, flushbolts.....	626
Push pulls, plates, trim.....	630
Pivots, closers.....	689
Wall stops.....	626

Overhead stops .....630  
Thresholds, weatherstrip.....628

**KEYING**

- A. Existing system is Best removable core. All cylinders and locks are to be compatible to owners existing system and keyed into owners existing system as directed by owner. Cylinders and locks are to be provided with temporary construction cores installed, all keyed alike and furnished with 12 construction keys. Core control keys are to issued only to the owner with the permanent keys.
- B. Key permanent cores to be O bitted, as directed by owner. Submit keying schedule directly to the owner for formal approval. All permanent keys to be nickel-silver. The quantity to be provided shall be an amount equal to 3 keys per cylinder. The quantity per set shall be as scheduled in the approved keying schedule. Deliver directly to the owners designated representative by restricted delivery.
- C. Upon completion of the project, the owner will exchange construction cores with permanent and return to supplier.
- D. Provide a flush wall-mount key cabinet, complete with 2 tag system. Capacity to be 150% of the number of keyed locks specified herein. Hardware supplier shall review capacity prior to submittal of keying schedule and notify contractor if a change in capacity is required.

**EXECUTION**

**DELIVERY & STORAGE**

- A. Deliver hardware f.o.b. jobsite (street address) to contractors authorized agent to transfer legal possession. Furnish in manufacturers original packaging, clearly marked to correlate with the hardware schedule.
- B. Contractor shall provide secure storage of ample space for all project hardware. Distribution of hardware shall be strictly controlled to prevent loss or damage. Required replacement of lost or damaged items will be the responsibility of the contractor.

**EXAMINATION**

- A. The contractor shall examine or otherwise verify that the openings scheduled to receive finish hardware are properly prepared and that doors and frames are correct as specified prior to installation of any finish hardware. Correct any conditions that prevent proper application or operation of finish hardware prior to installation of hardware.
- B. The contractor shall coordinate the examination and verification with the installing sub-contractor.

**INSTALLATION**

- A. Hardware to be installed by experienced tradesmen, familiar with published requirements and practiced in the correct and necessary methods, procedures and tolerances to provide proper installation and operation. Prime contractor will be responsible for verifying or validating installers experience prior to bid.
- B. Mount all hardware at locations recommended by DHI.
- C. Install each hardware item strictly in accordance with the manufacturers instructions and the guidelines published in ANSI/DHI A115.1G. Including proper lock and latch operation, strikes and strike adjustment at all strikes including floor strikes for cane bolts, flushbolts and vertical rods. Coordinator and bolt operation, closer adjustment, including degree of swing as stated on approved hardware submittal.

- D. Use only the fasteners provided by the manufacturer with the hardware. The use of improper fasteners may require relocation or replacement of the item or repair of the door and jamb. All consequential costs will be the responsibility of the installing sub-contractor.
- E. The installing sub-contractor shall examine each frame, door and wall area as necessary during installation of hardware to verify proper construction or reinforcement. Including wall blocking, frame and door reinforcement and mortise preparations. Report any improprieties to the contractor immediately and correct before proceeding with the installation. Failure to notify or any remedies made without authorization may void warranty and cause installer to be subject to damages.
- F. Hardware installed prior to final finish shall be coordinated by the contractor with the finish sub-contractor and installing sub-contractor and approved by the architect. Protect all hardware from contamination and/or damage until acceptance by owner.
- G. Locate thresholds to properly fit and seal with the door bottom, field cut and fit to each opening and set in sealant for a full water-proof seal at the sill.

#### QUALITY CONTROL

- A. Upon completion of installation, the installing sub-contractor shall provide written certification of compliance with above paragraph 3.03 and include with the certification, a copy of each set of installation instructions and installation templates for each item of hardware.
- B. Upon completion of project, installing sub-contractor shall inspect each opening for proper adjustment and condition. Any deficiency shall be reported to the contractor and corrected.

## METAL SUPPORT ASSEMBLIES

### GENERAL

#### SUMMARY

- A. Section Includes: Formed metal stud framing, furring, suspension systems and accessories as shown on Drawings and as specified.

#### SUBMITTALS

- A. Product Data: Submit data describing standard framing member materials and finish, product criteria, load charts, limitations, and installation instructions.
- B. Certificates: Mill Certification shall be provided with shipment to verify chemical composition, yield strength, tensile strength, elongation and coating thickness. Include listing of applicable ASTM standards specified in this section and comparison of ASTM requirements to actual materials provided to jobsite.
- C. Manufacturer's letter: Manufacturer shall provide letter stating that the material supplied to the specific project meets or exceed the performance standards listed in these specifications.

#### QUALITY ASSURANCE

- A. Perform Work in accordance with ASTM C 754 requirements

### PRODUCTS

#### MANUFACTURERS

- A. Furnish products as manufactured by a manufacturing member of the Steel Stud Manufacturers Association (SSMA), subject to compliance with Specification requirements.

#### FRAMING MATERIALS

- A. Studs, Runners and Furring Channels:
1. ASTM C 645, electro-galvanized to meet ASTM A 591, manufactured from steel supplied in accordance with ASTM A 653, Structural Quality Grade 33; G60 designation galvanized sheet steel.
  2. Thickness: In accordance with stud schedule provided herein.
  3. Deflection Track:
    - a. Non-Fire Rated Slotted Top Track - Single Track Slip System for Interior Partitions: As manufactured by Metal Lite, Inc., 3070 E. Miraloma Avenue, Anaheim, CA 92806 (800) 886-6824. Provide for partitions that are not required to be fire rated.
    - b. Fire Rated Shadowline Top Track - Single Track Slip System for Interior Partitions: Applicable configuration as required for fire rating as manufactured by Fire Trak Corporation, 111 Hazel Avenue East, Kimball, MN 55353 (800) 394-9875. Provide for partitions that are required to be fire rated.
  4. Curved Stud and Track Components: Custom curved stud and track components as manufactured by RadiusTrack Corporation, 6612 Lyndale

Avenue So., Suite 2, Richfield, MN 55423 (888) 872-3487.

- B. Studs: C-shaped, non-load bearing rolled steel, punched for utility access, of size shown on Drawings.
- C. Ceiling Runners: Cold or hot-rolled steel, meet ASTM C 754.
- D. Hanger and Tie Wire: Meet ASTM C 754.
- E. Furring and Bracing Members: Of same gauge, material and finish as studs, thickness to suit purpose.
- F. Clips, Brackets: Galvanized wire or sheet metal designed for attachment of framing, furring and bridging members.
  - 1. Deflection Clips: If acceptable to Building Official, VertiClip™ as manufactured by Signature Industries, LLC, P.O. Box 68005, Raleigh, NC 27613 (919) 844-0789 may be provided for attachment of framing to roof and floor construction at head and slide conditions. Provide sizes as required for stud depth(s). Clips shall be manufactured of steel conforming to ASTM A 653 Prime Certified G60 galvanized material or better, 50 ksi yield strength and 65 ksi ultimate strength. Deflection clips to have positive attachment to structure and stud material while allowing for frictionless movement.
  - 2. Bridging Clips: If acceptable to Building Official, BridgeClip™ as manufactured by Signature Industries, LLC, P.O. Box 68005, Raleigh, NC 27613 (919) 844-0789 may be provided for attachment of bridging to studs.
- G. Fasteners: GA 203, self-drilling, self-tapping screws.
- H. Anchorage Devices: Power driven, powder actuated, drilled expansion bolts or screws with sleeves as required for positive anchorage.
- I. Acoustic Sealant: As specified in Section 09250.
- J. Primer: FS TT-P-645, for touch-up of galvanized surfaces.
- K. Backing: "Notch-Tite" and "Flush Mount" as manufactured by Metal Lite, Inc., 3070 E. Miraloma Avenue, Anaheim, CA 92806 (800) 886-6824.

## EXECUTION

### EXAMINATION

- A. Verify that conditions are ready to receive Work.
- B. Verify field measurements are as shown on Drawings.
- C. Verify that rough-in utilities are in proper location.
- D. Beginning of installation means acceptance of substrate.

### METAL STUD ERECTION

- A. Install stud framing in accordance with ASTM C 754.
- B. Align and secure top and bottom runners at 24 inches o.c. Place two beads of acoustic sealant between runners and substrate.

- C. Fit runners under and above openings; secure intermediate studs at spacing of wall studs.
- D. Install studs vertically at 16 inches o.c.; unless indicated otherwise on Drawings. Place two beads of acoustic sealant between studs and adjacent vertical surfaces. Install felt strips between wall and stud where studs abut exterior walls.
- E. Connect studs to tracks using fastener method.
- F. Door Opening Framing: Install double studs at door frame jambs. Install stud tracks on each side of opening, at frame head height, and between studs and adjacent studs.
- G. Backing and Blocking: Provide backing and blocking attached to studs. Bolt or screw steel channels to studs. Install backing and blocking for support of plumbing fixtures, toilet partitions, wall cabinets, toilet accessories, and hardware. If proprietary system is used, install in accordance with manufacturer's printed instructions.
- H. Coordinate installation of bucks, anchors, blocking, electrical and mechanical Work placed in or behind partition framing.
- I. Splice studs with 8 inch nested lap, secure each stud flange with flush head screw.
- J. Construct corners using minimum three studs.
- K. Brace stud framing system and make rigid.
- L. Coordinate erection of studs with requirements of door and window frame supports and attachments.
- M. Align stud web openings.
- N. Refer to Drawings for indication of partitions extending to ceiling only and for partitions extending through ceiling to structure above. Maintain clearance under structural building members to avoid deflection transfer to studs. Provide nested extended leg ceiling runners, deflection clips or proprietary slip track. [Install fire rated proprietary slip track at fire rated partitions in accordance with applicable UL assembly and coordinate installation of additional gypsum board strips to comply with assembly requirements.]
- O. Coordinate placement of insulation in multiple stud spaces made inaccessible after stud framing erection.

#### WALL FURRING INSTALLATION

- A. Erect wall furring for direct attachment to concrete and masonry or as required.
- B. Erect furring channels vertically. Secure in place on alternate channel flanges at maximum 24 inches.
- C. Space furring channels maximum 16 inches on center, not more than 4 inches from floor and ceiling lines, and butting walls.
- D. Install furring channels directly attached to concrete and masonry or as required, as applicable in accordance with Manufacturer's instructions.
- E. Erect free-standing metal stud framing tight to concrete, concrete and brick masonry walls, attached by adjustable furring brackets in accordance with Manufacturer's instructions.

## ACOUSTICAL AND FIRE RATINGS

- A. Install framing and furring as required for indicated acoustical and fire ratings.

## CEILING FRAMING INSTALLATION

- A. Install in accordance with ASTM C 754.
- B. Coordinate location of hangers with other Work.
- C. Install ceiling framing independent of walls, columns and above-ceiling Work.
- D. Reinforce openings in ceiling suspension system which interrupt main carrying channels or furring channels, with lateral channel bracing. Extend bracing minimum 24 inches beyond each end of openings.
- E. Laterally brace entire suspension system.
- F. No hanger support shall be allowed from roof deck.
- G. At steel beams, joists or other steel construction wrap hangers around, inset through, or clip or bolt to the supports, so as to develop the full strength of the hangers.
- H. For cast-in-place concrete install hanger wires in the formwork using double looped hangers. Special insets, at least equivalent in strength to the hangers, to which the hangers can later be attached, may be inserted through or attached to the top of the forms in lieu of anchoring the hangers directly in the concrete.
- I. Grout hangers into cell of hollow core slab units or mechanical fasteners must be used to attach hangers.
- J. Attach hanger wires at concrete tee units by ram-set method only on the sides of the tee stems, at least 6 inches above the bottom of the stem. Attach with drilled stud type fasteners at other areas of tee units. Where tees receive conventional concrete topping hanger wires may be placed between joints of units provided double looped hangers are used.
- K. At lights or other openings that interrupt the main runner or furring channels reinforce grillage with 3/4 inch cold-rolled channels, wire tied atop and parallel to the main runner channels.
- L. Do not bridge control and expansion joints with metal furring. Provide separate supports on each side of joint.
- M. Fabricate and bend curved furring to required curves and radii in the shop.

## FIELD QUALITY CONTROL

- A. Testing: At Owner's request, Contractor shall provide spot testing of actual properties of steel framing to verify compliance with specifications.

## CLEANING

- A. During the course of the Work and on completion, remove and dispose of excess materials, equipment and debris away from premises. Leave Work in clean condition.

## STUD SCHEDULE

- A. Stud Table: Maximum limits based upon 5 psf deflection limit, 33 ksi yield stress, and composite wall sheathed both sides full height with 1/2 inch thick gypsum wallboard attached with No. 6 screws at 12 inches on center minimum, from the SSMA "Product Technical Information" - "Wall Height Tables for Composite Allowable Wall Heights." Maximum allowable deflection as follows:
1. Walls receiving gypsum wallboard finishes: L/240.
  2. Walls receiving plaster and brittle finishes, including stucco, stone masonry, and mirrors: L/360.
  3. Walls receiving ceramic and stone tile finishes: L/360.

STUD WIDTH	DESIGN THICKNESS (Gauge)	STUD SPACING	PARTITION HEIGHT		BRACING SPACING WHERE OCCURS
			L/240	L/360	
1 5/8"	18 mils .0188 in. (25)	16	8' - 4"	---	4' - 0" O.C.
		24	7' - 11"	---	4' - 0" O.C.
	33 mils .0346 in. (20)	16	9' - 8"	8'-5"	4' - 0" O.C.
		24	8' - 9"	7'-8"	4' - 0" O.C.
2-1/2"	18 mils .0188 in. (25)	16	11' - 3"	9'-10"	6' - 0" O.C.
		24	10' - 7"	9'-3"	6' - 0" O.C.
	33 mils .0346 in. (20)	16	12' - 10"	11'-2"	6' - 0" O.C.
		24	11' - 7"	10'-0"	6' - 0" O.C.
3-1/2"	18 mils .0188 in. (25)	16	14' - 4"	12'-4"	8' - 0" O.C.
		24	13' - 5"	11'-7"	8' - 0" O.C.
	33 mils .0346 in. (20)	16	16' - 5"	14'-3"	8' - 0" O.C.
		24	14' - 9"	12'-9"	8' - 0" O.C.
4"	18 mils .0188 in. (25)	16	15' - 4"	13'-4"	8' - 0" O.C.
		24	14' - 2"	12'-4"	8' - 0" O.C.
	33 mils .0346 in. (20)	16	18' - 4"	15'-11"	8' - 0" O.C.
		24	16' - 5"	14'-3"	8' - 0" O.C.
6"	18 mils .0188 in. (25)	16	19' - 9"	17'-11"	10' - 0" O.C.
		24	16' - 9"	16'-9"	10' - 0" O.C.
	33 mils .0346 in. (20)	16	24' - 6"	21'-4"	10' - 0" O.C.
		24	21' - 7"	18'-10"	10' - 0" O.C.



## GYPSUM BOARD

### GENERAL

#### SYSTEM DESCRIPTION

- A. Acoustic Attenuation for Interior Partitions as indicated on drawings: STC in accordance with ANSI/ASTM E90.

#### SUBMITTALS

- A. Product Data: Submit data on gypsum board, joint, finish and accessories.
- B. Samples: Submit sample of textured finish prior to application.
- C. Reports: Submit fire test report for fire rated assemblies, and acoustical performance test reports for acoustically-rated assemblies.

#### QUALITY ASSURANCE

- A. Applicator Qualifications: Company specializing in Gypsum Board Systems Work with 2 years documented experience and approved by Manufacturer.
- B. Regulatory Requirements: Conform to applicable code for fire rated assemblies in conjunction with Section 09100 and as shown on the Drawings.
1. Fire rated partitions: Listed assembly by UL No. 465.
- C. Comply with applicable specification recommendations of GA-216 and GA-600 as published by the Gypsum Association.

#### DELIVERY, STORAGE AND HANDLING

- A. Comply with GA-216 and Manufacturer's directions.

#### PROJECT CONDITIONS

- A. Environmental Requirements:
1. Maintain temperature of installed gypsum board spaces in range of 55 degrees F. to 90 degrees F. until building is entirely closed.
2. Ventilate as required to eliminate excessive moisture.

### PRODUCTS

#### MANUFACTURERS

- A. Furnish products of one of the following Manufacturers, except as approved by the Architect, subject to compliance with Specification requirements:
1. G-P Gypsum
2. Gold Bond Building Products Div., National Gypsum Co.
3. United States Gypsum Co.
4. James Hardie Gypsum

5. Pabco Gypsum

GYPSUM BOARD MATERIALS

- A. Standard Gypsum Board: ANSI/ASTM C36 or ASTM C1396; 5/8 inch thick, maximum permissible length; ends square cut, tapered edges.
- B. Fire Rated Gypsum Board: ANSI/ASTM C36 or ASTM C1396; fire resistive and moisture resistant type, UL rated; 5/8 inch, maximum permissible length; ends square cut, tapered edges.
- C. Moisture Resistant Gypsum Board: ANSI/ASTM C630 or ASTM C1396; 5/8 inch thick, maximum permissible length; ends square cut.
- D. Exterior Gypsum Sheathing Board: ANSI/ASTM C79 or ASTM C1396; moisture resistant and fire resistant type; 5/8 inch thick, maximum permissible length; ends square cut, edges; water repellent paper faces.
- E. Ceramic Tile Backer Board: As specified in Section 09310 - Ceramic Tile.

ACCESSORIES

- A. Adhesive: ASTM C557.
- B. Acoustical Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board, as recommended by Board Manufacturer.
- C. Corner Beads: GA216; Type CB; electro-galvanized steel
- D. Edge Trim: GA216; Type L bead; electro-galvanized steel and Type LC rolled-formed zinc.
- E. Control Joint: U.S. Gypsum No. 093, roll-formed zinc.
- F. Joint Materials: ANSI/ASTM C475; reinforcing tape, joint compound, adhesive, water, and fasteners. For coated board and gypsum sheathing, use material recommended by Board Manufacturer.
- G. Screws: ASTM C1002 for steel drill screws. Type G for fastening to gypsum board, Type S for fastening to light gauge steel framing and Type W for fastening to wood framing.
- H. Wall Texture: As manufactured by USG, multi-purpose, pre-packaged, non-asbestos type.
- I. Drywall Primer:
  - 1. Paint material specifically formulated to fill the pores and equalize the suction difference between gypsum board surface paper and the compound used on finished joints, angles, fastener heads and accessories and over skim coatings.
  - 2. Drywall primer which is applied to the finished surface of the work specified in this section shall be provided as specified under Sections 09900 and 09720 as applicable.
  - 3. A good quality, white latex drywall primer formulated with high binder solids, applied undiluted, shall be applied to gypsum board surfaces prior to the application of texture materials.

## EXECUTION

### INSPECTION

- A. Verify that site conditions are ready to receive Work and opening dimensions are as instructed by the Manufacturer.
- B. Beginning of installation means acceptance of substrate.

### GYPSUM BOARD INSTALLATION

- A. Install gypsum board in accordance with GA-201 and GA-216, and Manufacturer's instructions as applicable.
- B. Erect single layer standard gypsum board in most economical direction, with ends and edges occurring over firm bearing.
- C. Erect single layer fire rated gypsum board vertically, with edges and ends occurring over firm bearing.
- D. Exterior Sheathing:
  - 1. Install sheathing to comply with GA-253, ASTM C1280 and manufacturer's written instructions.
  - 2. Cut boards at penetrations, edges, and other obstructions of the work; fit tightly against abutting construction, except provide a 3/8-inch setback where non-load-bearing construction abuts structural elements.
  - 3. Coordinate sheathing installation with flashing and joint sealant installation so these materials are installed in the sequence and manner that prevent exterior moisture from passing through completed exterior wall assembly.
  - 4. Apply fasteners so screw heads bear tightly against face of sheathing boards but do not cut into facing.
  - 5. Do not bridge building expansion joints with sheathing; cut and space edges to match spacing of structural support elements.
  - 6. Joints: Remain untreated unless otherwise required for weather-resistive barrier, finish and/or cladding.
- E. Use screws when fastening gypsum board to metal and wood furring or framing.
- F. Treat cut edges and holes in moisture resistant gypsum board and exterior gypsum ceiling board with sealant.
- G. Place control joints consistent with lines of building spaces as indicated on Drawings and as recommended by Board Manufacturer.
- H. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.

### JOINT TREATMENT

- A. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
- B. Feather coats onto adjoining surfaces so that camber is maximum 1/32 inch.
- C. Taping, filling, and sanding is not required at surfaces behind ceramic tile.

## ACOUSTICAL TREATMENT

- A. Install acoustical sealant in accordance with Manufacturer's instructions.
- B. Install acoustical sealant at gypsum board perimeter at:
  - 1. Metal framing: Two beads.
  - 2. Base layer of double layer applications, if applicable.
  - 3. Face layer.
  - 4. Caulk partition penetrations by conduit, pipe, ductwork, and rough-in boxes.
- C. Install acoustical sealant where gypsum board joins other walls or surfaces at sound control partitions.

## FINISHING OF GYPSUM BOARD SURFACES

- A. Provide finish of gypsum board surfaces in accordance with the Gypsum Association "Recommended Specification: Levels of Gypsum Board Finish" as follows as noted on Room Finish Schedule:
  - 1. Level 0 (Temporary Construction): No taping, finishing, or accessories required.
  - 2. Level 1 (Fire Taping at plenum areas above ceiling, in attics, in areas where the assembly will be concealed or in building service corridors and other areas not normally open to public view):
    - a. Joints and interior angles shall have tape embedded in joint compound.
    - b. Surface shall be free of excess joint compound.
    - c. Tool marks and ridges are acceptable.
  - 3. Level 2 (Water resistant gypsum backing for tile):
    - a. Joints and interior angles shall have tape embedded in joint compound and wiped with a joint knife leaving a thin coating joint compound over joints and interior angles.
    - b. Fastener heads and accessories shall be covered with a coat of joint compound.
    - c. Surface shall be free of excess joint compound.
    - d. Tool marks and ridges are acceptable.
    - e. Joint compound applied over the body of the tape at the time of tape embedment shall be considered a separate coat of joint compound and shall satisfy the conditions of this level.
  - 4. Level 3 (Appearance areas to receive heavy or medium texture (spray or hand applied) finishes before final painting, or where heavy grade wallcoverings are to be applied as final decoration. This level of finish is not to be used where smooth painted surface or light to medium wallcoverings are to be applied.):
    - a. Joints and interior angles shall have tape embedded in joint compound and one additional coat of joint compound applied over joints and interior angles.
    - b. Fastener heads and accessories shall be covered with 2 separate coats of joint compound.
    - c. Joint compound shall be smooth and free of tool marks and ridges.
    - d. Surface to be coated with Drywall Primer as specified herein prior to application of texture.
    - e. Untextured surfaces to be coated with Drywall Primer prior to application of final finishes as specified in Sections 09900 and 09720, as applicable.
  - 5. Level 4 (Appearance areas to receive flat paints, light texture, or where backed wallcoverings are to be applied. This level of finish is not to be used where gloss, semi-gloss and enamel paints are to be applied.):
    - a. Joints and interior angles shall have tape embedded in joint compound and 2 separate coats of joint compound applied over flat joints and one separate coat of joint compound applied over interior angles.

- b. Fastener heads and accessories shall be covered with 3 separate coats of joint compound..
  - c. Joint compound shall be smooth and free of tool marks and ridges.
  - d. Surface to be coated with Drywall Primer as specified herein prior to application of texture.
  - e. Untextured surfaces to be coated with Drywall Primer prior to application of final finishes as specified in Sections 09900 and 09720, as applicable.
6. Level 5 (Appearance areas to receive gloss, semi-gloss, enamel, or nontextured flat paints or where severe lighting conditions occur.):
- a. Joints and interior angles shall have tape embedded in joint compound and 2 separate coats of joint compound applied over flat joints and one separate coat applied over interior angles.
  - b. Fastener heads and accessories shall be covered with 3 separate coats of joint compound.
  - c. A thin skim coat of joint compound, or a material manufactured especially for this purpose, shall be applied to the entire surface to fill imperfections in the joint work, smooth the paper texture and provide a uniform surface for decorating. Excess compound shall be immediately sheared off, leaving a film of skim coating compound completely covering the paper.
  - d. The surface shall be smooth and free of tool marks and ridges.
  - e. Surface to be coated with Drywall Primer as specified herein prior to application of texture.
  - e. Untextured surfaces to be coated with Drywall Primer prior to application of final finishes as specified in Sections 09900 and 09720, as applicable.
- B. Surfaces shall be free of dust, dirt and oil and shall received Drywall Primer before application of texture or skim coat as required by the manufacturer of the texture or skim coat materials.
- C. Surface Finish: Produce surface finish to match approved sample, type as indicated below.
- 1. Medium Orange Peel.

#### CLEANING

- A. After completion of wallboard installation, taping and texturing, remove rubbish, excess material and equipment from building and job site, leaving floors and other surfaces clean.
- B. Remove overspray from adjoining construction.
- C. During the course of the Work and on completion of the Work, remove excess materials, equipment and debris and dispose of away from premises. Leave Work in clean condition.

#### PROTECTION

- A. Protect Work from damage until acceptance
- B. Repair or replace damaged Work.



## TILE

### GENERAL

#### SUBMITTALS

- A. **Product Data:** Submit Manufacturer's data for tile and accessory materials, including recommended procedures for mixing materials and setting tile.
- B. **Samples:** Submit samples of each type of ceramic tile required, marked with Manufacturer's name and location where tile is to be installed.

#### QUALITY ASSURANCE

- A. Comply with applicable requirements of ANSI A-108 Series and the TCA "Handbook for Ceramic Tile Installation." Tile shall bear the TCA grade seal.
- B. **Pre-Installation Meeting:** Prior to commencing the work of this Section, schedule and attend a meeting at the job site to discuss conformance with Project requirements.
- C. **Blending:**
  - 1. Tile manufacturer to blend tile at the factory.
  - 2. Provide additional blending at the job site as needed to obtain the Architect's approval.
- D. **Mock-ups:** Provide job site mock-ups which will be used as data for comparison with the remainder of the work of this Section for the purposes of acceptance or rejection.
- E. **Regulatory Requirements:** Provide floor tiles with coefficient of friction in accordance with ADA guidelines.

#### DELIVERY, STORAGE AND HANDLING

- A. Deliver manufactured materials in original, unbroken containers bearing name of Manufacturer, brand and grade seals. Keep materials dry, clean and protected against deterioration.

#### MAINTENANCE

- A. **Extra Materials:** Furnish one (1) square foot of tile for each 100 square feet of each color and size of tile and grouting materials used in the Project. If less than 100 square feet is installed, provide a minimum of one square foot of extra stock. Extra materials shall be furnished in original packaging.

### PRODUCTS

#### MANUFACTURERS

- A. Furnish products of one of the following Manufacturers, subject to compliance with Specification requirements.
  - 1. Porcelain Ceramic Tiles

- a. American Olean Tile Company, a division of Daltile Corporation, Dallas, TX (214) 398-1411 [www.americanolean.com](http://www.americanolean.com) (Arizona Representative: Bedrosians (602) 268-2000)
  - b. Dal-Tile Corporation, Dallas, TX (214) 398-1411 (Arizona Representative: Kim Grenco 602-258-9390)
  - c. Emser International, Los Angeles, CA (323) 650-2000 [www.emser.com](http://www.emser.com) (Arizona Representative: Marci Crone (602) 263-8453).
  - d. Floor Gres Ceramiche, Fiorano M. (MO) Italy (Arizona Representative: Gary Kroeger, Ceramic Tile International, (602) 253-5551)
  - e. Caesar Cermiche, contact: Dennis McDonald Arizona Tile Architectural products Group at (602) 266-4422.
2. Setting and Grouting Materials:
- a. C-Cure, as manufactured by Bonded Materials Company, Phoenix, AZ 85041, (623) 873-0001 [www.c-cure.com](http://www.c-cure.com) (Arizona Representative: Gary Kroeger, Ceramic Tile International, (602) 253-5551)
  - b. Custom Building Products, Seal Beach, CA (562) 598-8808 [www.custombuildingproducts.com](http://www.custombuildingproducts.com) (Arizona Representative: Gary Kroeger, Ceramic Tile International, (602) 253-5551)
  - c. Hydroment a division of Bostik, Middleton, MA (800) 726-7845 (Arizona Distributor: Bedrosians (602) 268-2000)
  - d. Laticrete, Bethany CT (800) 243-4788, ext. 491 <http://laticrete.com/> (Arizona Representative: Mike Wirges [mfaso@laticrete.com](mailto:mfaso@laticrete.com))
  - e. MAPEI Corporation, Garland, TX (800)-42-MAPEI [www.mapei.com](http://www.mapei.com) (Arizona Representative; Mike Granatowski, (888) 300-4422 Box 2054)
  - f. Tec Specialty Products, Inc., an H.B. Fuller company. Palatine. IL (800) 323-7407 [www.tecspecialty.com](http://www.tecspecialty.com) (Arizona Representative: Joyce Ferko (949)632-1678)

#### TILE MATERIALS

- A. Floor / Wall Tile: (based on Caesar Cermiche from APG).
1. Porcelain tile of the following color, size, thickness:
    - a. Color:
    - b. Size: 12" x 12" or as indicated on drawings.
    - c. Face Finish: Matte
    - d. Edge: Bullnose at top of wainscot.
- B. Trim Shapes: Provide Manufacturer's full selection of trim shapes as required
1. Provide all bases, caps, stops, returns, trimmers, and other shapes indicated or required to produce a completely finished installation.
  2. Except as may be shown otherwise on the Drawings, provide color and finish matching the adjacent tile.
  3. Cove Base shall be 6 inches x 12 inches unless otherwise noted on Drawings.

#### INSTALLATION MATERIALS

- A. Mortar Bed for Mud Set Method:
1. Portland cement: ASTM C150, Type 1.
  2. Sand: ASTM C144.
  3. Mortar: One part Portland cement to 6 parts damp sand by volume.
- B. Mortar for Thin Set Installation: Latex-portland cement mortar per ANSI A118.4 and applicable TCA Method.
- C. Mortar for Medium-Bed Set Installation: Provide materials composed as follows, with physical properties equaling or exceeding those required for thin-set mortars based on

testing of medium-bed specimens according to ANSI A118.4:

1. Prepackaged Dry-Mortar Mix: Factory-prepared mixture of portland cement; dry, redispersible, ethylene vinyl acetate additive; and other ingredients to which only water needs to be added at Project site.
  2. Products: Mapei; ULTRA/FLOR Mortar with KERAPLY acrylic latex additive.
- D. Fast Setting Mortar: Latex-hydraulic cement mortar, meeting ANSI 118.4 fast setting mortar requirements.
1. Product: Grani/Rapid as manufactured by Mapei. Fast setting two-component system consisting of KER 318 flexible liquid polymer additive and hydraulic mortar with the following characteristics:
    - a. Pot Life @ 72F: 30-40 minutes
    - b. Adjustability Time @ 72F: Approximately 40 minutes
    - c. Compressive Strength:
      - 1) after 24 hours: 2145 p.s.i.
      - 2) after 7 days: 3575 p.s.i.
      - 3) after 28 days: 4500 p.s.i.
    - d. Flexural strength:
      - 1) after 24 hours: 570 p.s.i.
      - 2) after 7 days: 1210 p.s.i.
      - 3) after 28 days: 1350 p.s.i.
- E. Epoxy Mortar: Epoxy resin and epoxy hardener in accordance with ANSI 118.3 and applicable TCA method.
- F. Adhesive Installation: Organic adhesive per ANSI 136.1, Type I, and acceptable with TCA Method W242.
- G. Grout:
1. Latex grout: Conforming to ANSI 118.6 and the TCA Handbook, by an approved Manufacturer. Grout shall be sealed as recommended by manufacturer.
    - a. Provide sanded grout.
  2. Epoxy grout: Chemical-resistant per ANSI 118.3, water-cleanable during installation, by an approved Manufacturer.
  3. Colors shall match existing field tile selection unless otherwise noted at quarry tile. For ceramic tile, the grout color shall be as noted on the finish schedule. Provide shop drawing samples for approval.
- H. Thresholds: Marble Institute of America, Class A, color selected by the Architect from standard colors of the approved manufacturer, shaped to provide a comfortable transition between tile and other floor finishes, with smooth matte surface finish and in the dimensions and thicknesses shown on the Drawings. Marble thresholds are typical at all restroom door transitions.

#### ACCESSORIES

- A. Cleavage Membrane: Provide one of the following:
1. Dal-Tile S or Nobleseal TS, 30 mil CPE with spun bond polyester on both faces. Adhesive for application of membrane shall be compatible with substrate.
  2. 0.004 inch thick polyethylene sheeting complying with ASTM D2103.
  3. 15 lb. asphalt-saturated felt complying with ASTM D226.
- B. Cementitious Backer Units (Ceramic Tile Backer Board): Provide cementitious backer units conforming to ANSI A118.9. Georgia-Pacific Dens-Shield, Modulars Inc. Wonder-Board, or USG Durabond Division Durock Tile Backer Board are acceptable products. Furnish with joint tape.

- C. **Expansion/Control Joint Sealant:** Provide in colors selected by the Architect, complying with requirements of Section 07900.
  - 1. At joints between floors and walls, and at perimeter of metal door frames, provide one-part low modulus moisture cure silicone rubber sealant conforming to FS TT-S-001543A, Class A, FS TT-S-00230C, Type II, Class A and ASTM C 920, Type S, Grade NS, Class 25, Use NT, M, G, A, and O.
  - 2. At joints in traffic areas, and at perimeter joints, provide two-part polyurethane material conforming to ASTM C920, Type M, Grade P, Class 25, Use T, with Shore A hardness of 35 - 45 .
  
- D. **Waterproof Membrane:** Provide one of the following:
  - 1. PRP 315 two-component synthetic polymer anti-fracture and waterproofing membrane and as manufactured by Mapei Corporation, meeting ANSI A118.10, trowel-applied
  - 2. Schluter KERDI sheet waterproofing membrane
  - 3. Other sheet waterproofing membrane meeting Uniform Plumbing Code and so labeled and acceptable to Architect.

## EXECUTION

### EXAMINATION

- A. Examine subsurfaces to receive Work and report detrimental conditions in writing. Commencement of Work will be construed as acceptance of subsurfaces.
  
- B. Coordinate with other Work which affects, connects with or is concealed by this Work. Before proceeding, make certain required inspections have been made.
  
- C. Where a Portland cement mortar setting will be installed, do not commence installation of the setting bed until substrata are within the following tolerances:
  - 1. Horizontal surfaces: Level within 1/4 inch in 10'-0" in all directions;
  - 2. Vertical surfaces: Level within 1/4 inch in 8'-0" in all directions.
  
- D. Where tile units will be thin-set directly to the substrata, do not commence installation of the tile units until substrata are within the following tolerances:
  - 1. Horizontal surfaces: Level within 1/8 inch in ten feet in all directions;
  - 2. Vertical surfaces: Level within 1/8 inch in eight feet in all directions.
  - 3. Deflection:
    - a. Horizontal Surfaces: Less than 1/360 of the span.
    - b. Vertical Surfaces: Verify that design of the wall or partition will not permit deflection exceeding 1/360 of the span for point and uniform loading. Space wood or metal studs not less than 16 inches on centers.
  
- E. **Conditions of Surfaces to Receive Tile:**
  - 1. Verify that surfaces to receive tile are firm, dry clean, and free from oily or waxy films and curing compounds.
  - 2. Verify that grounds, anchors, plugs, recess frames, bucks, electrical work, mechanical work, and similar items in or behind the tile have been installed before proceeding with installation of tile.
  - 3. Scarify hard steel trowel finish concrete surfaces.
  - 4. Completely remove curing compounds on concrete surfaces by scarification or cleaning methods acceptable to tile setting materials manufacturer.

### PREPARATION

- A. Lay out Work so that no tile of less than half size occurs.
  - 1. For heights stated in feet and inches, maintain full courses to produce nearest attainable heights without cutting tile.
  - 2. Align joints in wall tile vertically and horizontally except where other patterns are shown or specified. Align joints in walls to conform to patterns selected.
  - 3. Align joints in floor tile at right angles to each other and straight with walls and conform to patterns selected or indicated.
- B. Obtain exact locations of expansion joints and accessories before installing tile.
- C. Locate accessories in tile walls as indicated on Drawings or as directed by Architect. Where the size of accessory does not line up with the jointing pattern of adjacent tile, the cutting of tile and arrangement of joints around the accessories shall be as directed by Architect.

#### INSTALLATION

- A. Cementitious Backer Units: Install cementitious backer units at wet area walls as indicated on Drawings in accordance with Manufacturer's directions.
  - 1. Where two units abut, leave a gap from 1/8 to 3/16 inch wide (or as recommended by the manufacturer), fill solid with mortar, and cover with the fiberglass tape embedded in a skim coat of mortar.
- B. Tile -General:
  - 1. Install tile in accordance with ANSI Specifications A108.1 through A118.1 and Manufacturer's recommendations. Masonry walls to receive tile shall have a leveling coat of mortar applied prior to installation of tile.
  - 2. Cut and drill neatly as required without marring tile. Rub smooth necessary cuts with a fine stone. Set cut edge against fixture, cabinet or other tile with joint at least 1/16-inch wide.
- C. Waterproof Membrane (Adhesive): Utilize where membrane is required beneath tile. Waterproof covers at wet areas in accordance with Manufacturer's recommendations to a minimum height of 8 inches above floor. Allow adhesive type waterproof membrane to cure before applying bonding materials.
- D. Thin Set: Where indicated to be thin-set, install tile using TCA Method for substrate condition and type for latex-portland cement mortar, and as follows:
  - 1. Floors: TCA F122.
  - 2. Walls: TCA W244.
- E. Grout:
  - 1. Mix grout to a creamy consistency.
  - 2. Mix only as much grout as can be used in one hour.
  - 3. Thoroughly force into joints, fill entire depth.
  - 4. Finished surface of joints shall be uniformly smooth, and continuously level with edges of tile.
  - 5. Seal grout in accordance with manufacturer's recommendations.
- F. Expansion and Control Joint Sealant:
  - 1. Workmanship for caulking and sealants shall conform to requirements of Section 07900.
  - 2. Provide expansion/control joints where indicated on Drawings, and:
    - a. Interior: 24'-0" to 36'-0" in each direction.
    - b. Exterior: 12'-0" to 16'-0" in each direction.
  - 3. Joints between tile and door frames and other metal accessories, tile and ceiling,

wall tile and wall tile at inside corners and wall tile and floor tile shall be sealed with silicone rubber sealant.

4. Provide expansion joints at tile columns, curbs and pipes and fill with sealant. At building structural joints extend expansion joints through the tile. Seal with sealant. In no case shall tile be carried over expansion joints without a joint in the tile.

#### CURING

- A. Damp cure all tile installations, including Portland cement grouts, for 72 hours minimum.
  1. Cover with clean non-staining 40-pound Kraft paper.
  2. Do not use polyethylene sheets directly over tile on horizontal surfaces.
  3. Keep all traffic off newly installed floors for at least 72 hours. Protection may be necessary.

#### TOLERANCES

- A. Tile: Do not exceed the following deviations from level and plumb, and from elevations, locations, slopes and alignments shown:
  1. Horizontal surfaces: 1/8 inch in 10'-0" in all directions;
  2. Vertical surfaces: 1/8 inch in 8'-0" in all directions.
  3. Lippage: 1/8 inch maximum.
  4. Maximum Variation of Joint Width: 1/16 inch.

#### CLEANING

- A. Wipe surfaces clean after grouting, remove traces of mortar and grout. Do not use acid solution for cleaning glazed tile.
- B. During the course of the Work and on completion, remove and dispose of excess materials, equipment and debris away from premises. Leave Work in clean condition.

#### PROTECTION

- A. Close spaces to traffic or other Work until tile is firmly set. Protect from damage until acceptance. Repair damaged Work at no additional cost to Owner.
- B. Prohibit foot and wheel traffic from using newly tiled floors for at least 7 days. Place large, flat boards in walkways and wheelways where use of newly tiled floor is unavoidable.

## ACOUSTICAL CEILINGS

### GENERAL

#### SYSTEM DESCRIPTION

- A. Installed System: Conform to UL Design #L206 for ceiling and floor assembly.

#### SUBMITTALS

- A. Shop Drawings: Submit Drawings showing complete layout of systems including attachments, intersections of members and edge conditions.
- B. Product Data: Provide data on metal grid system components and acoustical units.
- C. Samples:
1. Submit 2 samples of each type of unit specified, including color selection when applicable.
  2. Submit samples of Manufacturer's full color selection for selection by Architect.

#### QUALITY ASSURANCE

- A. Qualifications: Installer shall be approved by Manufacturer of material or system.
- B. Standards: Comply with ASTM C635, "Standard Specification for Acoustical Tile and Lay-In Panel Ceilings" and ASTM C636, "Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels."

#### DELIVERY, STORAGE AND HANDLING

- A. Packing and Shipping: Deliver materials to site in Manufacturer's original unopened packaging with labels intact. Protect finished surfaces with removable wrapping or coating which will not bond when exposed to sunlight.
- B. Storage: Adequately protect against damage while stored at the site.
- C. Handling: Comply with Manufacturer's instructions.

#### MAINTENANCE

- A. Extra Materials: Provide an additional 5 percent of each type of acoustical unit installed, in unopened labeled cartons, to the Owner at completion of Work, for his maintenance use, at no additional cost. Provide, at minimum, one full carton of each type of acoustical unit.

### PRODUCTS

#### MANUFACTURERS

- A. Furnish products of the following Manufacturers, except as approved otherwise by the Architect, subject to compliance with Specification requirements.

1. USG Interiors, Inc.
2. Or Architect approved equal.

## SUSPENSION SYSTEM

- A. Ceiling Suspension System: Heavy duty with components formed from commercial quality cold rolled steel electro-zinc coated.
  1. Main-Runners: Minimum of 1-1/2 inch in height with an exposed capped face of 15/16 inch in width, nominally 12 feet long.
  2. Cross-Tees: Minimum of 1-1/2 inch in height with an exposed capped face in a width to match main runners.
  3. Finish: Exposed faces of main and cross runners shall be a baked enamel paint finish, white color.
- B. Fire Rated Ceiling Suspension System: Heavy duty UL, with components formed from commercial quality cold rolled steel electro-zinc coated and pre-painted.
  1. Fire Rated Cross Tees: Minimum of 1-1/2 inch in height with an exposed capped face of 15/16 inch in width, nominally 2 feet and 4 feet long.
  2. Finish: Exposed faces of main and cross runners shall be a baked enamel paint finish, white color.
- C. Hanger Wire: Galvanized steel conforming to Federal Specification FF-QQ-W-461, Finish 5, Class 1 annealed, and not less than 12 gage).
- D. Suspension system shall support the ceiling system specified with a maximum deflection of 1/360 of the span.
- E. Wall and Penetration Moldings: 24 MSG painted steel with a minimum one inch wide lower flange, finish and configuration to match grid. For circular penetrations provide edge molding manufactured to exact diameter of circular penetration.
- F. Hold-Down Clips: Provide access type hold-down clips where required by Acoustical Ceiling Manufacturer for type and condition and where panels weigh less than one pound per square foot.

## CEILING PANELS

- A. Acoustical Ceiling Panels:
  1. Model/Style: Armstrong Fine Fissured Medium Tecture.
  2. Size: 24 inch x 48 inch x 5/8 inch.
  3. Surface Finish: Factory applied, washable, vinyl latex paint finish, white color.
  4. Light reflectance of LR-1 (over 75 percent), per Fed. Spec. SS-S-118B and ASTM E1264.
  5. Surface Burning Characteristics: Class A per ASTM E1264 and Fed. Spec. SS-S-118B, Flame Spread 25 or under, per ASTM E-84 (UL Label).
  6. NRC: .55 in suspended mounting.
  7. CAC: 35 (continuous ceiling).
  8. Edge Detail: Square Lay-in.

## ACCESSORIES

- A. Acoustical Batt Insulation: Specified in Section 09820.

## EXECUTION

## EXAMINATION

- A. Verification of Conditions: Examine subsurfaces to receive Work and report detrimental conditions in writing, with a copy to Architect. Commencement of Work will be construed as acceptance of subsurfaces.
- B. Verify, before proceeding with this Work, that required inspections of existing conditions have been completed.

## INSTALLATION - SUSPENSION SYSTEM

- A. Install suspension system in accordance the following:
  - 1. ASTM C636 and as supplemented in this Section.
  - 2. CISCA's Recommendations for Acoustical Ceilings: Comply with CISCA's "Recommendations for Direct-Hung Acoustical tile and Lay-in Panel Ceilings-Seismic Zones 1-2".
  - 3. U.B.C. "Metal Suspension Systems for Acoustical Tile and for Lay-in Panel Ceilings": U.B.C. Standard 25-2.
- B. Install fire rated system in accordance with specified UL Design.
- C. Install system capable of supporting imposed loads to a deflection of 1/360 maximum.
- D. Locate system on room axis according to reflected ceiling plan.
- E. Install after major above-ceiling Work is complete. Coordinate the location of hangers with other Work.
- F. Supply hangers or inserts for installation in concrete with instructions for their correct placement.
- G. Provide hanger clips during steel deck erection. Provide additional hangers and inserts as required.
- H. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- I. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- J. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability. Support fixture loads by supplementary hangers located within 6 inches of each corner; or support components independently.
- K. Do not eccentrically load system, or produce rotation of runners.
- L. Install edge molding at intersection of ceiling and vertical surfaces, using longest practical lengths. Miter corners. Provide edge moldings at junctions with other interruptions.
- M. Form expansion joints as detailed. Form to accommodate plus or minus 1 inch movement. Maintain visual closure.
- N. Install protection over light fixtures in accordance with UL assembly requirements.

#### INSTALLATION - ACOUSTICAL LAY-IN UNITS

- A. Install acoustical units in accordance with Manufacturer's instructions.
- B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Lay directional patterned units one way with pattern parallel to longest room axis. Fit border trim neatly against abutting surfaces.
- D. Install units after above-ceiling Work is complete.
- E. Install acoustical units level in uniform plane, and free from twist, warp and dents.
- F. Cut panels to fit irregular grid and perimeter edge trim. Field rabbet panel edge.
- G. Where round obstructions occur, provide preformed closers to match edge molding.
- H. Install hold-down clips to retain panels tight to grid system where required for fire-rated system.

#### INSTALLATION - ACOUSTICAL TILES

- A. Securely cement adhesive applied ceiling tile to base with no less than 4 spots of acoustic cement. Cement spots to average not less than 1 inch diameter. Locate at each corner approximately 2 inches from edges of the tile.

#### ERECTION TOLERANCES

- A. Maximum Variation from Flat and Level Surface: 1/4 inch in 10 feet.

#### ADJUSTING

- A. Remove damaged or soiled panels and replace with new units, as directed by Architect.

#### CLEANING

- A. During the course of the Work and on completion, remove and dispose of excess materials, equipment and debris away from premises. Leave Work in clean condition.

## RESILIENT TILE FLOORING

### GENERAL

#### SUBMITTALS

- A. **Product Data:** Submit data on specific products, describing physical and performance characteristics, sizes, patterns and colors available.
- B. **Samples:** Submit 2 samples of each material specified illustrating color and pattern.
- C. **Maintenance Data:** Submit maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

#### QUALITY ASSURANCE

- A. **Qualifications:** Installation shall be by qualified installer approved by the Manufacturer of the materials.
- B. **Regulatory Requirements:**
  - 1. 1997 UBC Table 8A flame spread index.
  - 2. Slip resistance of floor surfaces and changes in level shall be in accordance with applicable law.
  - 3. Nosing design shall be in accordance with applicable law.

#### DELIVERY, STORAGE AND HANDLING

- A. **Packing and Shipping:** Deliver materials to site in Manufacturer's original unopened packaging with labels intact.
- B. **Storage:** Adequately protect against damage while stored at the site.
- C. **Handling:** Comply with Manufacturer's instructions.

#### PROJECT/SITE CONDITIONS

- A. **Environmental Requirements:** Installation shall not begin until Work of other Trades is substantially completed and the area or rooms where flooring is to be installed has been maintained at a minimum temperature of 70 degrees F. for at least 48 hours.
- B. **Moisture content and bondability** of concrete sub-floors shall be determined by a field testing method recommended by the flooring manufacturer.
- C. **Maintain ambient temperature** required by Adhesive Manufacturer three days prior to, during, and 24 hours after installation of materials.

#### MAINTENANCE

- A. **Extra Materials:** Provide 100 square feet of flooring and 50 lineal feet of base of each material specified.

## PRODUCTS

### MANUFACTURERS

- A. Vinyl Composition Tile Manufacturers: Furnish products of one of the specified Manufacturers, except as approved by the Architect, subject to compliance with Specification requirements.
  - 1. Armstrong World Industries
  - 2. Mannington Commercial
  
- B. Wall Base: Furnish products of one of the specified Manufacturers, except as approved by the Architect, subject to compliance with Specification requirements.
  - 1. Type TS - Thermoset Vulcanized Rubber:
    - a. Burke/Mercer
    - b. Roppe
  
- C. Accessories:
  - 1. Rubber:
    - a. Roppe

### TILE FLOORING

- A. Vinyl Composition Tile: ASTM F1066 Class 2
  - 1. Size: 12 inch x 12 inch size
  - 2. Thickness: 1/8 inch thick
  - 3. Design: As indicated on drawings

### BASE

- A. Base: ASTM F1861.
  - 1. Material: Type TS thermoset vulcanized rubber
  - 2. Height: 4 inch
  - 3. Thickness: 1/8 inch thick
  - 4. Type: Top set, coved typical, toeless at carpet.
  
- B. Base Accessories: Premolded end stops and external corners of same material, size, and color as base.

### ACCESSORIES

- A. Adhesives: Suitable for the underfloor substrate conditions involved as recommended by the Manufacturer of the flooring materials. Adhesives shall be waterproof, stabilized type. Asphalt emulsions are not acceptable.
  
- B. Crack and Joint Filler: Waterproof type as recommended by the Manufacturer.
  
- C. Edge Strips: 1 inch wide with beveled edge. Material to match flooring.
  
- D. Sealer: Type recommended by Flooring Manufacturer.

## EXECUTION

### EXAMINATION

- A. Verification of Conditions: Examine subsurfaces to receive Work and report detrimental

conditions in writing to Architect. Commencement of Work will be construed as acceptance of subsurfaces.

- B. Inspect the sub-floor to receive resilient flooring. Do not lay floor covering until sub-floors are in proper condition to receive same. Sub-floors shall be broom clean, free of foreign matter and thoroughly clean before installation.
- C. Verify concrete floors are dry and bondable.

#### PREPARATION

- A. Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with subfloor filler.
- B. Apply, trowel, and float filler to leave a smooth, flat, hard surface.
- C. Prohibit traffic from area until filler is cured.
- D. Vacuum clean substrate.
- E. Apply primer to floor surfaces as recommended by Flooring Manufacturer.

#### INSTALLATION - TILE FLOORING

- A. Install in accordance with Manufacturers' instructions and in accordance with "Recommended Work Procedures for Resilient Floor Coverings" of the Resilient Floor Covering Institute.
- B. Mix tile from container to ensure shade variations are consistent.
- C. Spread only enough adhesive to permit installation of materials before initial set.
- D. Set flooring in place, press with heavy roller to attain full adhesion.
- E. Lay tile flooring with joints parallel to building lines and with symmetrical tile patterns.
- F. Install tile to square grid pattern with all joints aligned. Allow minimum 1/2 full size tile width at room or area perimeter.
- G. Terminate flooring at centerline of door openings where adjacent floor finish is dissimilar.
- H. Install edge strips at unprotected or exposed edges, and where flooring terminates.
- I. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.
- J. Install flooring under movable partitions without interrupting floor pattern.
- K. Installation of resilient tile flooring over the Vapor Reduction Floor Coating (as specified in Section 07260): Install resilient tile flooring using contact type adhesives with long working times (such as Armstrong S-515 and S-700 Resilient Tile Adhesives that have a working time of 24 hours and 18 hours). The method of use shall be to apply the material and allow the water/solvent to flash off for a minimum of 4 to 5 hours prior to the flooring installation.

#### INSTALLATION - BASE

- A. Fit joints tight and vertical. Maintain minimum measurement of 18 inches between joints.
- B. Miter internal corners. At external corners, use premolded units. At exposed ends use premolded units.
- C. Install base on solid backing. Bond tight to wall and floor surfaces.
- D. Scribe and fit to door frames and other interruptions.

#### CLEANING

- A. After flooring has become well seated and just prior to opening it to traffic, thoroughly clean in accordance with Manufacturer's recommendations. No waxing is required.
- B. Remove dirt, debris and adhesive from floor covering and adjacent surfaces using Manufacturers recommended methods and leave installation in a condition.
- C. During the course of the Work and on completion, remove excess materials, equipment and debris and dispose of away from premises. Leave Work in clean condition.

#### PROTECTION

- A. Minimize traffic until flooring has become well seated at least 48 hours, at a maintained temperature of not less than 70 degrees F., and do not permit fixtures, equipment, trucks, or similar items on flooring.

## CARPET

### GENERAL

#### SUBMITTALS

- A. **Product Data:** Submit Manufacturer's Specifications and recommended procedures for installing carpet, adhesive and accessories.
- B. **Shop Drawings:** Submit Drawings indicating seam locations and edging conditions in accordance with Manufacturer's recommendations.
- C. **Samples:** Submit 12 inch by 12 inch carpet sample and 6 inch sample of edge strip in Manufacturer's standard colors. Provide following information for each carpet sample submitted:
1. Name of Manufacturer.
  2. Name/pattern of carpet.
- D. **Certification:**
1. At least 30 days prior to scheduled installation, submit Manufacturer's anticipated shipping date, including certification that carpet will conform to Specifications and approved samples.
  2. Provide certification from manufacturer that carpet will not display or evidence a significant change in color due to exposure to atmospheric contaminants (Ozone or Oxides of Nitrogen) for 5 years.
- E. **Test Reports:** Submit reports for flammability, smoke density and static propensity from independent laboratory no more than 2 years old.
- F. **Quality Control Submittals:**
1. Manufacturer shall furnish roll numbers and other information which will enable identification of certified carpet. Inspect carpet after manufacture for manufacturing defects.
  2. **Certificates:** Certification that submitted samples conform with Specification requirements.
- G. **Environmental Position:**
1. Carpet manufacturer to submit:
    - a. Written statement of its Environmental Position and provide documentation of on-going recycling programs, energy conservation programs, reclamation of raw materials and recyclable materials, and Environmental Stewardship programs at local manufacturing site locations.
    - b. Written documentation that a fully established reclamation program, including examples of the mechanics of the program are in place at the time of bid.
- H. **Contract Closeout Submittals:** Submit the following in accordance with Section 01770:
1. **Maintenance:** Submit 2 copies of Manufacturer's instructions for carpet care and cleaning. Instructions shall include shampooing and removal of stains and burns.
  2. **Warranty.** Submit manufacturer's warranty.

## QUALITY ASSURANCE

- A. Carpet Installer Qualifications:
  - 1. Minimum of 5 years commercial installation experience.
  - 2. Review Manufacturer's recommendations and recommend in writing to Architect variations required to assure installation guarantee.
  
- B. Standards: Comply with the following:
  - 1. Flammability: Passes (CPSC 16 CFR, Part 1630).
  - 2. Flame Spread: Critical Radiant Flux Class I, not less than 0.45 Watts per cm<sup>2</sup> (NFPA 253 or ASTM E-648, in direct glue-down application).
  - 3. Optical Smoke Density Requirements (ASTM E662-79): Less than 450 (NBS Smoke Density Chamber - NFPA-258).
  - 4. Static Propensity: Under 3.0 KV (AATCC-134).
  - 5. Colorfastness: Carpet shall not display or evidence a significant change in color due to exposure to atmospheric contaminants (Ozone or Oxides of Nitrogen) for 5 years.

## DELIVERY, STORAGE AND HANDLING

- A. Packing and Shipping: Deliver materials to site in Manufacturer's original unopened packaging with each roll having register number tags attached or register identification stenciled on mill wrappings and intact.
  
- B. Storage and Protection: Store in well ventilated spaces protected from damage, dirt, stains, moisture and other adverse conditions.

## PROJECT CONDITIONS

- A. Field Measurements: Verify installation dimensions by making field measurements.

## WARRANTY

- A. General: Special Project Warranty and Manufacturer's Warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of Contract Documents.
  
- B. Special Project Warranty: Provide special project warranty, signed by Contractor, Installer, and Manufacturer (Carpet Mill) agreeing to repair or replace defective materials and workmanship, during 10 year warranty period following Substantial Completion. Special project warranty includes, but is not limited to, following:
  - 1. Delamination of adhered carpet from substrate, cushion from substrate, or carpet from cushion.
  - 2. Edge raveling, snags, or runs.
  - 3. Permanent indentation of carpet cushion.
  
- C. Manufacturer's Warranty: In addition to Special Project Warranty, provide manufacturer's Limited 10 Year Wear Warranty on form furnished following this section or on manufacturer's standard form of similar content subject to Architect's approval. Manufacturer's warranty shall include dimensional stability, wear and static resistance.

## MAINTENANCE

- A. Extra Materials: Carpet scraps and trimmings more than 3 feet in one dimension shall be neatly packaged in small quantities and delivered to Owner at Project Closeout.

Include as overage one piece of carpet of each color not less than 4 square yards.

## PRODUCTS

### MANUFACTURERS

- A. Furnish products of one of the following Manufacturers subject to compliance with Specification requirements:
1. Lees Commercial Carpets

### MATERIALS

- A. Commercial Carpet (Glue-Down):
1. Carpet: Lees Commercial Carpets.
  2. Face Yarn: Amtron Legacy Nylon with DuraTech Soil Protection by DuPont.
  3. Primary Backing: Woven Polypropylene.
  4. Secondary Backing: Woven Polypropylene.
  5. Construction: Tufted.
  6. Face Weight: 22 ounces per square yard. Total weight 72.14 oz. minimum per square yard.
  7. Pile Height: \_\_\_\_\_.
  8. Pile Thickness: .092" Average.
  9. Yarn Ply: \_\_\_\_\_.
  10. Stitches per inch (mm): 8.5 per in.
  11. Gage: 5/64".
  12. Width: 12'.
  13. Dye Method: Yarn Dyed.
  14. Density: 8600.
  15. Weight Density: 189391.
  16. Color: See Finish Schedule.

### ACCESSORIES

- A. Underlayment: Portland cement-latex concrete floor filler for leveling concrete floor as recommended by Carpet Manufacturer.
- B. Floor Primer: Manufacturer's approved floor primer applied to all areas that are to receive glue-down carpeting.
- C. Adhesive: Acceptable to carpet manufacturer, low-odor adhesive without solvent, VOC compliant.
1. Ad-vanced Air Tech Adhesives as manufactured by Advanced Adhesive Technology Inc., Dalton, GA (800) 228-4583.
  2. Carpet Adhesive as manufactured by Capitol Adhesives, Dalton, GA (800) 831-8381.
  3. Chapco Safe-Set as manufactured by Chicago Adhesive Products Co., Chicago, IL (800) 621-02200.
  4. Earthbond 6900, 7000 or 7500 (as applicable) as manufactured by Roberts Consolidated Industries, Inc., City of Industry, CA (818) 369-7311.
  5. Envirotec Healthguard Adhesives as manufactured by W.F. Taylor Co., Fontana, CA (800) 397-4583.
  6. XL Adhesives as manufactured by XL Corporation, Calhoun, GA (800) 367-4583.
- D. Edge Strip: Metal or vinyl reducer strip for areas, doorways and other areas where edge

of carpet is exposed.

- E. Carpet Gripper: Tackless type for stretch installation.
- F. Rubber Base: See Section 09652. Base shall be installed after carpet.

## EXECUTION

### EXAMINATION

- A. Verification of Conditions: Examine subsurfaces to receive Work and report detrimental conditions in writing to Architect. Commencement of Work will be construed as acceptance of subsurfaces.
  - 1. Test concrete for excessive moisture content or hydro-static moisture content. Excessive moisture is defined as no more than 2.5 pounds per 1000 square feet in 24 hours.
  - 2. Test concrete for acidity/alkalinity which shall test in the 6.0 to 8.0 range.
  - 3. Frequency of tests shall comply with manufacturer's guidelines.
- B. Coordination: Coordinate with other Work which affects, connects with, or will be concealed by this Work.

### PREPARATION

- A. Surface Preparation:
  - 1. Inspect surfaces to receive carpet, make tests recommended by Carpet Manufacturer, take necessary corrective action.
  - 2. Grind ridges in concrete floors level and smooth.
  - 3. Fill cracks, construction joints and other surface imperfections with latex underlayment compound troweled level with adjacent surfaces.
  - 4. Telegraphing of irregularities in subfloor shall be sufficient cause for rejection.
  - 5. Remove foreign and incompatible materials and vacuum clean surfaces immediately prior to installation.
  - 6. Contractor shall provide written moisture and alkali test results pertaining to the concrete slab prior to installation.
- B. Existing Surface Preparation: At existing floors, remove existing floors in areas indicated to receive carpet, to provide an acceptable surface for direct glue-down carpet as follows:
  - 1. Provide clean floor surfaces.
  - 2. Flood apply full strength floor stripping solution. Allow to stand for several minutes and, prior to drying, scrub with disc scrubber with screen mesh or stiff bristle brush.
  - 3. Flood rinse with hot water and completely remove rinse water with squeegee and/or wet-vac.
  - 4. Repeat any or all of above steps as required to insure complete removal of wax and stripper.
  - 5. Allow floor to dry completely.
  - 6. Repair floor as required by Carpet Manufacturer prior to installing carpet.

### INSTALLATION - GLUE-DOWN

- A. Install carpeting material and adhesive in strict accordance with Manufacturer's recommendations and in accordance with [CRI 104-1993, "Standard for Installation of Commercial Textile Floor Covering Materials"] [CRI 105-1993, "Standard Industry

Reference Guide for Installation of Residential Textile Floor Covering Materials"] as published by the Carpet and Rug Institute.

- B. Lay carpet materials tight and free of irregularities. Cut and fit carpeting accurately and smoothly on wall and floor surfaces, around projections and into trim strips or binding bars with a minimum number of seams. Install no lengths or fillers which are less than 2'-0" (600mm) in length. Make installation continuous under removable portable and/or accordion partitions.
- C. Carpet Seams:
  - 1. Locate seams in accordance with approved seam diagram.
  - 2. Seam layout shall provide a minimum total seam length with minimum head seams.
  - 3. Do not locate head seams in areas of heavy traffic.
  - 4. Butt match seams in carpeting material with no cut yard ends allowed and with carpet tufting running in same direction throughout Project installation.
  - 5. Stagger carpet cross cuts or seams by a minimum of 10 feet.
  - 6. Required tapes or adhesives used shall be in strict accordance with carpet and product Manufacturer's recommendations for type of seam, material and use intended.
- D. Edge Strips:
  - 1. Install where floor carpeting terminates and where carpeting abuts a dissimilar floor material.
  - 2. Securely fasten edge strips with concealed fasteners. Center under doors at doorways.
- E. Base Cap: Install cap at walls to receive carpet base in accordance with Manufacturer's directions. Miter at corners.

#### INSTALLATION - STRETCH

- A. Install tackless strip at perimeter of carpeting. Maintain uniform spacing from stripping to wall so that cut carpet edge will turn down to substrate in a tight slot.
- B. Cushion: Install carpet cushion in the largest possible size over the entire area to be carpeted. Place cushion with face in direction recommended by the Manufacturer. Butt cushion tight against tackless strip. Lay out cushion seams so as not to occur under carpet seams. Butt edges of cushion and adhere cushion to substrate with daubs of adhesive approximately 4 inches in diameter, spaced approximately 2 feet apart at edges.
- C. Install carpeting in strict accordance with Manufacturer's recommendations.
- D. Lay carpet materials tight and free of irregularities. Cut and fit carpeting accurately and smoothly on wall and floor surfaces, around projections and into trim strips or binding bars with a minimum number of seams. Install no lengths or fillers which are less than 20 feet in length.
- E. Stretching: Stretch, adjust and trim carpet in accordance with recognized industry practice. Use power stretcher of a type recommended by the Carpet Manufacturer. Secure carpet edges to tackless strip.
- F. Edge Strips:
  - 1. Install where floor carpeting terminates and where carpeting abuts a dissimilar floor material.

2. Securely fasten edge strips with concealed fasteners. Center under doors at doorways.

#### CLEANING

- A. Remove spots, smears, stains, and similar defects immediately with a material recommended by Carpet Manufacturer. Thoroughly vacuum and clean carpets after other Trades have been completed. Installed carpeting material shall be left free from adhesives, scraps, carpet ripples, scallop and puckers.
- B. Carpet spots shall be cleaned with spot remover approved by Carpet Manufacturer and loose threads removed with sharp scissors. Installed carpeting material shall be free from defects at time of final acceptance by Owner.
- C. During the course of the Work and on completion, remove and dispose of excess materials, equipment and debris away from premises.

#### PROTECTION

- A. Protect installed carpet against soiling abuse or damage by other Trades, and cover completed Work as necessary to ensure protection.
- B. Repair or replace damaged Work.

**CARPETING MANUFACTURER'S  
LIMITED 10 YEAR WEAR WARRANTY**

Project Title \_\_\_\_\_

Project Address \_\_\_\_\_

Project Owner \_\_\_\_\_

\_\_\_\_\_ (quality name), manufactured by

\_\_\_\_\_ (manufacturer) is warranted to resist wear from normal commercial traffic. If the surface pile in any area is worn more than 10% within 10 years from the date of the installation, manufacturer will pay for replacement, including labor for installation.

The warranty covers pile abrasion for all normal indoor contract areas. It excludes damage due to cuts, tears, burns, pulls, pile crush, stains or other damage caused by improper cleaning, and any incidental or consequential damages which may be claimed as a result of the necessity for replacement.

This warranty shall apply only to carpet installed and maintained in accordance with accepted industry standards. As a condition hereof, one square yard of the affected carpet shall, upon request, be furnished to manufacturer for testing.

This warranty applies for the carpet installation identified herein:

Color \_\_\_\_\_

Yardage Installed \_\_\_\_\_

Roll Number(s): \_\_\_\_\_

Date Installed: \_\_\_\_\_

\_\_\_\_\_  
President

\_\_\_\_\_  
Date

END OF CARPETING MANUFACTURERS WARRANTY

