

SECTION 03 49 00

GLASS-FIBER REINFORCED CONCRETE PANELS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Plant-cast, glass-fiber-reinforced precast concrete panels.
- B. Embedded hardware and anchors.
- C. Loose connection hardware.
- D. Integrated steel support framing.

1.02 RELATED SECTIONS

- A. Section 03 30 00 - Cast-in-Place Concrete: Building structural frame.
- B. Section 04 20 00 - Unit Masonry: Back-up masonry.
- C. Section 05 12 00 - Structural Steel: Building structural frame.
- D. Section 05 06 40 - Cold-Formed Metal Framing: Structural stud members.
- E. Section 07 19 00 - Water Repellent Coating.
- F. Section 07 60 00 - Metal flashings.
- G. Section 07 84 00 - Firestopping: Fire barrier seal between units and edge of floor slab.
- H. Section 07 90 00 - Joint Sealers: Application of backer rods or bond breakers and joint sealers.

1.03 REFERENCES

- A. ASTM A 27/A 27M - Standard Specification for Steel Castings, Carbon for General Application.
- B. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel.
- C. ASTM A 47/A 47M - Standard Specification for Ferritic Malleable Iron Castings.
- D. ASTM A 123/A 123M - Standard Specification for Zinc (Hot-Dip) on Iron and Steel Hardware.

- E. ASTM A 108 - Standard Specification for Steel Bars, Carbon, Cold-Finished, Standard Quality.
- F. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- G. ASTM A 283/A 283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.
- H. ASTM A 325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
- I. ASTM A 500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- J. ASTM A 513 - Standard Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing
- K. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- L. ASTM A780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
- M. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members.
- N. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
- O. ASTM C 33 - Standard Specification for Concrete Aggregates.
- P. ASTM C 150 - Standard Specification for Portland Cement.
- Q. ASTM C 260 - Standard Specification for Air-Entraining Admixtures for Concrete.
- R. ASTM C 494/C 494M - Standard Specification for Chemical Admixtures for Concrete.
- S. ASTM C 618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.
- T. ASTM C 979 - Standard Specification for Pigments for Integrally Colored Concrete.
- U. ANSI - American Iron and Steel Institute (AISI), Specification for the Design of Cold-Formed Steel Structural Members

- V. AWS D1.1 - Structural Welding Code - Steel.
- W. AWS D1.3 - Structural Welding Code - Sheet Steel.
- X. AWS D1.4 - Structural Welding Code - Reinforcing Steel.
- Y. PCI MNL-117 - Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products.
- Z. PCI MNL-128 - Recommended Practice for Glass Fiber Reinforced Concrete Panels.
- AA. PCI MNL-130 - Manual for Quality Control for Plants and Production of Glass Fiber Reinforced Concrete Products.
- BB. SSPC 2 - Hand Tool Cleaning.
- CC. SSPC 3 - Power Tool Cleaning.
- DD. SSPC Paint 20 - Zinc-Rich Primers (Type I - Inorganic and Type II - Organic).
- EE. SSPC Paint 25 - Zinc Oxide, Alkyd, Linseed Oil Primer for Use Over Hand Cleaned Steel, Type I and Type II
- FF. CIELAB - International Commission of Illumination, 1976 Standards.

1.04 SYSTEM DESCRIPTION

- A. System: Plant fabricated glass-fiber-reinforced precast concrete panels consisting of face mix, back-up mix, steel support frame attached via pins, gravity anchors and flex anchors, steel connections for panel attachment to structure, and other inclusions for attachments to panels.
- B. Design Requirements: Design glass-fiber-reinforced precast concrete panels and shapes under the supervision of a professional engineer and in accordance with procedures of PCI MNL-128, Recommended Practices for Glass Fiber Reinforced Concrete Panels using property data generated from the manufacturer's actual production.
- C. Performance Requirements:
 - 1. Provide glass-fiber-reinforced precast concrete panels and panel frames capable of withstanding gravity, wind, seismic, and erection design loads as well as the effects of thermal and moisture-induced volume changes, according to load factors and combinations established in PCI MNL 128.
 - 2. Design Loads: As indicated.

3. Design framing systems to withstand design loads with lateral deflections no greater than 1/240 of the wall height.
4. Provide for movement of framing members without damage or overstressing, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 100 degrees F.

1.05 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. [Product Data]: Submit manufacturer's data sheets on each product to be used, including:
 1. Preparation instructions and recommendations.
 2. Storage and handling requirements and recommendations.
 3. Installation methods.
- C. Shop Drawings: Indicate dimensions, cross-sections and edge details; metal framing details, location, size and type of reinforcement, including reinforcement necessary for safe handling and erection; and connection details, and relationship to adjacent materials:
 1. Design calculations demonstrating compliance with indicated loading conditions and showing flexural ultimate strengths assumed for design, stamped by a structural professional engineer registered in the location of the project.
 2. Layout, dimensions, and identification of each panel segment corresponding to installation sequence.
 3. Location and details of anchorage devices embedded in panels and shapes, and connection details to building.
- D. Samples:
 1. Selection Samples: For each finish product specified, two complete sets of color sample, minimum size 6 inches (150 mm) square, representing manufacturer's full range of available colors and patterns for the exposed face of panels.
 2. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns for the exposed face of panels.

3. Do not start fabrication until samples are approved.
- E. Maintain plant records and quality control program during production of units. Make records and access to plant available to Architect upon request.
- F. Submit certificates of compliance for the following:
1. Admixtures.
 2. Portland Cement: Identify the cement brand name, type and mill location used for the quality control sample.
 3. Glass Fibers: Submit evidence that glass composition, Portland cement matrix, or both have been designed for glass-fiber reinforced precast concrete panel applications.

1.06 QUALITY ASSURANCE

- A. Perform Work in accordance with PCI MNL 128, Recommended Practice for Glass Fiber Reinforced Concrete Panels
- B. Manufacturer Qualifications: Provide panels and shapes only from a manufacturer who has demonstrated capability to produce products of the quality and scope required for this project, and with not less than 5 years of successful experience in manufacturing glass-fiber reinforced precast concrete panels and shapes and who is certified in one or more of the following programs:
1. Certified Participant in the Architectural Precast Association's Plant Certification Program for GFRC.
 2. Designated PCI-Certified Plant for Group G, Glass Fiber Reinforced Concrete by PCI's Plant Certification Program
 3. Retains licensed Professional Engineer for plant and record inspection indicating production, testing and quality control methods comply with PCI MNL-130, Manual for Quality Control: Glass Fiber Reinforced Concrete.
- C. Installer Qualifications: A firm which has specialized in erection of glass-fiber reinforced precast concrete panels or architectural precast concrete items similar to those required on this project for not less than 5 years and who is acceptable to manufacturer of glass-fiber reinforced precast concrete panels.
- D. Welder Qualifications: Use welders who have been qualified in accordance with AWS D1.1 and AWS D1.4 within the last year.
- E. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
1. Finish areas designated by Architect.

2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
3. Refinish mock-up area as required to produce acceptable work.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver units to the project site palletized, safely wrapped, packed and labeled and retain until erected.
- B. Store materials in a dry location off the ground, and in such a manner to prevent damage or intrusion of foreign matter.
- C. Handle and transport units in a position consistent with their shape and design in order to avoid excessive stresses or damage.
- D. Store units to protect them from contact with soil, staining, and from physical damage.
- E. Place stored units so that identification marks are easily readable.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturer: METRO CAST Corporation; 6140 N. Hix Road Westland, MI 48185. ASD. Tel: (734) 728-0210. Fax: (734) 728-5759. Email: metrocastcorp@earthlink.net Website: <http://www.metrocastcorp.com>
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.02 MATERIALS

- A. Aggregates:
 1. Back-up Mix: Washed and dried silica sand or other sand having a history of successful use in glass-fiber-reinforced precast concrete panel construction; passing through a No. 20 sieve.
 2. Facing Mix: Fine and course aggregate for face mix shall conform to ASTM C 33 except for gradation. Aggregates shall be clean, hard, strong, durable, inert, and free of staining and deleterious materials. Provide aggregate in colors and sizes as required to achieve the panel finish texture and colors indicated on the Drawings.

- B. Portland Cement: ASTM C 150, Type I, II or III. Use the same type, brand and color of portland cement for all panels and shapes. Color shall be as required to obtain the panel facing color indicated.
- C. Admixtures:
 - 1. Air-entraining admixtures, ASTM C 260. ASTM C260, ASTM C494, ASTM C618 or acrylic thermoplastic copolymer dispersion conforming to PCI MNL-130, Appendix E.
 - 2. Polymer Compound: Conform to requirements of PCI MNL-128, Appendix L.
- D. Coloring Agent: ASTM C 979; shall have no adverse effects to glass-fiber-reinforced precast concrete panel set and strength; shall be stable at high temperature; and shall be sunlight fast and alkali-resistant. Color shall be as required to obtain panel facing color selected.
- E. Water for Mixing Concrete: Use potable water.
- F. Glass Fiber: Conforming to PCI MNL-130, Appendix D and specifically designed to be compatible with the aggressive alkaline environment of portland cement based composites or fibers with a history of successful use in portland cement based composites that has been modified to be compatible with the fiber.
- G. Anchors and Loose Attachment Hardware:
 - 1. Structural Steel: ASTM A 36/A 36M.
 - 2. Cold Drawn Wire:
 - 3. Anchor Bolts: ASTM A 325.
 - 4. Pipe: ASTM A 500 Grades A or B.
 - 5. Tube Steel: ASTM A 500 Grade A or B.
 - 6. Carbon-Steel Rods: ASTM A 108, cold drawn.
 - 7. Carbon-Steel Plate: ASTM A 283/A 283M.
 - 8. Malleable-Steel Castings: ASTM A 47/A 47M.
 - 9. Carbon-Steel Castings: ASTM A 27/A27M, Grade 60-30.
 - 10. Finish: Galvanized in accordance with ASTM A 153/A 153M.
- H. Panel Frame Materials:

1. prdate-963558740prdate-963558740Cold-Formed Steel Framing: Manufacturer's standard C-shaped steel studs, complying with AISI "Specification for the Design of Cold-Formed Steel Structural Members," minimum uncoated steel thickness of 0.0538 inch (1.37mm) of web depth indicated, with stiffened flanges, V-shaped steel track, and of the following steel sheet:
 - a. Metallic-Coated Steel Sheet: ASTM A 653/A653M, structural-steel sheet, of grade required by structural performance of framing and with zinc coating thickness of:
 - 1) G60 (Z180).
 - 2) G90 (Z275).
 - b. Painted, Nonmetallic-Coated Steel Sheet: ASTM A1011/A1011M hot rolled or ASTM A1008/ A1008M cold rolled; nonmetallic coated according to ASTM A 1003/ A 1003M; of grade required by structural performance of framing.
2. prdate-963558740prdate-963558740Hollow Structural Sections: Steel tubing, ASTM A500, Grade B, or ASTM A513. Finish hollow structural sections with wall thickness less than 3/16 inch (4.76 mm) as follows:
 - a. Organic Zinc-Rich Primer: SSPC-Paint 20 on surfaces prepared to comply with SSPC-SP6/NACE No.3, "Commercial Blast Cleaning."
 - b. Primer: SSPC-Paint 25 on surfaces prepared to comply with SSPC-SP 2, "Hand Tool Cleaning," or better.
3. prdate-963558737prdate-963558737Steel Channels and Angles: ASTM A36/ A36M, finished as follows:
 - a. Organic Zinc-Rich Primer: SSPC-Paint 20 on surfaces prepared to comply with SSPC-SP6/NACE No.3, "Commercial Blast Cleaning."
 - b. Primer: SSPC-Paint 25 on surfaces prepared to comply with SSPC-SP 2, "Hand Tool Cleaning," or better.
- I. Form Materials: Provide form materials that will produce panels having the profile, dimensions and tolerances indicated. Use release agents which are compatible with finish specified and joint sealants proposed for use.
- J. Mixes: Portland cement, water, glass fibers and sand mixed in proportions determined in accordance with PCI MNL-128.

2.03 FABRICATION

- A. Fabricate panels in general compliance with PCI MNL-128 and MNL-130.
- B. Molds:
 - 1. Rigid and constructed of materials that will result in finished products conforming to the profiles, dimensions and tolerances indicated on the Drawings.
 - 2. Release agents; apply and use according to manufacturer's instructions.
- C. Proportioning and Mixing:
 - 1. Carefully measure mix constituents in a manner to achieve the desired mix proportions.
 - 2. Meter the glass fiber and cement slurry to the spray head at rates to achieve the desired mix proportion and glass content. Check rates in accordance with standard procedures described in PCI MNL-128.
 - 3. Maintain cleanliness of equipment and working procedures at all times.
- D. Hand Spray Application:
 - 1. Spray apply a mist coat consisting of the matrix without fiber. Applied coating not to exceed 1/8 inch thick in order to avoid an unreinforced surface.
 - 2. Spray or place face mix in thickness shown on shop drawings.
 - 3. Spray-up main body of material before the mist coat has set.
 - 4. Apply by spraying such that uniform thickness and distribution of glass fiber and cement matrix is achieved during the application process.
 - 5. Consolidate by rolling or such other techniques as necessary to achieve complete encapsulation of fibers and compaction.
 - 6. Control thickness by using a pin gauge or other approved method. Perform a minimum of 2 measurements per 5 square feet of panel surface with at least 3 measurements per panel.
 - 7. Perform hand forming of intricate details, incorporate formers or infill material, and overspray before the material has achieved its initial set so as to insure complete bonding.
- E. Inserts and Embedments:

1. Properly embed inserts in built up homogeneous glass-fiber reinforced precast concrete panel bosses to develop their strength. Waste material or overspray is not acceptable to encapsulate inserts or for bonding pads.
2. Test inserts to establish test data and reduce test values by the appropriate safety factors to determine connection strength to be used in design.
3. Rigid embedded items bonded to the glass-fiber reinforced precast concrete panel shall not create undesirable restraint to volume changes.

F. Panel Frame Fabrication:

1. Fabricate panel frames and accessories plumb, square, true to line, and with components securely fastened in accordance with design requirements.
 - a. Fabricate panel frames using jigs or templates.
 - b. Cut cold-formed metal framing members by sawing or shearing; do not torch cut.
 - c. Fasten cold-formed metal framing members by welding. Comply with AWS D1.3 requirements and procedure for welding, appearance and quality of welds, and methods used in correcting welding work.
 - d. Fasten framing members of hollow structural sections, steel channels, or steel angles by welding. Comply with AWS D1.1 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
 - e. Weld flex, gravity, and seismic anchors to panel frames.
2. Reinforce, stiffen, and brace framing assemblies, if necessary, to withstand handling, delivery, and erection stresses. Lift fabricated assemblies in a manner that prevents damage or significant distortion.
3. Galvanizing Repair: Touch up accessible damaged galvanized surfaces according to ASTM A 780.

G. Finish of Exposed Faces: Panel faces shall be free of honeycombs, form marks, concrete droppings or other blemishes that would telegraph through the panel. Provide a finish surface free of laitance, grease, form release treatments, efflorescence, curing compounds or other foreign material that would adversely affect bonding of any subsequent coating.

1. Color and texture of exposed face surfaces shall match Architect's design reference panel.

2. Color and texture of exposed face surfaces shall match _____.
 3. Color and texture of exposed face surfaces shall match one of the manufacturers standard finishes as selected by the Architect.
- H. Dimensional Tolerances of Finished Units: Provide in accordance with PCI MNL-117 and PCI MNL-128.
- I. Cover: Provide embedded anchors, inserts, and other sprayed in items with sufficient anchorage and embedment for design requirements.
- J. Curing:
1. Immediately after the completion of spraying of the panel, cure panels using a method to ensure sufficient strength for removing the units from the form.
 2. After initial curing, remove panel from form and place in a controlled curing environment.
 3. An acrylic thermoplastic copolymer dispersion may be used as a curing admixture. Only copolymers shown to eliminate the need for moist curing through independent laboratory test data shall be used.
- K. Panel Identification:
1. Mark each glass-fiber reinforced precast concrete panel to correspond to identification mark on shop drawings for panel location.
 2. Mark each glass-fiber reinforced precast concrete panel with date on which it was cast.
 3. Apply markings on surface that will not be exposed in the finished construction.

2.04 SOURCE QUALITY CONTROL

- A. Independent Testing:
1. Allow Owner's testing agency access to material storage areas, concrete production equipment, concrete placement, and curing facilities.
 2. Cooperate with Owner's testing agency and provide samples of materials and concrete mixes as may be requested for additional testing and evaluation.
 3. Test glass-fiber reinforced precast concrete panel units in accordance with PCI MNL-130.

B. Plant Testing:

1. Test glass-fiber reinforced precast concrete panel units in accordance with PCI MNL-130.
2. Perform testing by an independent testing agency capable of performing the specified tests. Submit copies to the Architect and designated authorities.

C. Acceptability of Appearance:

1. Finished construction in place shall present a uniform, pleasing appearance when viewed in good typical lighting with the naked eye at a distance of 10 feet and shall show no imperfections at a distance of 20 feet.
2. The range of total acceptable color (lightness, color saturation and hue) variation shall not exceed CIELAB 3.0 provided that the difference in hue alone does not exceed CIELAB 1.0 as defined by the International Commission of Illumination, 1976 Standards.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Check placement of structural support system to assure a true and level surface for attachment of panels. Do not begin construction until discrepancies that could adversely affect installation of panels have been corrected.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Setting:
 1. Lift glass-fiber reinforced precast concrete panel units with suitable lifting devices at points provided by the manufacturer.
 2. Set glass-fiber reinforced precast concrete panel units level, plumb, square and

true within the allowable tolerances.

3. Site cutting of panels is not permitted.
- C. Supports and Bracing: Provide temporary supports and bracing required to maintain position, stability, and alignment as units are being permanently connected.
- D. Fastening:
1. Fasten glass-fiber reinforced precast concrete panel units in place by bolting or welding or both as shown on erection drawings.
 2. Field welding shall be done by qualified welders using equipment and materials compatible with the base material.
 3. Use non-combustible shields during welding operations to protect adjacent Work.
- E. Tolerances of Erected Units:
1. Tolerances for location of glass-fiber reinforced precast concrete panel units shall be noncumulative and as listed below. For erection tolerances not listed below, those listed in PCI MNL 117 shall apply.
 2. Face width of joint:
 - a. Panel dimension 10 feet or less plus 3/16 inch.
 - b. Panel dimension 10 to 20 feet plus 3/16 inch, minus 1/4 inch.
 - c. Panel dimension greater than 20 feet plus 1/4 inch, minus 5/16 inch
 3. Warpage: Maximum permissible warpage of one corner out of plane of the other three shall be 1/16 inch per foot of distance from the nearest adjacent corner or 1/8 inch total after installation.
 4. Bowing: Not over $L/360$, where L is the panel length.

3.04 PATCHING AND CLEANING

- A. Patch and clean panels using methods and materials in accordance with manufacturer's instructions.
- B. Patching blemishes using a patching mixture matching the color and texture of surrounding surface.
- C. Use extreme care to prevent damage to panel surfaces and to adjacent materials.

Provide protection of adjacent surfaces if required.

- D. Surface must be thoroughly rinsed with clean water immediately after using cleaner.

3.05 FIELD TESTS AND INSPECTION

- A. Quality Control Program: Panel manufacturer shall have an established quality control program in effect at the plant or shall employ an independent testing laboratory approved by the Architect to monitor glass content, spray rate, physical properties and curing period and conditions.
- B. Sampling and Testing:
 - 1. Prepare test specimens and use test procedures in accordance with PCI MNL-128, Chapter 8 and Appendix A.
 - 2. Prepare a minimum of 2 test boards per work shift until a production uniformity acceptable to the quality control personnel has been achieved. At such time frequency may be reduced to one board per work shift.
 - 3. For each board determine glass content by the washout test, flexural ultimate strength and flexural yield strength.
 - 4. Glass content shall be considered satisfactory if within minus 0.5 and plus 1.0 percent, by weight, of the glass content in the design mix.
 - 5. Flexural yield strength shall be considered satisfactory if both of the following requirements are met.
 - a. The average of all sets of 3 consecutive strength tests equal or exceed assumed ultimate flexural strength for design purposes.
 - b. No individual test (average of 6 coupons) fall below required assumed ultimate flexural strength for design purposes by more than 10 percent.
 - 6. Submit reports giving proportions, test results, inspection results, unit identification numbers and casting date for each work shift.
- C. Rejection:
 - 1. Panels in place may be rejected for any one of the following product defects or installation deficiencies:
 - a. Non-repairable damage incurred during construction operations.
 - b. Ragged or irregular edges.
 - c. Visible form joints or irregular surfaces.

- d. Panels not conforming to tolerance requirements.
- e. Foreign material embedded in the face.
- f. Visible repairs.
- g. Cracks visible at a distance of 10 feet.
- h. Panels do not meet design strength requirements.

3.06 PROTECTION

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

3.07 SCHEDULE

- A. Item:

END OF SECTION

SECTION 04 05 13
MASONRY MORTAR

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Mortar for unit masonry and stone veneer.

1.02 RELATED SECTIONS

- A. Section 04 20 00 – Unit Masonry: Mortar for concrete unit masonry.
- B. Section 04 43 00 – Stone Veneer: Mortar for natural stone veneer.

1.03 REFERENCES

- A. ASTM C150 – Portland Cement.
- B. ASTM C144 – Aggregate for Masonry Mortar.
- C. ASTM C207 – Hydrated Lime for Masonry Mortar
- D. ASTM C270 – Mortar for Unit Masonry
- E. International Masonry Industry All-Weather Council (IMIAC) - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of Section 01 65 00.
- B. Store and protect products under provisions of Section 01 66 00.
- C. Protect cement from moisture and humidity

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Cold Weather Requirements: IMIAC requirements.
- B. Maintain materials and surrounding air temperature to minimum 10 degrees C (40 degrees F) prior to, during, and 48 hours after completion of masonry work.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Portland Cement: ASTM C150, Normal – Type I, white color for facebrick and grey color for common brick
- B. Mortar aggregate: ASTM C144, standard masonry type; clean dry; protected from dampness, freezing, or foreign matter.
- C. Hydrated Lime: ASTM C207, Type S.
- D. Water: Clean and potable.
- E. Mortar Color: Mineral oxide pigment; chocolate brown color; “Great Stuff” manufactured by Acme Manufacturing Co. Ltd.

2.02 MIXES

- A. Mortar for Load Bearing Walls and Partitions: ASTM C270, Type S, using proportion method.
- B. Mortar for Non-Load Bearing Walls and Partitions: ASTM C270, Type N, using proportion method.

2.03 MORTAR MIXING

- A. Thoroughly mix mortar ingredients in quantities needed for immediate use in accordance with ASTM C270.
- B. Add mortar color in accordance with manufacturer’s instructions. Provide uniformity of mix and coloration.
- C. Do not use anti-freeze compounds to lower the freezing point of mortar.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install mortar in conjunction with Sections 04 20 00 and 04 43 00.

3.02 FIELD QUALITY CONTROL

- A. Field testing will be performed under provisions of Section 01 45 00.

END OF SECTION

SECTION 05 40 00
COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. This section specifies materials and services required for installation of cold-formed steel, including tracks and required accessories as shown and specified. This Section includes the following:
1. Exterior load-bearing steel stud walls.
 2. Interior load-bearing steel stud walls.
 3. Exterior non-load-bearing steel stud curtain wall.
 4. Steel joists.
 5. Steel trusses.

1.2 RELATED WORK:

- A. Structural steel framing: Section 051200, STRUCTURAL STEEL.
- B. Open web steel joists: Section 052100, STEEL JOISTS.
- C. Non-load-bearing metal stud framing assemblies: Section 092216, NON-STRUCTURAL METAL FRAMING.
- D. Gypsum board assemblies: Section 092600, GYPSUM BOARD SYSTEM.

1.3 DESIGN REQUIREMENTS:

- A. Design steel in accordance with American Iron and Steel Institute Publication "Specification for the Design of Cold-Formed Steel Structural Members", except as otherwise shown or specified.
- B. Structural Performance: Engineer, fabricate, and erect cold-formed metal framing to withstand design loads within limits and under conditions required.
1. Design Loads: As indicated.
 2. Design framing systems to withstand design loads without deflections greater than the following:
 - a. Exterior Load-Bearing Walls: Lateral deflection of // 1/240 // // 1/360 // // 1/600 // of the wall height.
 - b. Interior Load-Bearing Walls: Lateral deflection of // 1/240 // // 1/360 // of the wall height.
 - c. Exterior Non-load-Bearing Curtain wall: Lateral deflection of // 1/240 // // 1/360 // // 1/600 // // 1/720 // of the wall height.
 - d. Floor Joists: Vertical deflection of // 1/240 // // 1/360 // of the span.

- e. Roof Trusses: Vertical deflection of $\frac{1}{240}$ of the span.
3. Design framing systems to provide for movement of framing members without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change (range) of 67 degrees C (120 degrees F).
 4. Design framing system to accommodate deflection of primary building structure and construction tolerances, and to maintain clearances at openings.
 5. Design exterior non-load-bearing curtain wall framing to accommodate lateral deflection without regard to contribution of sheathing materials.
 6. Engineering Responsibility: Engage a fabricator who assumes undivided responsibility for engineering cold-formed metal framing by employing a qualified professional engineer to prepare design calculations, shop drawings, and other structural data.

1.4 SUBMITTALS:

- A. Submit in accordance with Section 013323, SAMPLES AND SHOP DRAWINGS.
- B. Shop Drawings: Shop and erection drawings showing steel unit layout, connections to supporting members, and information necessary to complete installation as shown and specified.
- C. Manufacturer's Literature and Data: Showing steel component sections and specifying structural characteristics.
- D. For cold-formed metal framing indicated to comply with certain design loadings, include structural analysis data sealed and signed by the qualified professional engineer who was responsible for its preparation.

1.5 APPLICABLE PUBLICATIONS:

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.
- B. American Iron and Steel Institute (AISI):
Specification and Commentary for the Design of Cold-Formed Steel Structural Members (1996)
- C. American Society of Testing and Materials (ASTM):
A36/A36M(REV. A)-2003...Standard Specifications for Carbon Structural Steel
A123/A123M-2002.....Standard Specifications for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

- A153/A153M-2003.....Standard Specifications for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
- A307-2002.....Standard Specifications for Carbon Steel Bolts and Studs
- A653/A653M-2003.....Standard Specifications for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- C955-2003.....Standard Specifications for Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases
- C1107-2002.....Standard Specifications for Packaged Dry, Hydraulic-Cement Grout (Non-shrink)
- E488-96(Reapproved 2003)Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements
- E1190-95(Reapproved 2000)Standard Test Methods for Strength of Power-Actuated Fasteners Installed in Structural Members
- D. American Welding Society (AWS):
 - D1.3-(98).....Structural Welding Code-Sheet Steel
- E. Military Specifications (Mil. Spec.):
 - MIL-P-21035B(Reinst. Notice 2) Paint, High Zinc Dust Content, Galvanizing Repair

PART 2 - PRODUCTS

2.1 MATERIALS:

- A. Sheet Steel for joists, studs and accessories 16 gage and heavier: ASTM A653, structural steel, zinc coated // G60 // // G90 //, with a yield of 340 MPa (50 ksi) minimum.
- B. Sheet Steel for joists, studs and accessories 18 gage and lighter: ASTM A653, structural steel, zinc coated // G60 // // G90 //, with a yield of 230 MPa (33 ksi) minimum.
- C. Galvanizing Repair Paint: MIL-P-21035B.
- D. Nonmetallic, Non-shrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, Portland cement, shrinkage-compensating agents, plasticizing and water-reducing agents, complying with ASTM C1107, with fluid consistency and a 30 minute working time.

2.2 WALL FRAMING:

A. Steel Studs: Manufacturer's standard C-shaped steel studs of web depth indicated, with lipped flanges, and complying with the following:

1. Design Uncoated-Steel Thickness:

//0.91 mm (0.0358 inch)//

//1.20 mm (0.0474 inch)//

//1.52 mm (0.0598 inch)//

//(0.0747 inch)//

//2.66 mm (0.1046 inch)//

2. Flange Width:

//35 mm (1-3/8 inches)//

//(1-5/8 inches)//

//(2 inches)//

//(2-1/2 inches)//

3. Web: Punched // Unpunched //.

B. Steel Track: Manufacturer's standard U-shaped steel track, unpunched, of web depths indicated, with straight flanges, and complying with the following:

1. Design Uncoated-Steel Thickness: Matching steel studs.

2. Flange Width: Manufacturer's standard deep flange where indicated, standard flange elsewhere.

2.3 JOIST FRAMING:

A. Steel Joists: Manufacturer's standard C-shaped steel joists, unpunched, of web depths indicated, with lipped flanges, and complying with the following:

1. Design Uncoated-Steel Thickness: // 0.91 mm (0.0358 inch). //

// 1.20 mm (0.0474 inch). // // 1.52 mm (0.0598 inch). // // 1.90 mm
0.0747 inch). // // 2.66 mm (0.1046 inch).//

2. Flange Width: // 41 mm (1 5/8 inches) minimum. // // (2 inches). //
63 mm (2 1/2 inches) //

B. Steel Joist Track: Manufacturer's standard U-shaped steel joist track, unpunched, of web depths indicated, with straight flanges, and complying with the following:

1. Design Uncoated-Steel Thickness: Matching steel joists.

2. Flange Width: // 41 mm (1 5/8-inches) minimum. // 51 mm (2 inches).
// 63 mm (2 1/2-inches). //

2.4 FRAMING ACCESSORIES:

A. Fabricate steel framing accessories of the same material and finish used for framing members, with a minimum yield strength of 230 MPa (33 ksi).

B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:

1. Supplementary framing.
2. Bracing, bridging, and solid blocking.
3. Web stiffeners.
4. Gusset plates.
5. Deflection track and vertical slide clips.
6. Stud kickers and girts.
7. Joist hangers and end closures.
8. Reinforcement plates.

2.5 ANCHORS, CLIPS, AND FASTENERS:

- A. Steel Shapes and Clips: ASTM A36, zinc coated by the hot-dip process according to ASTM A123.
- B. Cast-in-Place Anchor Bolts and Studs: ASTM A307, Grade A, zinc coated by the hot-dip process according to ASTM A153.
- C. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times the design load, as determined by testing per ASTM E488 conducted by a qualified independent testing agency.
- D. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times the design load, as determined by testing per ASTM E1190 conducted by a qualified independent testing agency.
- E. Mechanical Fasteners: Corrosion-resistant coated, self-drilling, self-threading steel drill screws. Low-profile head beneath sheathing, manufacturer's standard elsewhere.

2.6 REQUIREMENTS:

- A. Welding in accordance with AWS D1.3
- B. Furnish members and accessories by one manufacturer only.

PART 3 - EXECUTION

3.1 FABRICATION:

- A. Framing components may be preassembled into panels. Panels shall be square with components attached.
- B. Cut framing components squarely or as required for attachment. Cut framing members by sawing or shearing; do not torch cut.
- C. Hold members in place until fastened.
- D. Fasten cold-formed metal framing members by welding or screw fastening, as standard with fabricator. Wire tying of framing members is not permitted.
 1. Comply with AWS requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.

2. Locate mechanical fasteners and install according to cold-formed metal framing manufacturer's instructions with screw penetrating joined members by not less than 3 exposed screw threads.
- E. Where required, provide specified insulation in double header members and double jamb studs which will not be accessible after erection.

3.2 ERECTION:

- A. Handle and lift prefabricated panels in a manner as to not distort any member.
- B. Securely anchor tracks to supports as shown.
- C. At butt joints, securely anchor two pieces of track to same supporting member or butt-weld or splice together.
- D. Plumb, align, and securely attach studs to flanges or webs of both upper and lower tracks.
- E. All axially loaded members shall be aligned vertically to allow for full transfer of the loads down to the foundation. Vertical alignment shall be maintained at floor/wall intersections.
- F. Install jack studs above and below openings and as required to furnish support. Securely attach jack studs to supporting members.
- G. Install headers in all openings that are larger than the stud spacing in that wall.
- H. Attach bridging for studs in a manner to prevent stud rotation. Space bridging rows as shown.
- I. Studs in one piece for their entire length, splices will not be permitted.
- J. Provide a load distribution member at top track where joist is not located directly over bearing stud.
- K. Provide joist bridging and web stiffeners at reaction points where shown.
- L. Provide end blocking where joist ends are not restrained from rotation.
- M. Provide an additional joist under parallel partitions, unless otherwise shown, when partition length exceeds one-half joist span and when floor and roof openings interrupt one or more spanning members.
- N. Provide temporary bracing and leave in place until framing is permanently stabilized.
- O. Do not bridge building expansion joints with cold-formed metal framing. Independently frame both sides of joints.
- P. Fasten reinforcement plate over web penetrations that exceed size of manufacturer's standard punched openings.

3.3 TOLERANCES:

- A. Vertical alignment (plumbness) of studs shall be within 1/960th of the span.
- B. Horizontal alignment (levelness) of walls shall be within 1/960th of their respective lengths.
- C. Spacing of studs shall not be more than 3 mm (1/8 inch) +/- from the designed spacing providing that the cumulative error does not exceed the requirements of the finishing materials.
- D. Prefabricated panels shall be not more than 3 mm (1/8 inch) +/- out of square within the length of that panel.

3.4 FIELD REPAIR:

Touch-up damaged galvanizing with galvanizing repair paint.

- - - E N D - - -

Section 06 11 13 2x4 studs

Model Specification

The following paragraphs are for insertion into a section of generic specifications or generic/proprietary specifications covering rough carpentry to include preservative treated wood. Notes shown in italics should not be included in the final specification.

PART 1 GENERAL

1.01 REFERENCES

A. American Wood-Preservers' Association (AWPA):

1. Standard C1, All Timber Products — Preservative Treatment by Pressure Process.
2. Standard C2, Lumber, Timber and Ties (salt water use only).
3. Standard C3, Piles.
4. Standard C4, Poles.
5. Standard C9, Plywood.
6. Standard C14, Wood for Highway Construction.
7. Standard C16, Wood Used on Farms.
8. Standard C18, Marine Construction.
9. Standard C22, Lumber and Plywood for Permanent Wood Foundations
10. Standard C23, Round Poles and Posts Used in Building Construction.
11. Standard C24, Sawn Timber Used to Support Residential and Commercial Structures.
12. Standard C25, Sawn Crossarms
13. Standard C28, Structural Glued Laminated Members and Laminations Before Gluing.
14. Standard C33, Structural Composite Lumber.
15. Standard C34, Shakes and Shingles.
16. Standard P5, Waterborne Preservatives.
17. Standard M4, Care of Preservative-Treated Wood Products.

A. National Institute of Standards and Technology (NIST):

1. PS 1, U.S. Product Standard for Construction and Industrial Plywood.
2. PS 20, American Softwood Lumber Standard.

A. Western Wood Preservers Institute

1. Best Management Practices for the Use of Treated Wood in Aquatic Environments.

1.02 QUALITY ASSURANCE

A. Qualifications:

1. Treatment Facility: Provide treated materials that have been produced under the appropriate ASTM or ANSI standard or an ALSC recognized quality assurance program.

1.03 DELIVERY, STORAGE, AND HANDLING

If drying after treatment is selected in part 2, retain the two paragraphs below.

A. Packing and Shipping:

1. Provide waterproof covers for preservative treated wood during shipment.

A. Storage and Protection:

1. Store preservative treated wood off the ground and protected from the weather.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Preservative: Wolman CCA Type C; Arch Wood Protection

2.02 MATERIALS

Lumber for preservative treatment must conform to the following specifications. Select grade and species below. Other grades and species may be acceptable, contact Arch to verify.

A. Lumber: In accordance with NIST PS 20 and as follows:

1. Grade: No. 1
1. Grade: No. 2
1. Grade: No. 1 Dense.
1. Grade: No. 2 Dense.
1. Grade: Select Structural.
2. Species: Southern pine.
2. Species: Red pine.
2. Species: Ponderosa pine.
2. Species: Hem-fir.
3. Surfacing: S4S.
3. Surfacing: S1S2E.
3. Surfacing: Rough.
4. Moisture Content: 19%, maximum.

Plywood for preservative treatment must conform to the following specifications. Select panel grade, exposure durability, species group, and structural rating from below.

A. Plywood: In accordance with NIST PS 1 and as follows:

1. Panel Grade: A-C.
1. Panel Grade: B-C.
1. Panel Grade: C-C.
1. Panel Grade: C-D.
2. Exposure Durability: Exterior.
2. Exposure Durability: Exposure 1.
3. Species Group: 1.
3. Species Group: 2.
4. APA Structural Rating: Structural I.
4. APA Structural Rating: Structural II.

- C. Preservative: CCA Type C in accordance with AWPA P5 and formulated using only the oxide form of the chemicals.

2.03 PRESERVATIVE TREATMENT

Select required end uses below.

A. Pressure Treatment: In accordance with the requirements of AWP Standard C1 and in accordance with the following standards for indicated end uses:

1. Lumber (salt water use only): C2.
2. Piling: C3.
3. Poles: C4.
3. Plywood: C9.
4. Highway Construction: C14.
5. Poles, Piles and Posts Used as Structural Members on Farms: C16.
6. Marine Construction: C18.
7. Permanent Wood Foundations: C22.
8. Building Poles and Posts: C23.
9. Sawn Timbers: C24.
10. Sawn Crossarms: C25
11. Structural Glued Laminated Members: C28.
12. Structural Composite Lumber: C33.
13. Shakes and Shingles: C34.

Select required applications below.

B. Preservative Retention: In accordance with the specified standard, determined in the specified zone for the following applications:

1. Above Ground.
2. Ground or Fresh Water Contact.
3. Wood Foundation or Structural Poles.
4. Salt Water Immersion.

A. Moisture Content: Drying after treatment is not required.

Select Above or Below.

B. Moisture Content: ???Dry after treatment as follows:

1. Lumber: 19%, maximum.
2. Plywood: 18%, maximum.
3. Plywood: 15%, maximum (for Permanent Wood Foundation).

Retain below if fixed preservative is required for aquatic environments.

A. Pressure Treatment of Materials for Aquatic Environments: In accordance with the Best Management Practices published by the Western Wood Preservers Institute.

2.05 SOURCE QUALITY CONTROL

A. Inspection:

1. Untreated Material:

- a. Lumber: Provide lumber that has been inspected and graded before treatment by an ALSC recognized grading agency.
- b. Plywood: Provide plywood that has been inspected and graded before treatment by a code-recognized inspection and testing agency.
- c. Poles: Provide poles that have been inspected and graded (BEFORE TREATMENT?) in accordance with ANSI standards.

- d. Piling -- Provide piling that has been inspected and graded (BEFORE TREATMENT?) in accordance with ASTM standards.
- 1. Treated Material: Provide treated material that bears the quality mark of an ALSC-recognized agency which maintains supervision, testing, and inspection of the quality of the product.

PART 3 EXECUTION

3.01 INSTALLATION

Below is not generally required for U.S. eastern and central pine species less than 5 inches thick. No other special installation specifications are required for preservative treated wood.

- A. Surface Treatment of Field Cuts: Treat field cuts on members that provide structural support to a permanent structure in accordance with AWWPA Standard M4.

TREATED WOOD FOUNDATION

PART 1: GENERAL

1.01 REFERENCES

A. American Wood-Preservers' Association (AWPA):

1. Standard C1, All Timber Products – Preservative Treatment by Pressure Process.
2. Standard C2, Lumber, Timbers, Bridge Ties and Mine Ties.
3. Standard C9, Plywood.
4. Standard P5, Waterborne Preservatives.
5. Standard E13, Standard Method of Testing to Determine Water Repellents in Pressure Treated Lumber.
6. Standard M4, Care of Preservative - Treated Wood Products.
7. Standard U1, Use Category System

B. National Institute of Standards and Technology (NIST):

1. PS 1, U.S. Product Standard for Construction and Industrial Plywood.
2. PS 20, American Softwood Lumber Standard.

1.02 QUALITY ASSURANCE

A. Qualifications:

1. Treatment Facility: Provide treated materials that have been produced under quality assurance program conducted by an ALSC - recognized agency.

1.03 DELIVERY, STORAGE, AND HANDLING

If drying after treatment is selected in part 2, retain the two paragraphs below.

A. Packing and Shipping:

1. Provide waterproof covers for preservative treated wood during shipment.

B. Storage and Protection:

1. Store preservative treated wood off the ground and protected from the weather.

PART 2: PRODUCTS

2.01 MANUFACTURERS

A. Preservative: Wolman E Copper Azole; Arch Treatment Technologies, Inc.

Retain below if water repellent is required.

C. Water Repellent: Wolman WE water repellent; Arch Treatment Technologies, Inc.

2.02 MATERIALS

Lumber for preservative treatment must conform to the following specifications. Select grade and species below. Other species are acceptable for some applications, contact Arch or review code evaluation reports for more information. Not all species are readily available in all areas of the country.

A. Lumber: In accordance with NIST PS 20 and as follows:

1. Grade: No. 1
1. Grade: No. 2
1. Grade: No. 1 Dense.
1. Grade: No. 2 Dense.
1. Grade: Select Structural.
1. Grade: Standard.
1. Grade: Premium.
2. Species: Southern pine.
2. Species: Red pine.
2. Species: Ponderosa pine.
2. Species: Hem-fir.
2. Species: Douglas fir.
2. Species: Western Hemlock.
2. Species: Eastern White Pine.
2. Species: Radiata Pine
2. Species: Caribbean Pine
3. Surfacing: S4S.
3. Surfacing: S1S2E.
3. Surfacing: Rough.

Plywood for preservative treatment must conform to the following specifications. Select panel grade, exposure durability, species group, and structural rating from below.

B. Plywood: In accordance with NIST PS 1
and as follows:

1. Panel Grade: A-C.
1. Panel Grade: B-C.
1. Panel Grade: C-C.
1. Panel Grade: C-D.
2. Exposure Durability: Exterior.
2. Exposure Durability: Exposure 1.
3. Southern pine face veneers, Group 1 or 2 - no hardwood core veneers
3. Douglas fir face veneers, Group 1 or 2 - no hardwood core veneers
4. APA Structural Rating: Structural I.
4. APA Structural Rating: Structural II.

C. Preservative: Copper azole in accordance with AWWA Standard P5.

2.03 PRESERVATIVE TREATMENT

Confidential Page 3 10/11/2005

Select required end uses below.

A. Pressure Treatment: In accordance with the requirements of AWWA Standard C1 and in accordance with the following standards for indicated end uses:

1. Lumber: C2.
2. Plywood: C9.

Select required applications below.

B. Minimum Preservative Retention: In accordance with the specified standard, determined in the specified zone, for the following applications:

1. Above Ground.
2. Ground or Fresh Water Contact.
3. Structural Posts and Poles (Sawn or Round).

C. Moisture Content: Drying after treatment is not required.

Select Above or Below.

C. Moisture Content: Dry after treatment as follows:

1. Lumber: 19%, maximum.
2. Plywood: 18%, maximum.

Retain below if water repellent is required.

2.04 WATER REPELLENT TREATMENT

A. Factory water repellent applied with preservative treatment.

2.05 SOURCE QUALITY CONTROL

A. Inspection:

1. Untreated Material:

- a. Lumber: Provide lumber that has been inspected and graded by an ALSC recognized grading agency.
- b. Plywood: Provide plywood that has been inspected and graded before treatment by a code-recognized inspection and testing agency.

2. Treated Material: Provide treated material that bears the Wolmanized trademark and the quality mark of an ALSC-recognized agency which maintains supervision, testing, and inspection of the quality of the product. Quality marks shall be affixed to each piece and include the following:

- a. Identification of the inspection agency.
- b. Identification of the standard to which the material was treated.
- c. Identification of the treating facility.

d. Identification of the preservative and retention.

PART3: EXECUTION

3.01 INSTALLATION

Below is not generally required for pine species less than 6 inches thick. No other special installation specifications are required for preservative treated wood.

A. Surface Treatment of Field Cuts:

Treat field cuts on members that provide structural support to a permanent structure in accordance with AWPAC Standard M4.

END OF SECTION

SECTION 06 16 26

FIBERBOARD UNDERLAYMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Underlayment for finish flooring over concrete slabs.
 - 1. Floating method.
 - 2. Adhesive method.

1.02 RELATED SECTIONS

- A. Section 03 31 00 – Cast-In-Place Concrete.
- B. Section 09 30 13 – Ceramic Tile.
- C. Section 09 64 23 – Wood Parquet Flooring.
- D. Section 09 64 33 – Wood Strip Flooring.
- E. Section 09 65 13 – Resilient Flooring.
- F. Section 09 68 00 – Carpet.

1.03 REFERENCES

- A. ASTM E 84 – Test Method for Surface Burning Characteristics of Building Materials.

1.04 SUBMITTALS

- A. Submit under provisions of Section 01 30 00.
- B. Product Data: Manufacturer's product and complete installation data for all materials in this specification.
- C. Installation Guide: Product manufacturer's written installation guide.
- D. Closeout Submittals: Warranty and Manufacturer's performance certifications.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in the manufacturer's original sealed, labeled packaging.
- B. Store materials inside when possible, stored flat at all times before installation. For exterior storage, place in a dry, well-vented area above ground on wooden pallets and covered with waterproof tarpaulins.

- C. Inspect the materials upon delivery to assure that specified products have been received.
- D. Report damaged material immediately to the delivering carrier and note such damage on the carrier's freight bill of lading.
- E. Remove protective packaging not less than 24 hours before installation to allow material to acclimate.

1.06 PROJECT CONDITIONS

- A. Maintain temperature and humidity conditions before, during, and after application closely approximating those which will exist when building is occupied.
- B. Concrete slab must be dry before application. Do not apply where moisture is present.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturer: Homasote Company, P.O. Box 7240, West Trenton, NJ 08628-0240; ASD. Tel: (609) 883-3300, Fax: (609) 530-1584, Internet address: <http://www.homasote.com>; For local rep contact: Sweet's Buyline 1-800-892-1165 (#0878).
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00. Proposed substitutions shall meet the performance and quality standards of this specification.
- C. Substitutions: Not permitted.
- D. Provide all fiberboard underlayment from a single manufacturer.

2.02 MATERIALS

- A. Fiberboard Underlayment: ComfortBase™ high-density fiberboard made from 100 percent recycled newsprint with 1/4 inch (6 mm) deep by 4 inch by 4 inch (100 by 100 mm) grid on one side only.
 - 1. Thickness: 1/2 inch (13 mm).
 - 2. Density: 26-28 pcf (416-448 kg/cubic m).
 - 3. Tensile Strength parallel to surface: 450-700 psi (3,100-4,830 kPa) minimum.
 - 4. Transverse M.O.R.: 750-1,000 psi (5,175-6,900 kPa) minimum.
 - 5. Hardness (Janka Ball): 230 lbs. (104 kg).
 - 6. Water Absorption by Volume:
 - a. 2 hour immersion: 5 percent maximum.
 - b. 24 hour immersion: 15 percent maximum.
 - 7. Expansion, 50 to 90 percent relative humidity: 0.25 percent.
 - 8. Noise Reduction Coefficient: 0.20.

- 9. R-value: 1.2 (0.021).
- 10. Flame Spread: Class III (or C).

2.03 ACCESSORIES

- A. Adhesive: APA approved subfloor adhesive meeting APA AFG-01 specification.
- B. Wood Nailers: 1/2 inch (13 mm) thick by 1-1/2 inches (38 mm) wide.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates upon which work will be installed.
- B. Verify environmental conditions are, and will continue to be, maintained in accordance with manufacturer's recommendations.
- C. Coordinate with responsible entity to perform corrective work on unsatisfactory substrates or conditions.
- D. Starting work by installer is acceptance of substrate and environmental conditions.

3.02 PREPARATION

- A. Follow manufacturer's instructions by separating and allowing underlayment boards to be exposed to environmental temperature and humidity conditions for not less than 24 hours before start of installation.

3.03 INSTALLATION

- A. Follow manufacturer's recommendations for temperature and humidity conditions before, during, and after installation. (Bowing of panels away from grid side is normal before application.)
- B. Allow 3/16 inch (4.7 mm) space at panel joints, 3/8 inch (9.5 mm) space at walls and partitions, to allow for expansion and contraction.
- C. Provide 1/2 inch (13 mm) expansion joints at 50 feet (15.240 m) in each direction.
- D. Stagger all panel joints regardless of panel size.
- E. Underlayment Application for Carpet and Pad (Floating Method):
 - 1. Nail or glue wood nailers to concrete where tackless strips are to be used.
 - 2. Lay panels in position, grid side down.
 - 3. Allow 48 hours before installation of pad and carpet.

F. Underlayment Application for Carpet and Pad (Adhesive Method):

1. Nail or glue wood nailers to concrete where tackless strips are to be used.
2. Apply continuous 3/8 inch (9.5 mm) beads of adhesive on grid surface of underlayment panels:
 - a. Each direction at 1/3 points .
 - b. 3/4 inch (19 mm) from each edge.
3. Place adhesive side down to concrete and apply pressure over entire surface.
4. Maintain installed panels traffic-free for 24-48 hours before installation of pad and carpet.

G. Underlayment Application for Adhered Carpet, Vinyl, Wood Parquet, Wood Strip, and Ceramic Tile Flooring (Adhesive Method):

1. Apply continuous 3/8 inch (9.5 mm) beads of adhesive on grid surface of underlayment panels:
 - a. Each direction at 1/3 points .
 - b. 3/4 inch (19 mm) from each edge.
2. Place adhesive side down to concrete and apply pressure over entire surface.
3. Maintain installed panels traffic-free for 24-48 hours before installation of plywood.
4. Install 4 foot by 4 foot (1.219 by 1.219 m) maximum sheets of 3/8 inch (9.5 mm) minimum thickness plywood of suitable underlayment grade over installed panels.
 - a. Trowel adhesive over underlayment panels in 100 percent coverage fashion.
 - b. Apply plywood so that plywood joints do not coincide with underlayment joints.
 - c. Nail each corner and center of plywood using concrete nails to penetrate concrete 1 inch (25 mm) minimum.
 - d. Use additional nails as necessary to hold plywood flat.
5. Maintain installed plywood traffic-free for 24-48 hours before installation of finish flooring.

3.04 ADJUSTING AND CLEANING

- A. Follow manufacturer's instructions for repairing damaged panels.
- B. Replace panels that cannot be repaired to "as new" condition.

END OF SECTION

SECTION 06165

FIBERBOARD UNDERLAYMENT

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Underlayment for finish flooring over concrete slabs.

1. Floating method.
2. Adhesive method.

1.2 RELATED SECTIONS

A. Section 03300 - Cast-In-Place Concrete.

B. Section 09310 - Ceramic Tile.

C. Section 09647 - Wood Parquet Flooring.

D. Section 09648 - Wood Strip Flooring.

E. Section 09650 - Resilient Flooring.

F. Section 09680 - Carpet.

G. _____.

1.3 REFERENCES

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

B. _____.

1.4 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's product and complete installation data for all materials in this specification.

C. Installation Guide: Product manufacturer's written installation guide.

D. Closeout Submittals: Warranty and Manufacturer's performance certifications.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in the manufacturer's original sealed, labeled packaging.
- B. Store materials inside when possible, stored flat at all times before installation. For exterior storage, place in a dry, well-vented area above ground on wooden pallets and covered with waterproof tarpaulins.
- C. Inspect the materials upon delivery to assure that specified products have been received.
- D. Report damaged material immediately to the delivering carrier and note such damage on the carrier's freight bill of lading.
- E. Remove protective packaging not less than 24 hours before installation to allow material to acclimate.

1.6 PROJECT CONDITIONS

- A. Maintain temperature and humidity conditions before, during, and after application closely approximating those which will exist when building is occupied.
- B. Concrete slab must be dry before application. Do not apply where moisture is present.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Homasote Company, P.O. Box 7240, West Trenton, NJ 08628-0240; ASD. Tel: (609) 883-3300, Fax: (609) 530-1584, Internet address: <http://www.homasote.com>; For local rep contact: Sweet's Buyline 1-800-892-1165 (#0878).
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600. Proposed substitutions shall meet the performance and quality standards of this specification.
- C. Substitutions: Not permitted.
- D. Provide all fiberboard underlayment from a single manufacturer.

2.2 MATERIALS

- A. Fiberboard Underlayment: ComfortBase™ high-density fiberboard made from 100 percent recycled newsprint with 1/4 inch (6 mm) deep by 4 inch by 4 inch (100 by 100 mm) grid on one side only.

1. Thickness: 1/2 inch (13 mm).
2. Density: 26-28 pcf (416-448 kg/cubic m).
3. Tensile Strength parallel to surface: 450-700 psi (3,100-4,830 kPa) minimum.
4. Transverse M.O.R.: 750-1,000 psi (5,175-6,900 kPa) minimum.
5. Hardness (Janka Ball): 230 lbs. (104 kg).
6. Water Absorption by Volume:
 - a. 2 hour immersion: 5 percent maximum.
 - b. 24 hour immersion: 15 percent maximum.
7. Expansion, 50 to 90 percent relative humidity: 0.25 percent.
8. Noise Reduction Coefficient: 0.20.
9. R-value: 1.2 (0.021).
10. Flame Spread: Class III (or C).

2.3 ACCESSORIES

- A. Adhesive: APA approved subfloor adhesive meeting APA AFG-01 specification.
- B. Wood Nailers: 1/2 inch (13 mm) thick by 1-1/2 inches (38 mm) wide.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates upon which work will be installed.
- B. Verify environmental conditions are, and will continue to be, maintained in accordance with manufacturer's recommendations.
- C. Coordinate with responsible entity to perform corrective work on unsatisfactory substrates or conditions.
- D. Starting work by installer is acceptance of substrate and environmental conditions.

3.2 PREPARATION

- A. Follow manufacturer's instructions by separating and allowing underlayment boards to be exposed to environmental temperature and humidity conditions for not less than 24 hours before start of installation.

3.3 INSTALLATION

- A. Follow manufacturer's recommendations for temperature and humidity conditions before, during, and after installation. (Bowing of panels away from grid side is normal before application.)
- B. Allow 3/16 inch (4.7 mm) space at panel joints, 3/8 inch (9.5 mm) space at walls and partitions, to allow for expansion and contraction.

C. Provide 1/2 inch (13 mm) expansion joints at 50 feet (15.240 m) in each direction.

D. Stagger all panel joints regardless of panel size.

E. Underlayment Application for Carpet and Pad (Floating Method):

1. Nail or glue wood nailers to concrete where tackless strips are to be used.

2. Lay panels in position, grid side down.

3. Allow 48 hours before installation of pad and carpet.

F. Underlayment Application for Carpet and Pad (Adhesive Method):

1. Nail or glue wood nailers to concrete where tackless strips are to be used.

2. Apply continuous 3/8 inch (9.5 mm) beads of adhesive on grid surface of underlayment panels:

a. Each direction at 1/3 points .

b. 3/4 inch (19 mm) from each edge.

3. Place adhesive side down to concrete and apply pressure over entire surface.

4. Maintain installed panels traffic-free for 24-48 hours before installation of pad and carpet.

G. Underlayment Application for Adhered Carpet, Vinyl, Wood Parquet, Wood Strip, and Ceramic Tile Flooring (Adhesive Method):

1. Apply continuous 3/8 inch (9.5 mm) beads of adhesive on grid surface of underlayment panels:

a. Each direction at 1/3 points .

b. 3/4 inch (19 mm) from each edge.

2. Place adhesive side down to concrete and apply pressure over entire surface.

3. Maintain installed panels traffic-free for 24-48 hours before installation of plywood.

4. Install 4 foot by 4 foot (1.219 by 1.219 m) maximum sheets of 3/8 inch (9.5 mm) minimum thickness plywood of suitable underlayment grade over installed panels.

a. Trowel adhesive over underlayment panels in 100 percent coverage fashion.

b. Apply plywood so that plywood joints do not coincide with underlayment joints.

c. Nail each corner and center of plywood using concrete nails to penetrate concrete 1 inch (25 mm) minimum.

d. Use additional nails as necessary to hold plywood flat.

5. Maintain installed plywood traffic-free for 24-48 hours before installation of finish flooring.

3.4 ADJUSTING AND CLEANING

A. Follow manufacturer's instructions for repairing damaged panels.

B. Replace panels that cannot be repaired to "as new" condition.

SECTION 06 22 13

STANDARD PATTERN WOOD TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wood baseboard moulding manufactured by Ornamental Mouldings.

1.02 RELATED SECTIONS

- A. Section 06 44 00 – Ornamental woodwork
- B. Section 06 46 00 – Shop-fabricated wood trim.

1.03 SUBMITTALS

- A. Submit literature and installation instructions provided by the manufacturer to determine space requirements.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in original packaging with any documentation provided by the manufacturer.
- B. Store and protect products from any form of moisture or humidity as such interaction can cause damage to the wood.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

- A. Ornamental Mouldings, 3804 Comanche Road, Archdale, NC

2.02 MATERIALS

- A. Wood – White Hardwood such that 0.5-inch (12.7 mm) space shall be covered by a moulding fastened to the wall and so arranged that it will not obstruct the swelling or shrinkage movements of the floor. Fire-retardant-treated wood complying with Section 2303.2 shall be permitted within exterior wall assemblies with a 2-hour rating or less.
- B. Adhesive – Wood adhesive qualified under ASTM E 119.
- C. Finish shall be lacquer or conversion varnish per AWI Custom Grade Specifications: TR-2 and OP-2 for lacquer, and TR-4 and OP-4 for varnish.

- D. Finishing Nails – 1-1/2"

2.03 COMPONENTS

- A. Baseboard: 19/32" x 4-1/8" Bead & Reel Baseboard
- B. Outside Base Corner: 1-1/8" x 1-1/8" x 6"
- C. Inside Base Corner: 7/8" x 7/8" x 6"

PART 3 EXECUTION

3.01 INSTALLATION

- A. Mouldings should be finished prior to installation.
- B. Oak should be pre-drilled before nailing. This prevents splitting and cracking.
- C. Corner blocks, plinth blocks and base corners should be installed before casings and baseboards.
- D. Install baseboards according to the manufacturer's instructions included with the product.

3.02 POST-INSTALLATION

- A. Counter sink all nail heads and touch up with putty.

PART 4 FINISHING

4.01 RECOMMENDED PROCESS

- A. Mouldings should be finished prior to installation.

4.01 FINISHING

- A. The finish should be applied to a clean, dry surface. On ornaments, light sanding can ensure a smoother finish application.
- B. Stain: Start with a filler/sealer so the stain will be uniformly absorbed. Test the stain on the inside of the moulding to ensure the right shade. Then follow the finish manufacturers instructions for application. Once you have the color you want, top with a coat of clear varnish or urethane for protection.
- C. Paint: Start with a latex primer, then apply one or more coats of trim paint.

END OF SECTION

SECTION 062500

PREFINISHED WOOD PANELING

PART 1.0 - GENERAL

1.1 DESCRIPTION

- A. Wood wainscoting and wall panel systems shall be the New England Classic® Classic**Rustic** Systems manufactured by the New England Classic, Inc. Company.

1.2 SUBMITTALS

- B. Submit manufacturer's literature and installation instructions to determine layout requirements.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Delivery of Product: The Classic**Rustic** panel system shall be delivered to the job site in the manufacturer's original packaging with manufacturer's identification intact and legible.
- B. Storage & handling: The Classic**Rustic** panel system shall be stored and handled in such a way to protect against contact with water, exposure to weather, breakage and damage. Do not store directly on concrete without a plastic sheet as a moisture barrier.

1.4 LIMITATIONS

- A. Moisture Conditions: the Classic**Rustic** panel system shall not be used in wet or damp areas.
- B. Temperature conditions: The Classic**Rustic** panel system shall not be used in contact with surfaces where temperatures exceed 120° F.

PART 2.0 PRODUCTS 2.1 ACCEPTABLE MANUFACTURER

- A. New England Classic®, 615 North Murray Street, Gainesboro, TN 38562

2.2 MATERIALS

- A. Substrate shall be industrial grade class 1 (fire retardant) or 3, or moisture resistant MDF, product class MD, that conforms with ANSI A208.2- 1994. Panel substrate shall be 5-ply veneer core plywood, bonded with Type II adhesive in accordance to ANSI/HPVA HP-1-1994.
- B. Adhesive for bonding veneers to substrate shall be PVA, EVA, or PUR type adhesive.
- C. Real wood veneer shall be grade-A, sanded to 180 grit.

- D. Factory finish shall be either lacquer or conversion varnish per Architectural Woodwork Institute (AWI) Custom Grade Specifications: TR-2 and OP-2 for lacquer, and TR-4 and OP-4 for conversion varnish finish.

2.3 COMPONENTS

- A. Panel:
5" x 23 1/2" x 7/16" thick
5" x 31 1/2" x 7/16" thick
- B. Cap:
1 3/4" x 1 3/4" x 96" long
- C. Top & Casing Rail:
1" x 5" x 96" long
- D. Base Rail:
1" x 6 3/4" x 96" long
- E. Shoe:
3/4" x 2" x 96" long
- F. Edge Molding:
1 1/8" x 3" x 34 3/4" long
1 1/8" x 3" x 42 3/4" long

PART 3.0 INSTALLATION

3.1 INSTALLATION

- A. Install product per the manufacturer's installation recommendations using the instructions provided with the product.

3.2 WARRANTY

- A. Manufacturer shall furnish a five year warranty against defects in material and workmanship.

3.3 MATERIALS ACCEPTANCE

- A. City of New York MEA 190-99-M

PART 4.0 FINISHING & MAINTENANCE

4.1 UNFINISHED OAK, MAPLE, CHERRY

- A. Fill all nail holes and splices with matching wood filler. Sand wood filler patches smooth to the veneer surface with 180 grit paper, taking care not to sand through the veneer. Apply stain, sealer and clear finish coat, lightly sanding between coats with 220 grit paper. We recommend applying a light coat of lemon oil or furniture oil to replenish the natural sheen, especially in dry environments.

4.2 FINISHED

- A. Use matching color putty to fill fastener holes. A matching stain kit is included with factory finished product.

END OF SECTION

**SECTION 06 41 00
ARCHITECTURAL WOOD CASEWORK**

SPEC WRITER NOTE: Delete between //----// if not applicable to project. Also delete any other item or paragraph not applicable in the section and renumber the paragraphs.

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies // wood veneer casework, // plastic laminate casework // as detailed on the drawings, including related components and accessories required to form integral units. Wood casework items shown on the drawings, but not specified below shall be included as part of the work under this section, and applicable portions of the specification shall apply to these items. Each like item of casework shall be of the same design and by one manufacturer.

SPEC WRITER NOTE: Edit and add to the following lists as required by project drawings.

- B. Where shown, provide plastic laminate casework items as follows:
1. Base cabinets in //Dental Service Darkroom // , _____.
 2. // Cabinets // and // counters // in Radiology Darkroom // _____.
 3. Plastic laminate covered countertops for casework.
 - //4. _____.
- C. Where shown, provide wood veneer casework items as follows:
1. Wall cabinets, base cabinets at // Dental Service // Radiology Service //
_____//.
 - //2. _____.

1.2 RELATED WORK

- A. Custom Casework: Section 06200, FINISH CARPENTRY AND MILLWORK.
- B. Color and Finish of Plastic Laminate: Section 09050, INTERIOR/EXTERIOR FINISHES, MATERIALS, AND FINISH SCHEDULES.
- C. Lavatories and Plumbing in Casework: Section 15450, PLUMBING FIXTURES AND TRIM.

1.3 MANUFACTURER'S QUALIFICATIONS

The fabrication of casework shall be by a manufacturer who produces casework similar to the casework specified and shown.

1.4 SUBMITTALS

- A. Submit in accordance with Section, SAMPLES AND SHOP DRAWINGS.
- B. Manufacturer's Literature and Data:
- Sinks, trim and fittings
 - Locks for doors and drawers
 - Adhesive cements
- C. Samples:
- Counter top, plastic laminate, 150 mm (six inch) square

Wood Face Veneer or Hardwood Plywood

D. Shop Drawings (1/2 full size):

1. All casework, showing details of construction, including materials, hardware and accessories.
2. Cabinets and counters showing faucets in connection with sink bowls, and electrical fixtures and receptacles which are mounted on cabinets and counters.
3. Fastenings and method of installation.

//E. Mock-Up: Where required for special casework and where four or more similar units are involved, submit a mock-up of a typical unit for approval by resident engineer. //

1.5 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.

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

A167-99 (R2004) Stainless and Heat-Resisting chromium-Nickel Steel Plate, Sheet and Strip

A1008-04..... Steel, Sheet, Cold-Rolled, Carbon, Structural, High Strength Low Alloy

C1036-01 Flat Glass

C. National Particleboard Association (NPA):

A208.1-93..... Wood Particleboard

D. U.S. Department of Commerce Product Standards (Prod. Std):

PS1-95 Construction And Industrial Plywood

E. Hardwood, Plywood and Veneer Association (HPVA):

HP.1-93 Hardwood and Decorative Plywood

F. Architectural Woodwork Institute (AWI):

Architectural Woodwork Quality Standards, Guide Specifications Quality Certification Program - 1999

G. American Society of Mechanical Engineers (ASME):

A112.18.1M-00 Plumbing Fixture Fittings

H. National Electrical Manufacturers Association (NEMA):

LD3-00 High Pressure Decorative Laminates

LD3.1-95 Performance, Application Fabrication and Installations of High-Pressure Decorative Laminates

PART 2 - PRODUCTS

SPEC WRITER NOTE: Make material requirements agree with applicable requirements specified in the referenced Applicable Publications. Update and specify only that which applies to the project.

2.1 PLYWOOD, HARDWOOD FACE VENEER

A. ANSI HP.1, Premium Grade // plain sliced Red Oak // Rotary cut Select White Birch // ____ //.

2.2 PLASTIC LAMINATE:

- A. NEMA LD-3.
- B. Exposed decorative surfaces including countertops, both sides of cabinet doors, and for items having plastic laminate finish. General purpose Type HGL.
- C. Cabinet Interiors Including Shelving: Both of following options to comply with NEMA, CL20 as a minimum.
 - 1. Plastic laminate clad plywood or particle board.
 - 2. Resin impregnated decorative paper thermally fused to particle board.
- D. Backing sheet on bottom of plastic laminate covered wood tops. Backer Type BKL.
- E. Post Forming Fabrication, Decorative Surface: Post forming Type HGP.

2.3 PLYWOOD, SOFTWOOD

- A. Prod. Std. PS1, five ply construction from 13 mm to 28 mm (1/2 inch to 1-1/8 inch) thickness, and seven ply for 31 mm (1-1/4 inch) thickness.

2.4 PARTICLEBOARD

- A. ANSI A208.1, Type 1, Grade 1-M-3.

2.5 RUBBER OR VINYL BASE

- A. Straight (for carpet), cove (for resilient floor); 100 mm (4 inch) high, 3 mm (1/8 inch) thick, flexible to conform to irregularities in walls, partitions and floors.

2.6 PLUMBING FIXTURES

- A. ASME 112.18M, except die-cast zinc-alloy material is not acceptable.

2.7 GLASS: ASTM C1036

- A. For Doors: Type I, Class 1, Quality q4.

2.8 SOLID WOOD

- A. Wood required for edge banding // moldings // legs // shall be of same species as wood face veneer.

2.9 SHEET STEEL

- A. ASTM A1008.

2.10 STAINLESS STEEL

- A. ASTM A167, with No. 4 finish.

2.11 HARDWARE

- A. Where pin tumbler locks are specified, disc tumbler lock "Duo A", with brass working parts and case, as manufactured by the Illinois Lock Company will be an acceptable substitute. Locks for each type casework, shall be keyed differently and shall be master-keyed for each type service, such as Nurses, Psychiatric, Administration. Provide two keys for each lock. Exposed hardware, except as otherwise specified, shall be satin finished chromium plated brass or nickel plated brass.
- B. Marking of Locks and Keys:
 - 1. The name of the manufacturer, or trademark by which manufacturer can readily be identified, legibly marked on each lock.
 - 2. The key change number marked on the exposed face of lock, and also stamped on each key.

3. Key change numbers shall provide sufficient information for replacement of the key by the manufacturer.

C. Hinged Doors:

1. Doors 900 mm (36 inches) and more in height shall have three hinges and doors less than 900 mm (36 inches) in height shall have two hinges. Each door shall close against two rubber bumpers.
2. Hinges: Fabricate hinges with minimum 2 mm (0.072 inch) thick chromium plated steel leaves, and with minimum 3.5 mm (0.139 inch) diameter stainless steel pin. Hinges shall be five knuckle design with 63 mm (2-1/2 inch) high leaves and hospital type tips.
3. Fasteners: Provide full thread wood screws to fasten hinge leaves to door and cabinet frame. Finish screws to match finish of hinges.

D. Door Catches:

1. Friction or Magnetic type, fabricated with metal housing.
2. Provide one catch for cabinet doors 1200 mm (48 inches) high and under, and two for doors over 1200 mm (48 inches) high.

E. Locks:

1. Cylinder type pin tumbler.
2. Equip doors and drawers where shown with locks.

F. Drawer and Door Pulls:

Doors and drawers shall have flush pulls, fabricated of either chromium plated brass, chromium plated steel, stainless steel, or anodized aluminum.

G. Drawer Slides:

1. Full extension steel slides with nylon ball-bearing rollers.
2. Slides shall have positive stop.
3. Equip drawers with rubber bumpers.

H. Sliding Doors:

1. Each door shall be supported by two ball bearing bronze or nylon rollers, or sheaves riding on a stainless steel track at top or bottom, and shall be restrained by a nylon or stainless steel guide at the opposite end.
2. Plastic guides are not acceptable.
3. Each door shall have rubber silencers set near top and bottom of each jamb.

I. Shelf Standards (Except For Fixed Shelves):

Bright zinc-plated steel for recessed mounting with screws, 16 mm (5/8 inch) wide by 5 mm (3/16 inch) high providing 13 mm (1/2 inch) adjustment, complete with shelf supports.

J. Gate Bolt:

Surface mounted barrel type with strike.

K. Hinged Gates:

Gates shall have two double-acting // hinges // pivots //, size as required.

SPEC WRITER NOTE: Make selection and edit the following paragraphs.

2.12 FABRICATION

- A. Casework shall be of the // flush overlay // exposed face frame // reveal overlay // design and, except as otherwise specified, be of premium grade construction and of component thickness in conformance with AWI Quality Standards.
- B. Fabricate casework of // plastic laminated covered plywood or particleboard // factory finished wood veneer // as follows:
 - 1. Where shown, // gates // doors // drawers // shelves // all semi-concealed surfaces // shall be plastic laminated.
 - //2. Horizontal and vertical reveals between doors and drawer for reveal overlay design shall be 19 mm (3/4 inch) unless otherwise shown. //
 - //3. Glazed doors shall have 5 mm (3/16 inch) thick glass, set in glazing compound. //
 - //4. Sliding doors shall have stops to prohibit bypass and be removable without use of tools. //
- C. Electrical fixtures, receptacles, wiring and junction boxes required for fixtures and receptacles:
 - 1. Factory installed in casework.
 - 2. For electrical lighting fixtures, see drawings.
 - 3. For electric receptacles and lighting fixtures installed below or adjacent to wall cabinets or above counter tops, see electrical sections or specifications.
 - 4. Install wiring in built-in raceways and terminate at junction box mounted on rear of cabinet and counter.
 - 5. For final hook-up at junction box see electrical sections of specifications.
- //D. Provide 18 gage sheet steel sloping tops for casework where shown. Fasten sloping tops with oval-head screws inserted from interior. Exposed ends of sloping tops shall have flush closures fastened as recommended by manufacturer//.
- E. Base:
 - 1. Provide rubber or vinyl base with close, flush joints; set with adhesive.
 - 2. Remove adhesive from exposed surfaces.
 - 3. Install base at floor line after casework has been accurately leveled.
 - 4. Rub base to glossy finish.
- F. Countertops:
 - 1. Countertops, splashbacks // and reagent type shelves // shall be plastic laminate factory glued to either a plywood (PS1), or particleboard (ANSI A208.1) core.
 - 2. Countertops shall be // 19 mm // 32 mm // (// 3/4 inch // 1-1/4 inches) // thick.
 - 3. Splashbacks // and reagent type shelves // shall be finished 19 mm (3/4 inch) thick and be secured to countertops with concealed metal fastenings and with contact surfaces set in waterproof adhesive.
 - 4. Provide cut-outs for plumbing trim where shown.
 - 5. Cover exposed edges of countertops, splashbacks // and reagent type shelves // with plastic.
- G. Sink bowls:
 - 1. 18 gage stainless steel, of size and design shown.

2. All interior corners of bowls shall be formed to manufacturer's standard radii.
3. Sinks shall have rims with flanged edges overlapping tops to provide tight joints.
4. Secure sink bowls with concealed fastenings.
5. For service lines from service fixtures, see other sections of specifications.

H. Provide the following plumbing trim and fittings:

1. Faucets: ASME A112.18M Type I, compression type, countertop mounted, chromium plated brass, having two valves and with // swing-spout // and // gooseneck spout // as shown, elevated to clear handles.
2. Fittings shall have an elongated escutcheon for spout and handles, replaceable valve seats and four arm or lever style indexed chromium plated brass or stainless steel handles; handles either with or without hood.

I. Faucets:

1. ASME A112.18M Type I, compression type, splashback mounted, chromium plated brass, having two valves and with // swing-spout // and // gooseneck spout // as indicated.
2. Fittings shall have exposed body union inlets and adjustable flanges.
3. Valves shall have indexed chromium plated brass or stainless steel lever handles and replaceable valves seats; handles either with or without hood.

J. Drain:

1. Cast or wrought brass or stainless steel with flat strainer.
2. Surfaces of drains exposed from above shall have a chromium plated finish.

K. Traps: Cast brass.

L. Spray Hose:

1. Hose shall drop below counter top when not in use and be of sufficient length to reach the entire length of the countertop.
2. Concealed trim may be rough brass.

M. Support Members For Tops of Tables:

1. Construct as detailed.
2. Provide miscellaneous steel members and anchor as shown.

N. Legs For Counters:

1. Fabricate legs for counters of 1.6 mm (0.0635 inch) thick, 38 mm (1-1/2 inch) square tubular // stainless // steel where shown.
2. Secure legs to counter tops and provide legs at bottom with shoes not less than 25 mm (one inch) in height.
3. Fabricate shoes of either stainless steel, aluminum or chromium plated brass.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Set casework in place; level, plumb and accurately scribe and secure to walls, and/or floors.
- B. The installation shall be complete including all trim and hardware. Leave the casework clean and free from defects.

3.2 FASTENINGS

- A. Fastenings for securing casework to adjoining construction shall be as detailed on the drawings or approved shop drawings.
- B. See section 05500, METAL FABRICATIONS for reinforcement of walls and partitions for casework anchorage.

--- E N D ---

SECTION 07 20 00

FIBERGLASS INSULATION

PART 1 GENERAL

1.01 SUMMARY

- A. Provide glass fiber thermal/sound attenuation insulation for assembly as indicated in building plans.

1.02 MATERIALS PROVIDED IN OTHER SECTIONS

- A. Section 09100 - Metal Support Systems.
- B. Section 09120 - Ceiling Suspension Systems.
- C. Section 09250 - Gypsum Board.
- D. Section 09260 - Gypsum Board Systems.

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM).
 - 1. C665 - Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
 - 2. E84 - Test Method for Surface Burning Characteristics.
 - 3. E96 - Test Method for Water Vapor Transmission of Materials.
 - 4. E136 - Test Method for Behavior of Materials in a Vertical Tube Furnace at 750° C.
 - 5. C518 - Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter.
 - 6. E970 - Test Method for Critical Radiant Flux of Exposed Attic Floor Insulation Using a Radiant Heat Energy Source.

1.04 SUBMITTALS

Submit Guardian Fiberglass, Inc. product data, product literature and product samples for specified insulation.

1.05 DELIVERY

Protect product from damage and becoming wet or covered with ice and snow.

1.06 LIMITATIONS

- A. Kraft and standard foil facings will burn and should not be left exposed.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Guardian Fiberglass, Inc.

2.02 THERMAL/SOUND ATTENUATION BATT INSULATION

- A. Type: Unfaced glass fiber batt complying with ASTM C665 Type I - Class A.
- B. Type: Kraft faced glass fiber batt complying with ASTM C665 Type II - Class C.
- C. Type: Foil faced glass fiber batt complying with ASTM C665 Type III, Class B.
- D. Type: Foil Scrim Kraft (FSK) faced glass fiber batt complying with ASTM C665 Type III, Class A.
- E. Size: Select from product literature.

Metal Frame Insulation

R-value _____ Thickness _____ Width _____ Length _____

Wood Frame Insulation

R-value _____ Thickness _____ Width _____ Length _____

F. Surface Burning Characteristics

1. Unfaced batt
Flame spread of 25 or less
Smoke developed of 50 or less
When tested in accordance with ASTM E84
2. Foil faced batt
Flame spread of 75 or less
Smoke developed of 150 or less
When tested in accordance with ASTM E84
3. Foil Scrim Kraft (FSK) faced batt
Flame spread of 25 or less

Smoke developed of 50 or less
When tested in accordance with ASTM E84

G. Vapor Retarder Perm Rating

1. Kraft/Foil facings maximum 1 perm
2. Foil Scrim Kraft (FSK) faced maximum .05 perm

H. Combustion Characteristics

Tested in accordance with ASTM E136

2.03 OTHER MATERIALS

Provide other materials not listed but required for proper installation for work in this section.

PART 3 EXECUTION

3.01 INSPECTION

- A. Examine the areas and conditions under which work of this section will be installed. Verify that adjacent materials are dry and ready to receive insulation. Verify mechanical and electrical services within walls have been tested.
- B. Provide written report listing conditions detrimental to performance of work in this section. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 General Installation.

- A. Comply with manufacturer's instructions for particular conditions of installation in each case.
- B. Between Metal Studs

Friction-fit insulation between studs after cover material has been installed on one side of the cavity. Use wire or metal straps to hold insulation in place in applications without a cover material or where the stud depth is larger than the insulation thickness. When faced insulation is used, the attachment flanges may be taped to the face of the metal stud prior to applying the interior finish.

-- Provide supplementary support to hold the product in place until finish surface is applied when insulation is installed in heights over 8 feet.

- C. Between Wood Studs.

Friction-fit unfaced insulation between studs after cover material has been installed on one side of the cavity. Use wire or metal straps to hold insulation in place in applications without a cover material. When faced insulation is used, staple attachment flanges to face or side of stud every 8 to 12 inches to prevent gaps along the edge of the vapor retarder.

D. Furring Strips.

- Install insulation between furring strips, hat channels, or z-shaped furring in areas where finish surface will be applied.
- Contact the furring strip manufacturer for recommendations on the appropriate fastener system to use.

E. Mechanical Fasteners.

Apply insulation directly to the interior surface of the exterior wall with appropriate spindle or prong-type anchors.

- Fasten anchors to wall by welding the pin to metal and then impale the insulation, or by using pre-attached heads and welding them through the insulation.
- Fasten anchors to wall with adhesive. Follow manufacturer's recommendations for surface preparation and adhesive pattern.
- Impale insulation on anchor and secure with washer. Select pin lengths to ensure tight fit. Protect pin tips where subject to human contact. See manufacturer's diagram for impaling pin pattern.

3.03 MATERIAL STORAGE AND PROTECTION

Protect insulation from damage and protect during installation and after from becoming wet.

END OF SECTION

Section 07 21 00

FiberGlass Insulation

Part 1. General.

1.01 Summary.

A. Provide glass fiber thermal/sound attenuation insulation for assembly as indicated in building plans.

1.02 Materials provided in other sections.

- A. Section 09100 - Metal Support Systems.
- B. Section 09120 - Ceiling Suspension Systems.
- C. Section 09250 - Gypsum Board.
- D. Section 09260 - Gypsum Board Systems.

1.03 References.

- A. American Society for Testing and Materials (ASTM).
 - 1. C665 - Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
 - 2. E84 - Test Method for Surface Burning Characteristics.
 - 3. E96 - Test Method for Water Vapor Transmission of Materials.
 - 4. E136 - Test Method for Behavior of Materials in a Vertical Tube Furnace at 750° C.
 - 5. C518 - Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter.
 - 6. E970 - Test Method for Critical Radiant Flux of Exposed Attic Floor Insulation Using a Radiant Heat Energy Source.

1.04 Submittals.

Submit Guardian Fiberglass, Inc. product data, product literature and product samples for specified insulation.

1.05 Delivery.

Protect product from damage and becoming wet or covered with ice and snow.

1.06 Limitations.

A. Kraft and standard foil facings will burn and should not be left exposed.

Part 2. Products.

2.01 Manufacturer.

A. Guardian Fiberglass, Inc.

2.02 Thermal/Sound Attenuation Batt Insulation.

A. Type: Unfaced glass fiber batt complying with ASTM C665 Type I - Class A.

B. Type: Kraft faced glass fiber batt complying with ASTM C665 Type II - Class C.

C. Type: Foil faced glass fiber batt complying with ASTM C665 Type III, Class B.

D. Type: Foil Scrim Kraft (FSK) faced glass fiber batt complying with ASTM C665 Type III, Class A.

E. Size: Select from product literature.

Metal Frame Insulation

R-value _____ Thickness _____ Width _____ Length _____

Wood Frame Insulation

R-value _____ Thickness _____ Width _____ Length _____

F. Surface Burning Characteristics

1. Unfaced batt

Flame spread of 25 or less

Smoke developed of 50 or less

When tested in accordance with ASTM E84

2. Foil faced batt

Flame spread of 75 or less

Smoke developed of 150 or less

When tested in accordance with ASTM E84

3. Foil Scrim Kraft (FSK) faced batt

Flame spread of 25 or less

Smoke developed of 50 or less

When tested in accordance with ASTM E84

G. Vapor Retarder Perm Rating

1. Kraft/Foil facings maximum 1 perm
 2. Foil Scrim Kraft (FSK) faced maximum .05 perm
- H. Combustion Characteristics
Tested in accordance with ASTM E136

2.03 Other materials.

Provide other materials not listed but required for proper installation for work in this section.

Part 3. Execution.

3.01 Inspection.

A. Examine the areas and conditions under which work of this section will be installed. Verify that adjacent materials are dry and ready to receive insulation. Verify mechanical and electrical services within walls have been tested.

B. Provide written report listing conditions detrimental to performance of work in this section. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 General Installation.

A. Comply with manufacturer's instructions for particular conditions of installation in each case.

B. Between Metal Studs

Friction-fit insulation between studs after cover material has been installed on one side of the cavity. Use wire or metal straps to hold insulation in place in applications without a cover material or where the stud depth is larger than the insulation thickness. When faced insulation is used, the attachment flanges may be taped to the face of the metal stud prior to applying the interior finish.

-- Provide supplementary support to hold the product in place until finish surface is applied when insulation is installed in heights over 8 feet.

C. Between Wood Studs.

Friction-fit unfaced insulation between studs after cover material has been installed on one side of the cavity.

Use wire or metal straps to hold insulation in place in applications without a cover material. When faced insulation is used, staple attachment flanges to face or side of stud every 8 to 12 inches to prevent gaps along the edge of the vapor retarder.

D. Furring Strips.

- Install insulation between furring strips, hat channels, or z-shaped furring in areas where finish surface will be applied.
- Contact the furring strip manufacturer for recommendations on the appropriate fastener system to use.

E. Mechanical Fasteners.

Apply insulation directly to the interior surface of the exterior wall with appropriate spindle or prong-type anchors.

- Fasten anchors to wall by welding the pin to metal and then impale the insulation, or by using pre-attached heads and welding them through the insulation.
- Fasten anchors to wall with adhesive. Follow manufacturer's recommendations for surface preparation and adhesive pattern.
- Impale insulation on anchor and secure with washer. Select pin lengths to ensure tight fit. Protect pin tips where subject to human contact. See manufacturer's diagram for impaling pin pattern.

3.03 Material Storage and Protection.

Protect insulation from damage and protect during installation and after from becoming wet.

END OF SECTION

SECTION 07 21 16
BLANKET INSULATION

PART 1 - GENERAL

1.1 CONDITIONS AND REQUIREMENTS

- A. The General Conditions, Supplementary Conditions, and Division 1 – General Requirements apply.

1.2 SECTION INCLUDES

- A. Formaldehyde-free fiberglass thermal [and] [sound control] insulation.

1.3 RELATED SECTIONS

- A. Section [07 32 00] Roof deck insulation.
- B. Division 23 - Mechanical: [Duct insulation,] [equipment insulation,] [and] [pipe insulation.]

1.4 REFERENCES

- A. ASTM International Inc. (ASTM):
 - 1. ASTM C165 - Test Method for Measuring Compressive Properties of Thermal Insulations.
 - 2. ASTM C411 - Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation.
 - 3. ASTM C612 - Specification for Mineral Fiber Block and Board Thermal Insulation.
 - 4. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2001.
 - 5. ASTM C764 - Specification for Mineral Fiber Loose-Fill Thermal Insulation.
 - 6. ASTM C1015 - Practice for Installation of Cellulosic and Mineral Fiber Loose-Fill Thermal Insulation.
 - 7. ASTM C1104 - Test Method for Determining the Water Vapor Sorption of Unfaced Mineral Fiber Insulation.
 - 8. ASTM C1304 - Standard Test Method for Assessing the Odor Emission of Thermal Insulation Materials.
 - 9. ASTM C1320 - Standard Practice for Installation of Mineral Fiber Batt and Blanket Thermal Insulation.
 - 10. ASTM C1338 - Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings.

11. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2001.
12. ASTM E96 - Test Methods for Water Vapor Transmission of Materials.
13. ASTM E119, - Test Methods for Fire Tests of Building Construction and Materials.
14. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 Degrees C; 1999.
15. ASTM E970 - Critical Radiant Flux of Exposed Attic Floor Insulation Using a Radiant Heat Energy Source.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 1. Test data showing compliance of products with specified requirements.
 2. Preparation instructions and recommendations.
 3. Storage and handling requirements and recommendations.
 4. Installation methods.
- C. LEED Submittals: Provide documentation indicating how the requirements of Credit MR 4.1 [and 4.2] will be met.
 1. List of proposed materials with recycled content. Indicate post-consumer recycled content and pre-consumer recycled content for each product having recycled content.
 2. Product data and certification letter indicating percentages by weight of post-consumer and pre-consumer recycled content for products having recycled content.

1.6 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of building insulation through one source.
- B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
 1. Surface-Burning Characteristics: ASTM E84.
 2. Fire-Resistance Ratings: ASTM E119.
 3. Combustion Characteristics: ASTM E136.

1.7 DELIVERY, STORAGE AND HANDLING

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

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Johns-Manville International, Inc. (JM), PO Box 5108, Denver, CO 80217. ASD. Tel: (800) 654-3103. Fax: (303) 978-2318. www.jm.com.
- B. [Substitutions: Not permitted.]

2.2 INSULATING MATERIALS - GENERAL

- A. General: Provide insulating materials that comply with requirements and with referenced standards.
 - 1. Preformed Units: Sizes to fit applications indicated; selected from manufacturer's standard thicknesses, widths, and lengths.
- B. Recycled Content: To meet the requirements of LEED Credit MR 4.1 [and MR 4.2] provide insulating materials complying with the following:
 - 1. Credits MR 4.1 and MR 4.2: Provide insulating materials with post-consumer recycled content constituting a minimum of 10 percent of cost of materials used for project or post-consumer recycled content plus one-half of pre-consumer recycled content constituting a minimum of 20 percent of cost of materials used for project.

2.3 FORMALDEHYDE-FREE INSULATING MATERIALS

- A. Formaldehyde-Free Kraft And Foil Faced Glass-Fiber Batt Insulation: JM Formaldehyde-Free Kraft And Foil Faced Batts; ASTM C665, Type III, Class B, Category 1 for foil faced with maximum flame-spread and smoke-developed indices of 75 and 450, respectively; ASTM C665, Type II, Class C, Category 1 for Kraft faced, unrated for flame-spread and smoke-development; and of the following properties:
 - 1. Thermal Resistance (R-Value): [R-25].
 - 2. Combustion Characteristics: Passes ASTM E136.
 - 3. Critical Radiant Flux: ASTM E970, greater than 0.11 Btu/sq ft s (0.12 W/cm sq).
 - 4. Water Vapor Permeance: ASTM E96, 0.05 Perms (3 ng/Pa-s m²) for foil faced, 1.0 Perms (57 ng/Pa-s m²) for Kraft faced.
 - 5. Water Vapor Sorption: ASTM C1104, 5 percent or less by weight.
 - 6. Odor Emission: Passes ASTM C1304.
 - 7. Corrosiveness: Passes ASTM C665, 13.8.
 - 8. Fungi Resistance: Passes ASTM C1338.

9. Recycled Content: Certified by Scientific Certification Systems to contain minimum of 20 percent post-consumer and five (5) percent pre-consumer recycled glass product, on average of manufacturer's products.
10. Thickness: [6] inches ([152] mm).

2.4 INSULATION ACCESSORIES

- A. Tape: Self-adhesive vapor retarder tape with flame spread index of 25 or less, smoke developed index of 50 or less.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions for compliance with requirements for Sections in which substrates and related work are specified and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

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

3.3 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice and snow.
- C. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- D. Water-Piping Coordination: If water piping is located on inside of insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping.

- E. Apply single layer of insulation to produce thickness indicated, unless multiple layers are otherwise shown or required to make up total thickness.

3.4 INSTALLATION OF GENERAL BUILDING INSULATION

- A. Seal joints between closed-cell (non-breathing) insulation units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant as recommended by insulation manufacturer.
- B. Set vapor-retarder-faced units with vapor retarder to warm side of construction, unless otherwise indicated. Do not obstruct ventilation spaces, except for firestopping.
 - 1. Tape ruptures in vapor retarder, and seal each continuous area of insulation to surrounding construction to ensure airtight installation.
- C. Install glass-fiber blankets in cavities formed by framing members according to the following requirements:
 - 1. Use blanket widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.
 - 2. Place blankets in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
 - 3. For metal-framed wall cavities where cavity heights exceed 96 inches (2438 mm), support unfaced blankets mechanically and support faced blankets by taping stapling flanges to flanges of metal studs.
- D. For wood-framed construction, install mineral-fiber blankets in accordance with ASTM C1320 and as follows:
 - 1. With faced blankets having stapling flanges, secure insulation by friction fit inset or face stapling flanges to sides of framing members.
 - 2. With faced blankets having stapling flanges, lap blanket flange over flange of adjacent blanket to produce airtight installation after concealing finish material is in place.

3.5 INSTALLATION OF VAPOR RETARDERS

- A. General: Extend vapor retarder to extremities of areas to be protected from vapor transmission. Secure in place with adhesives or other anchorage system as indicated. Extend vapor retarder to cover miscellaneous voids in insulated substrates, including those filled with loose-fiber insulation.
- B. Seal vertical joints in vapor retarders over framing by lapping not less than two wall studs. Fasten vapor retarders to framing at top, end, and bottom edges; at perimeter of wall openings; and at lap joints. Space fasteners 16 inches (406 mm) oc.
- C. Seal overlapping joints in vapor retarders with adhesives or vapor-retarder tape according to vapor-retarder manufacturer's instructions. Seal butt joints and fastener

penetrations with vapor-retarder tape. Locate all joints over framing members or other solid substrates.

- D. Firmly attach vapor retarders to substrates with mechanical fasteners or adhesives as recommended by vapor-retarder manufacturer.
- E. Seal joints caused by pipes, conduits, electrical boxes, and similar items penetrating vapor retarders with vapor-retarder tape to create an airtight seal between penetrating objects and vapor retarder.
- F. Repair any tears or punctures in vapor retarders immediately before concealment by other work. Cover with vapor-retarder tape or another layer of vapor retarder.

3.6 PROTECTION

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

END OF SECTION

SECTION 07 31 20

WOODEN SHINGLE AND SHAKE ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wooden Shingle and Shake Roofing

1.02 RELATED SECTIONS

- A. Section 07 01 40 – Maintenance of Roofing and Siding Panels.
- B. Section 07 22 00 – Roof and Deck Insulation.
- C. Section 07 30 00 – Steep Slope Roofing.
- D. Section 07 31 00 – Shingles and Shakes.
- E. 07 62 00 – Sheet Metal Flashing and Trim.

1.03 REFERENCES

- A. ASTM – American Society for Testing and Material
 - 1. ASTM E 108-05 –Standard Test Methods for Fire Tests of Roof Coverings
 - 2. ASTM D 226-97 – Asphalt Saturated Organic Felt Used in Roofing and Waterproofing
 - 3. ASTM F1667-03 Driver Fasteners: Nails, Spikes and Staples
- B. IBC – International Building Code.
 - 1. IBC 1506 – Roof Materials.
- C. UL – Underwriter’s Laboratory.
 - 1. UL 1256 – Standard for Fire Test of Roof Deck Constructions.
 - 2. UL 1897 – Standard for Uplift Tests for Roof Covering Systems.
- D. CSSB – Cedar Shake and Shingle Bureau.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's unopened bundles or containers with the manufacturer's brand and name clearly marked thereon. Shingle bundle wrapping shall bear the label of Underwriters Laboratories, Inc.

- B. Store and protect products under provisions of Section 01 66 00, or in accordance with manufacturer's printed instructions.
- C. Keep materials dry, covered completely and protected from the weather. Place the product off the ground and under cover. If storing over new concrete (such as a freshly poured concrete garage) or over damp ground, place a moisture barrier under the product. Allow air to circulate freely around the product.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Cold Weather Requirements: IMIAC requirements.
- B. On the jobsite, keep the wood dry and, if possible, out of the elements.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Underlayment/Interlayment (Roofing Felt) – ASTM D 226, Type I, 13.5 kg per 9 m² (30-lb/100-sq. ft.).
- B. Wood Shingles – CSSB Grade 1, Grade 2, or Grade 3.
- C. Wood Shakes – CSSB Grade 1 or Grade 2, TFS Grade 1 or Grade 2.
- D. Nails
 - 1. Roofing Nails: ASTM F 1667: Type I, Style 20, galvanized steel, smooth shanks, with heads 9.5 mm to 11 mm (3/8-in to 7/16-in) diameter. Use nails 19 mm (3/4-in) long for fastening felt.
 - 2. Shingle Nails: ASTM F 1667, Type I, Style 20, galvanized steel, 6 d size.
- E. Staples – ASTM F 1667, Type IV, Style 5 zinc coated; flat top, 13 mm (1/2-in) long legs, 13 mm (1/2-in) wide for felt.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install wooden shakes and shingles in accordance with Drawings, approved shop drawings, and manufacturer's recommended installation instructions.
- B. Wood should be acclimatized before applying a finish or coating.

3.02 MAINTENANCE AND PROTECTION

- A. Zinc or copper strips nailed at ridge cap can control moss growth.
- B. Overhanging branches should be trimmed away from the roof.

- C. Ensure ventilation is available; areas with louvers, ridge vents, roof vents, and soffit vents need to be kept clear.
- D. In tropical areas, you may use wood treatments, provided these come with an MSDS (Material Safety Data Sheet) that lists product ingredients and safety precautions and a manufacturer's performance guarantee, and are an EPA registered wood preservative.

END OF SECTION

SECTION 07 46 16
ALUMINUM SIDING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. An aluminum composite material (building panel) used as the exterior cladding of new buildings and retrofit applications.

1.02 RELATED SECTIONS

- A. Section 05 100 Structural Metal Framing
- B. Section 07 26 00 – Vapor Retarders
- C. Section 07 27 00 – Air Barriers
- D. Section 07 31 00 – Shingles and Shakes

1.03 SUBMITTALS

- A. Shop drawings shall show panel system including attachment methods, joinery, methods and accommodation of thermal movement. Details shall not be drawn less than
- B. Samples
 - 1. If required, _____ samples of panel material shall be furnished.
 - 2. _____ samples of each custom color shall be submitted for architect's approval.
- C. Two copies of manufacturer's literature for the aluminum composite material.
- D. An affidavit certifying that the panel meets or exceeds requirements specified.

1.04 QUALITY INSURANCE

- A. Panel fabricator and installer shall be experienced and acceptable to panel manufacturer.
- B. Maximum deviation from the vertical and horizontal alignment of erected panels shall be no more than 1/4" in 20'0" (6mm in 6m).
- C. Panel supplier shall furnish calculations confirming structural adequacy if requested.

- D. Painted surfaces of composite panels shall meet all criteria printed in the manufacturer's literature.
- E. Where possible, field measurements shall be taken prior to completion of shop fabrication.

1.05 Product Delivery, Handling and Storage

- A. Protect panel finish and edges per panel manufacturer's recommendations.
- B. Store material in accordance with panel manufacturer's recommendations.

PART 2 PRODUCTS

2.01 ALUMINUM COMPOSITE MATERIALS

- A. Panels shall be REYNOBOND® PE, aluminum composite material as manufactured by Reynolds Metals Company. Panel Thickness: (choose desired thickness) RB160(4mm) = .157" RB240(6mm) = .236"
- B. Panels shall be furnished by an approved Dealer/Distributor of Reynolds Metals Company.
- C. Composite panels shall have a Class "A" building material rating when tested in accordance with ASTM E84 (Steiner Tunnel Test) and shall exhibit a flame spread of 15 and a smoke developed rating of 120, with a center panel joint. Flame spread of 0, smoke developed of 0 with no joint.
- D. Composite panel shall have passed the ASTM E108 modified test.
- E. Meet requirements of ASTM D635 Rate of Burning Evaluation on Plastic.
- F. Meet requirements of ASTM E906 Heat & Visible Smoke Release Rates.
- G. Panel Weight. RB160(4mm)=1.12lbs/sft RB240(6mm)=1.49lbs/sft
- H. Panel Finishes
 - 1. Coating shall be Colorweld 300 (or Colorweld 300XL), a fluoropolymer coating utilizing 70% Kynar 500 resins.
 - a. Color: As selected by architect from manufacturer's standard or custom colors.
 - b. Coating shall be factory applied on a continuous process paint line. Coating shall consist of a 0.2 mil (approx.) prime coat and a 0.8 mil (approx.) finish coat containing 70%.

2. Pencil Hardness - ASTM D3363-74 Shall be HB-H minimum (Eagle Turquoise).
3. Impact Adhesion - ASTM D2794-84 Coating shall show no cracking.
4. Cure Test - NCCA 11-18
Coating shall withstand 50+ double rubs of MEK soaked cloth.
5. Humidity Resistance - ASTM D2247-87
Coating shall show no blisters after 3000 hours of 100% humidity at 95°F.
6. Salt Spray Resistance - ASTM B117-85
After 3000 hours of exposure to 5% salt fog, at 95°F, scored sample shall show none or few #8 blisters, and less than 1/8" average creepage from scribe.
7. Weatherometer Test — ASTM D822-86/G23-81
Coating shall show no cracking, peeling, blistering or loss of adhesion after 2000 hours.
 - a. Chalking Resistance — ASTM D659-86
No chalk greater than #8 after 10 years Florida exposure at 45°S.
 - b. Color Change — ASTM D2244-74
Color change shall not exceed 5 NBS units after 10 years Florida exposure at 45°S.
 - c. After 5000 hours in Atlas Weatherometer coating shall show no objectionable chalking or color change. Abrasion Resistance — ASTM D968-81
8. Coating shall resist 65±15 liters/mil minimum of falling sand.

2.02 PANEL FABRICATION

A. Composition

1. Aluminum composite material shall be composed of a thermoplastic compound core sandwiched between two aluminum sheets formed into a continuous process.
2. Bond integrity, per ASTM D1781-76 and ASTM C481 Cycle B, shall be a minimum of 40 inlb/ in. (Peel strength).

B. Aluminum Face Sheets

1. Thickness: .020". Aluminum Alloy shall be 3105 H25.

C. Tolerances

1. Panel bow shall not exceed 0.8% of panel overall dimension in width or length.
2. Panel dimensions shall be such that there will be an allowance for field adjustment and thermal movement.
3. Panel lines, breaks and curves shall be sharp, smooth and free of warps or buckles.
4. Flatness: Panels shall be visually flat.

D. Panel surfaces shall be free of scratches or marks caused during fabrication.

2.03 ACCESSORIES

- A. All exposed fasteners shall be self-tapping 300 Series Stainless Steel.
- B. All self-drilling fasteners shall be protected with a corrosion resistant finish.
- C. All sealants shall be compatible with panel materials.

PART 3 –EXECUTION

3.01 INSPECTION

- A. Panel substructure shall be level and plumb.
- B. Panel substructure shall be structurally sound as determined by Architect/Engineer.
- C. Panel substructure shall be free of defects detrimental to work.
- D. Panel installer shall inspect substructure and shall not proceed with panel erection until any deviations are corrected.

3.02 INSTALLATION

- A. Erect panels level and plumb, in proper alignment and relation to substructure framing and established lines.
- B. Panels shall be erected in accordance with an approved set of shop drawings.
- C. Panel anchorage shall be structurally sound and per engineering recommendations, if required.
- D. Where aluminum materials come in contact with dissimilar materials, a bituminous paint or caulking tape shall be installed to insulate between the dissimilar materials. Factory applied protective paint or G-90 galvanized steel is considered adequate insulation.

3.03 ADJUSTING AND CLEANING

- A. Replace panels that have received irreparable damage.
- B. Repair panels with minor damage.
- C. Clean all foreign material from panel gutter system when applicable.
- D. Remove strippable film coating (if used) as soon as possible after surrounding material has been installed. Panel joints shall not be caulked before strippable is removed. (Glass above should typically be washed prior to removing strippable film below.)

(END OF SECTION)

SECTION 076200
STANDING SEAM SHEET METAL ROOFING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Standing Seam Metal Roofing.
- B. Related Flashing and Accessories.

1.02 RELATED SECTIONS

- A. Section 05 30 00 - Metal Decking.
- B. Section 06 10 00 - Rough Carpentry: Plywood and Underlayment.
- C. Section 07 20 00 - Insulation.
- D. Section 07 50 00 - Membrane Roofing: Roofing Materials, Fabric, Felt or Paper.
- E. Section 07 90 00 - Joint Sealers: Sealants and Caulking.

1.03 REFERENCES

- A. ASTM A 653: Steel Sheet, Zinc-Coated (Galvanized) by the Hot Dip Process, Structural Quality, Grade 40.
- B. ASTM A 924: Steel Sheet, Zinc-Coated by the Hot Dip Process.
- C. ASTM B 209: Aluminum and Aluminum Alloy Sheet and Plate.
- D. ASTM E 283: Static Air Infiltration.
- E. ASTM E 331: Static Water Infiltration.
- F. Herr Voss: Corrective Leveling.
- G. UL 90 Rating: Wind Uplift Approval Conforming to Underwriters Laboratories (UL) Section 580 Specifications.

H. SMACNA: Architectural Sheet Metal Manual.

1.04 SYSTEM DESCRIPTION

A. Factory formed, prefinished standing seam metal roofing system with concealed fasteners over solid substrate. Perimeter trim to match.

B. Panels manufactured in continuous lengths up to 40-ft.

1.05 SUBMITTALS

A. Shop drawings showing layout of panels, details of edge conditions, joints, corners, panel profiles, clips, trim, flashing and special details shall be submitted for approval.

B. Samples illustrating gauge, finish, color and texture of materials to be used shall be submitted for approval.

C. Panel manufacturer shall submit certification that the panels will be tension leveled during the roll forming process.

D. Provide verification that the standing seam panels are factory roll formed and UL 90 rated.

1.06 QUALITY ASSURANCE

A. Panels adhere to the previously mentioned criteria as proven by the submittals.

B. Underwriters Laboratories wind uplift resistance classification: Roof assembly shall be classified as class UL 90 as defined by UL 580 specifications.

C. Static Air Infiltration: Completed roof system shall have a maximum of 0.06 CFM/sq. ft. with 6.24 PSF air pressure differential as per ASTM E 283.

D. Water Infiltration: No evidence of water penetration at an inward static air pressure differential of not less than 6.24 PSF and not more than 12.00 PSF as per ASTM E 331.

E. Factory fabricated components shall be crated in cartons marked with the manufacturer's name or trademark and a UL 90 label where applicable.

F. Prequalification: Submit identification of at least 3 projects of similar scope and complexity along with the architect, owner and general contractor contracts. Applicator shall have three years minimum experience in application of similar products.

G. Field measurements will be taken prior to fabrication to assure symmetry.

H. Substitutions: Requests shall be submitted in writing at least 10 days prior to bid date and accompanied by product literature and samples.

I. No substitutions will be permitted after bid date.

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, protect and handle products to site under provisions of Section [01600.] [_____].

B. Stack prefinished material to prevent twisting, bending, abrasion, scratching and denting. Elevate one end of each skid to allow for moisture run-off.

C. Prevent contact with material that may cause corrosion, discoloration or staining.

D. Store material in a safe, dry, above-ground location.

E. Trim with strippable film shall not be exposed to direct sunlight or extreme heat.

F. Protect all materials and installations from damage by other trades.

G. Do not allow material storage or traffic on installed panel surface.

1.08 WARRANTY

A. Panel applicator shall provide a two-year weathertightness warranty.

B. Panel manufacturer shall provide a 20-year non-prorated warranty for the paint finish covering cracking, checking, blistering, peeling, flaking, chipping, chalking and fade.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Petersen Aluminum Corporation, 1005 Tonne Rd., Elk Grove, IL 60007.

2.02 MATERIALS

Edit for project specifications.

A. PAC-CLAD 24 ga. G-90 Galvanized, SNAP-CLAD panels, with a 70% (PVDF) Kynar 500 or Hylar 5000 finish. Panels to be 10" (250mm), 12" (300mm), 16" (400mm) or 18" (460mm) on-center with a minimum seam height of 1-3/4" (45mm). Underside of panels to be protected by a polyester washcoat with a dry film thickness of .3 mils and panel color to be selected from Petersen Aluminum's standard color chart.

*****[OR]*****

A. PAC-CLAD 24 ga G-90 Galvanized, snap on standing seam panels with a 70% Kynar 500 (PVF2) finish. Panels to be 11-in. (280mm), 12-in. (300mm) or 18-in. (460mm) on center with a minimum seam height of 1-in. Underside of panels to be protected by a polyester washcoat with a dry film thickness of 0.3 mils and panel color to be selected from Petersen Aluminum's standard color chart. Standing seam caps will be made from matching material and feature a positive, metal-to-metal locking mechanism.

*****[OR]*****

A. PAC-CLAD 24 ga G-90 Galvanized, High snap on standing seam panels with a 70% Kynar 500 (PVF2) finish. Panels to be 11-in. (280mm), 18-in. (460mm) or 19-in. (485mm) on center with a minimum seam height of 1-1/2". Underside of panels to be protected by a polyester washcoat with a dry film thickness of 0.3 mils and panel color to be selected from Petersen Aluminum's standard color chart. Standing seam caps will be made from matching material and feature a positive, metal-to-metal locking mechanism.

*****[OR]*****

A. PAC-CLAD 24 ga G-90 Galvanized, integral standing seam panels with a 70% Kynar 500 (PVF2) finish. Panels to be 11-in. (280mm), 18-in. (460mm) or 19-in. (485mm) on center with a minimum seam height of 1-1/2". Underside of panels to be protected by a polyester washcoat with a dry film thickness of 0.3 mils and panel color to be selected from Petersen Aluminum's standard color chart.

*****[OR]*****

A. PAC-CLAD 24 ga G-90 Galvanized, integral batten panels with a 70% Kynar 500 (PVF2) finish. Panels to be 11-in. (280mm), 18-in. (460mm) or 19-in. (485mm) on center with a minimum seam height of 1-1/2". Underside of panels to be protected by a polyester washcoat with a dry film thickness of 0.3 mils and panel color to be selected from Petersen Aluminum's standard color chart.

*****[OR]*****

A. PAC-CLAD 24 ga G-90 Galvanized, Redi Roof standing seam panels with a 70% Kynar 500 (PVF2) finish. Panels to be 12-in. (300mm) on center with a minimum seam height of 1-1/2". Underside of panels to be protected by a polyester washcoat with a dry film thickness of 0.3 mils and panel color to be selected from Petersen Aluminum's standard color chart.

*****[OR]*****

A. PAC-CLAD 24 ga G-90 Galvanized, Redi Roof batten panels with a 70% Kynar 500 (PVF2) finish. Panels to be 12-in. (300mm) on center with a minimum seam height of 1-

1/2". Underside of panels to be protected by a polyester washcoat with a dry film thickness of 0.3 mils and a panel color to be selected from Petersen Aluminum's standard color chart. Batten caps will be made from matching material and feature a positive, metal-to-metal locking mechanism.

B. Concealed fastening clips: [G-90 Galvanized steel] [6061-T6 extruded aluminum] (dependent on profile), spaced 18-in (460mm) on center.

C. Fasteners: [1-in. (25mm) #10 wood screw with a #2 Phillips head size and a pancake head].

D. Underlayment: 30 lb. roofing felt, horizontally lapped, staggered and applied from eave to ridge.

E. Plywood deck: 5/8-in. (16mm) nominal thickness.

F. Soffit panels: 12-in. (300mm) on center "V" grooved panels in 032 aluminum with Kynar finish. Select from standard color chart.

G. Flashing and accessories: fabricated from matching PAC-CLAD Kynar 500 sheet metal in accordance with standard SMACNA procedures and details.

2.03 FABRICATION

A. Panels 40-ft. (12.2m) and less will be in one continuous length.

B. Panels fabricated by a portable roll former will not be approved.

C. Fabricate trim and flashings from same material as the roof system.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Inspect roof deck to verify deck is even, smooth, sound and free of depressions, waves or projections and properly sloped.

B. Installer shall examine all substrates on which work is to be applied. Any surface not suitable for application of metal panel system shall be conveyed in writing to the architect.

3.02 PREPARATION

A. Provide horizontal layers of 30# roofing felt parallel to the eave. Shingle rows of felt from eave to ridge with a 6-in. overlap and stagger felt ends.

3.03 INSTALLATION

- A. Conform to standards set forth in the SMACNA architectural sheet metal manuals.
- B. Install panel plumb, level and straight with seams and ribs parallel, conforming to the design as indicated.
- C. Install panels so that they are weathertight - without waves, warps, buckles or distortions - and allow for expansion and contraction. Exercise care in handling panels to prevent surface damage.
- D. Caulk all flashing and panel joints that require caulking to prevent water penetration.
- E. Ribbed pans will be vertically broken under ridges and hooked at the eaves to insure weathertightness.
- F. Remove masking on trim flashings immediately after installation.
- G. Hem all raw edges on flashings.

3.04 CLEANING

- A. Dispose of excess materials and debris from the job site.
- B. Leave panels clean and free from fringes, marks, grease and stains.
- C. Thoroughly clean and touch-up any areas scarred during installation with a touch-up paint approved by panel manufacturer. Only minor scratches and fastener heads shall be touched-up; any other damaged material shall be replaced.

SECTION 08720
WEATHERSTRIPPING & SEALS
(EDGE SEALING PRODUCTS)

GENERAL

1.01 SUMMARY

Section Includes: Edge Sealing Products for smoke seal applications at doors.

Related Sections:

Division 8 Section(s): Steel Doors, Wood Doors, Sound Control Doors, Aluminum Frame Storefront Doors.

Division 10 Section(s): Compartments and Cubicles, Partitions.

Division 13 Section(s): Special Facilities, Integrated Construction, Special Structures, Special Purpose Rooms.

1.02 REFERENCES

ASTM International:

ASTM E90 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

ASTM E283 Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

ASTM E1408 Standard Test Method for Laboratory Measurement of the Sound Transmission Loss of Door Panels and Door Systems.

ASTM E1425 Standard Practice for Determining the Acoustical Performance of Exterior Windows and Doors.

ASTM E2074 Standard Test Method for Fire Tests of Door Assemblies, Including Positive Pressure Testing of Side-Hinged and Pivoted Swinging Door Assemblies

American National Standards Institute/Builders Hardware Manufacturers Association (ANSI/BHMA):

ANSI/BHMA A156.18 Materials and Finishes.

ANSI/BHMA A156.22 Door Gasketing Systems.

American National Standards Institute/Steel Door Institute (ANSI/SDI):

ANSI A250.8/SDI-100 Recommended Specifications for Standard Steel Doors and Frames.

American National Standards Institute/Window and Door Manufacturers Association (ANSI/WDMA):

ANSI/WDMA I.S.1-A Architectural Wood Flush Doors.

Underwriters Laboratories, Inc. (UL):

UL 10B Fire Tests of Door Assemblies.

UL 10C Fire Tests of Door Assemblies.

UL 1784 Air Leakage Tests of Door Assemblies.

International Code Council (ICC):

UBC 7-2 Fire Test of Door Assemblies (Positive Pressure).

UBC 7-2 Part II Section 7.210.6 Smoke and Draft Control.

International Building Code (IBC) 2000 Code (Positive Pressure).

British Standards (BS):

BS 476 Fire Tests on Building Materials and Structures.

BS 5588 Air Leakage and Smoke Parts 2, 3, 6 and 10.

National Fire Protection Association (NFPA):

NFPA 105 Installation of Smoke-Control Door Assemblies.

Specifier Note: Article below should be restricted to statements describing design or performance requirements and functional (not dimensional) tolerances of a complete system. Limit descriptions to composite and operational properties required to link components of a system together and to interface with other systems.

1.03 SYSTEM DESCRIPTION

Design Requirements: Provide edge seal products which have been manufactured, fabricated and installed to meet the following design criteria:

Acoustical Performance (ASTM E90, ASTM E1408, ASTM E1425): [Specify required STC or other acoustical performance criteria.].

Provide performance obtained from test procedures [UL 10B] [UL 10C] [UBC 7-2] [BS 476].

Smoke, Air Leakage: Comply with NFPA 105.

Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor before, during or after construction. Coordinate this article with Architect's and Contractor's duties and responsibilities in Conditions of the Contract and Division 1 Submittal Procedures Section.

1.04 SUBMITTALS

General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.

Product Data: Submit manufacturer's product data and installation instructions.

Shop Drawings: Provide drawings indicating required component locations, interface with adjacent materials, installation, anchorage, fastening and similar information.

Samples: Submit one each of manufacturer's standard selection samples.

Quality Assurance/Control Submittals: Submit the following:

Test Reports: Upon request, submit [Fire] [Sound] [And] [Durability] test reports from recognized testing laboratory.

Certificates: Submit manufacturer's certificate that products meet or exceed specified requirements.

Closeout Submittals: Submit the following:

Warranty documents specified herein.

Specifier Note: Article below should include statements of prerequisites, standards, limitations and criteria that establish an overall level of quality for products and workmanship for this section. Coordinate article below with Division 1 Quality Assurance Section.

1.05 QUALITY ASSURANCE

Installer Qualifications: Utilize an installer having demonstrated experience on projects of similar size and complexity.

Specifier Note: Paragraph below should list obligations for compliance with specific code requirements particular to this section and authority having jurisdiction. General statements to comply with a particular code are typically addressed in Conditions of the Contract and Division 1 Regulatory Requirements Section. Repetitive statements should be avoided.

Regulatory Requirements and Approvals: [Specify applicable requirements of regulatory agencies.].

[Code agency name].

[Report or approval number].

Certifications: [Specify requirement for certifications.].

Field Samples: [Specify requirement for field samples.].

Mock-Ups: [Specify requirements for mock-up.].

Subject to acceptance by owner, mock-up may be retained as part of finish work.

If mock-up is not retained, remove and properly dispose of mock-up.

Specifier Note: Retain paragraph below if preinstallation meeting is required.

Preinstallation Meetings: [Specify requirements for meeting.].

Specifier Note: Article below should include specific protection and environmental conditions required during storage. Coordinate article below with Division 1 Product Requirements Section.

1.06 DELIVERY, STORAGE & HANDLING

General: Comply with Division 1 Product Requirement Section.

Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.

Specifier Note: Coordinate article below with Conditions of the Contract and with Division 1 Closeout Submittals (Warranty) Section. Use this article to require special or extended warranty or bond covering the work of this section.

1.07 WARRANTY

Project Warranty: Refer to Conditions of the Contract for project warranty provisions.

Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under contract documents.

Specifier Note: Coordinate subparagraph below with manufacturer's warranty requirements.

Warranty Period: 3 years against defects in materials or workmanship, beginning with Date of Substantial Completion.

1.08 MAINTENANCE

Extra Materials: Provide additional material for use by owner in building maintenance and repair. [Specify number of units or percentage.].

PRODUCTS

Specifier Note: Retain article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of such phrases as "or equal" or "or approved equal" or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining "or equal" products.

1.09 EDGE SEAL PRODUCTS

Specifier Note: Paragraph below is an addition to CSI *SectionFormat* and a supplement to MANU-SPEC. Retain, edit or delete paragraph below to suit project requirements and specifier practice.

Manufacturer: Pemko Manufacturing Company.

Contact: PO Box 3780, 4226 Transport Street, Ventura, CA 93003; Telephone: (800) 283-9988, (805) 642-2600; Fax: (805) 642-4109; E-mail: pemkosales@pemko.com; website: www.pemko.com.

Proprietary Products/Systems: Perimeter gasketing and brush weatherstrip, including the following:

Pemko Hot Smoke Seal:

Material Description: Chemically inert expandable intumescent strip.

Finish: White.

Fasteners: Kerf stile installation.

Manufacturer Model Number: HSS1000.

Positive Pressure Category Listing: Category "G".

Pemko Hot Smoke Seal:

Material Description: Chemically inert expandable intumescent strip.

Finish: Graphite black.

Fasteners: Adhesive backed.

Manufacturer Model Number: HSS2000.

Positive Pressure Category Listing: Categories “G” and “H”.

Pemko Silicone Seal Adhesive Backed Fire/Smoke Gasketing:

Material Description: Extruded high temperature silicone.

Finish: [Black] [Clear] [Dark Bronze] [White].

Manufacturer Model Number: [S44] [S77] [S88].

Positive Pressure Category Listing: Categories “G,” “H” and “J”.

Pemko Pemkprene Adhesive Backed Fire/Smoke Gasketing:

Material Description: Thermoplastic polymer.

Finish: [Black] [Dark Bronze] [White].

Manufacturer Model Number: [PK33] [PK55].

Positive Pressure Category Listing: Categories “H” and “J”.

Pemko Brush Weatherstrip/Positive Pressure Tested:

Material Description: Extruded tempered aluminum 6063-T6.

Finish (ANSI/BHMA A156.18): [Mill finish aluminum] [Bright dip gold anodized aluminum] [Dark bronze anodized aluminum] [Painted aluminum: {Specify color.}] [Clear anodized aluminum] [Gold anodized aluminum].

Brush Construction: Densely compressed nylon filaments encased in aluminum retainer.

Color: [Aluminum color, black and gray nylon] [Painted white, white color nylon].

Positive Pressure Category Listing:

Type 180 degree aluminum retainer, 45 degree aluminum retainer: Category “H”.

Type 180 degree aluminum retainer, concealed fasteners, 45 degree aluminum retainer, concealed fasteners: Category “J”.

Manufacturer Model Number: [Specify manufacturer model number.].

Specifier Note: Edit Article below to suit project requirements. If substitutions are permitted, edit text below. Add text to refer to Division 1 Project Requirements (Product Substitutions Procedures) Section.

1.010 PRODUCT SUBSTITUTIONS

Substitutions: No substitutions permitted.

EXECUTION

Specifier Note: Article below is an addition to the CSI *SectionFormat* and a supplement to MANU-SPEC. Revise article below to suit project requirements and specifier’s practice.

1.011 MANUFACTURER’S INSTRUCTIONS

Comply with the instructions and recommendations of the edge seal products manufacturer.

Comply with door and frame manufacturer’s installation instructions.

Specifier Note: Specify actions to physically determine that conditions are acceptable to receive primary products of the section.

1.012 EXAMINATION

Site Verification of Conditions:

Verify that site conditions are acceptable for installation of edge seal products.

Examine doors and frames for compliance with requirements for door and frame manufacturer’s installation tolerances, labeled fire door assembly construction, wall and floor

construction and other conditions affecting performance.

Do not proceed with installation of edge seal products until unacceptable conditions are corrected.

Specifier Note: Specify actions required to physically prepare the surface, area or site or to incorporate the primary products of the section.

1.013 PREPARATION

Wood Door Preparation: Comply with: [ANSI/WDMA I.S.1-A] [Door manufacturer's positive pressure installation instructions].

Steel Door and Frame Preparation:

Drill and tap doors and frames for hardware per manufacturer's positive pressure installation instructions.

Ensure doors and frames are properly sized, plumb and square.

Comply with ANSI A250.8/SDI-100.

Specifier Note: Coordinate article below with manufacturer's recommended installation requirements.

1.014 INSTALLATION

Mounting Location: Comply with the following requirements, unless otherwise indicated:

Steel Doors and Frames:

Comply with manufacturer's positive pressure installation instructions.

Comply with ANSI A250.8/SDI-100.

[Specify standard or specific requirements.].

Wood Doors:

Comply with manufacturer's positive pressure installation instructions.

Comply with ANSI/WDMA I.S.1-A.

[Specify standard or specific requirements.].

Adjust and reinforce attachment substrates as necessary for proper installation and operation.

Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

Specifier Note: Specify the final actions required to prepare installed equipment or other completed work to properly function or perform.

1.015 ADJUSTING

Perform adjustments required to ensure that edge seal products function in compliance with manufacturer's performance criteria prior to acceptance by Owner.

Specifier Note: Specify the final actions required to clean installed equipment or other completed work to properly function or perform. Coordinate article below with Division 1 Execution Requirements (Cleaning) Section.

1.016 CLEANING

Remove any protective films and clean components as necessary following manufacturer's recommended procedures.

Specifier Note: Specify provisions for protecting work after installation but prior to acceptance by the owner. Coordinate article below with Division 1 Execution Requirements Section.

1.017 PROTECTION

Protect installed work from damage due to subsequent construction activity on the site.

SECTION 08 11 16

MONUMENTAL DOORS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Furnish all necessary materials, labor and equipment for the complete installation of aluminum entrance doors, door frames and hardware as shown on the drawings and specified herein.
- B. Monumental doors and frames shall be as manufactured by Tubelite Inc., Reed City, Michigan. Whenever substitute products are to be considered, supporting technical literature, samples, drawings and performance data must be submitted ten (10) days prior to bid in order to make a valid comparison of the products involved.

PART 2 - PRODUCT

2.01 MATERIALS

- A. Extrusions shall be of aluminum alloy 6063-T5 extruded within commercial tolerance and free from defects impairing strength and/or durability. Door stile and rail sections to be a minimum of .1875 inch wall thickness. Door frames sections to be of .1875 inch wall thickness at critical areas, with glazing and door moldings a minimum of .050 inch.
- B. Steel tension rods of .375 inch diameter shall run the full width of the top and bottom rails and shall be fixed with steel plates and lock nuts.
- C. Door glazing shall be by means of an interior and exterior fixed gasket of high quality extruded elastomeric material. Door frame members shall have continuous wool pile/vinyl fin weatherstripping at the head and jamb members. Bottom rail weatherstrip at threshold optional (architect specify). Door stops shall be of snap-in design on butt hinge and offset pivot applications, eliminating use of exposed screws.
- D. All door and frame members shall be accurately fitted to flush hairline joints.

2.02 HARDWARE

Standard and custom hardware shall be (architect select). The architect shall specify special hardware for custom doors and entrances. Hardware furnished by others shall be sent to the door manufacturer for application.

2.03 FINISH

- A. All exposed framing surfaces shall be free of scratches and other serious blemishes.

1. Finish to be (architect select):
 - a. Etched and clear anodized
 1. (AAM12C22A31) Class 2
 - a) Clear (OA)
 2. (AAM12C22A41) Class 1
 - a) Clear (2A)
 - b. Electrolytically deposited color
 1. (AAM12C22A44) Class 1
 - a. Champagne (4K)
 - b. Light Amber (2K)
 - c. Amber (1K)
 - d. Statuary Bronze (3K)
 - e. Black (OD)
 - c. Fluoropolymer painted color _____.

PART 3 EXECUTION

3.01 INSTALLATION

Shall be in accordance with the manufacturer's installation instructions and the approved shop drawings.

END OF SECTION

SECTION 08 13 19 & 08 12 19
STEEL DOORS AND FRAMES

PART 1 GENERAL

1.01 RELATED SECTIONS

- A. Section 04 20 00 - Masonry Assemblies
- B. Section 08 14 00 - Wood Doors.
- C. Section 08 71 00 – Door Hardware
- D. Section 08 80 00 - Glazing: Glass for door lights and borrow lights.
- E. Section 09 29 00 - Gypsum Board.
- F. Section 09 91 00 - Painting: Field painting of doors and frames.

1.02 REFERENCES

- A. ANSI A250.8 - SDI-100 Recommended Specifications for Standard Steel Doors and Frames; 1998.
- B. ANSI A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finish Painted Steel Surfaces for Steel Doors and Frames.
- C. ANSI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 1998.
- D. ANSI A250.11, Recommended Erection Instructions for Steel Frames.
- E. ASTM A 366/A 366M - Standard Specification for Commercial Steel (CS) Sheet, Carbon, (0.15 Maximum Percent) Cold-Rolled; 1997.
- F. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-coated (Galvannealed) by the Hot-Dip Process; 1998.
- G. ASTM E-90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
- H. DHI A115.1G - Installation Guide for Doors and Hardware; 1994.
- I. NFPA 80 - Standard for Fire Doors and Windows; 1999.
- J. NFPA 252 - Standard Methods of Fire Tests for Door Assemblies; 1995.
- K. UL 10B - Standard for Fire Tests of Door Assemblies; 1997.

L. UL 10C - Positive Pressure Fire Tests of Door Assemblies.

1.03 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets and specifications.
- C. Shop Drawings: Include schedule identifying each unit, with door marks or numbers referencing drawings. Show layout, profiles, product components and anchorages.
- D. Certificates: Product certificates signed by the manufacturer certifying material compliance with ANSI A250.8, specified performance characteristics and criteria, and physical requirements.
- E. Installation Instructions: Manufacturer's printed installation instructions, if other than as specified in SDI-105.

1.04 QUALITY ASSURANCE

- A. All products shall conform to the requirements of ANSI A250.8, "SDI 100 Recommended Specifications for Standard Steel Doors and Frames".
- B. Acoustical Doors shall have a minimum Sound Transmission Classification (STC) Rating of 38 and be tested in accordance with ASTM E-90-87, "Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements".
- C. Insulated Doors shall have:
 - 1. A "U Factor" of 0.10 for a Polyurethane core
 - 2. A "U Factor" of 0.13 for a Polystyrene core.
- D. Fire Rated Doors:
 - 1. Doors shall be tested in accordance with UL 10B, "Fire Tests of Door Assemblies", NFPA 252, "Fire Tests of Door Assemblies", and UL 10C, "Positive Pressure Fire Tests of Door Assemblies".
 - 2. Doors must have an approved marking or physical label, applied by an authorized facility, in accordance with the procedure set forth by an independent certification agency.
- E. Stairwell Doors shall have a 250° F. temperature rise rating, and the label on the door shall indicate the specific hourly fire rating.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver doors and frames palletized and wrapped to provide protection while in transit.
- B. Store all materials under cover. Avoid use of non-vented plastic or canvas shelters to prevent forming of humidity chambers that cause rust.
- C. If cardboard wrapping becomes wet, remove cartons immediately.
- D. Provide 1/4 inch (6 mm) spacing between doors to provide air circulation

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturer: Republic Builders Products, 155 Republic Drive, McKenzie, TN 38201. ASD. Tel: (901) 352-3383.
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.02 MATERIALS

- A. Uncoated Steel Sheet: Cold rolled commercial steel sheet complying with ASTM A 366/A 366M.

2.03 FACTORY FINISH

- A. All doors, frames, and stick components shall be cleaned and finished in accordance with ANSI A250.10, "Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames".
- B. Preparation: Clean and phosphatize surfaces of steel doors and frames".Add mortar color in accordance with manufacturer's instructions.
- C. Primer: Apply one coat of a gray, alkyd acrylic enamel primer, forced cured.
- D. Finish: Paint with alkyd acrylic enamel using a two-coat process, with each coat being force cured after each coating.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Before beginning installation, verify that substrate conditions previously installed under other sections are acceptable for installation of doors and frames in accordance with manufacturer's installation instructions and technical bulletins.
- B. Verify door frame openings are installed plumb, true, and level.

- C. Select fasteners of adequate type, number, and quality to perform intended functions.

3.02 INSTALLATION

- A. Install frames plumb, level, rigid and in true alignment in accordance with ANSI A250.11, "Recommended Erection Instructions for Steel Frames" and ANSI A115.IG, "Installation Guide for Doors and Hardware".
- B. All frames other than slip-on types shall be fastened to the adjacent structure to retain their position and stability. Drywall slip-on frames shall be installed in prepared wall openings, and shall use pressure type and sill anchors to maintain stability.
- C. Where grouting is required in masonry installations, frames shall be braced or fastened to prevent the pressure of the grout from deforming the frame members. Grout shall be mixed to provide a 4 inch (102 mm) maximum slump and hand troweled into place. Grout mixed to a thin "pumpable" consistency shall not be used.
- D. Install fire-rating doors and frames in accordance with NFPA 80 and local code authority requirements.
- E. Install doors to maintain alignment with frames to achieve maximum operational effectiveness and appearance. Adjust to maintain perimeter clearances as required. Shim as needed to assure the proper clearances are achieved.
- F. Install hardware as specified in Section 08 71 00 in accordance with the hardware manufacturer's recommendations and templates. ANSI A115.IG, "Installation Guide for Doors and Hardware" shall be consulted for other pertinent information.

3.03 CLEARANCES

- A. Clearance between the door and frame head and jambs for both single swing and pairs of doors shall be 1/8 inch (3.2 mm).
- B. Clearance between the meeting edges of pairs of doors shall be 3/16 inch plus or minus 1/16 inch (5 mm plus or minus 1.6 mm). For fire rated applications, the clearance between the meeting edges of pairs of doors shall be 1/8 inch plus or minus 1/16 inch (3.2 mm plus or minus 1.6 mm).
- C. Bottom clearance shall be 3/4 inch (19 mm).
- D. The clearance between the face of the door and door stop shall be 1/16 inch to 1/8 inch (1.6 mm plus or minus 3.2 mm).
- E. All clearances shall be, unless otherwise specified, subject to a tolerance of plus or minus 1/32 inch (.4 mm).

3.04 AJUSTING AND CLEANING

- A. Adjust doors for free swing without binding.

- B. Adjust hinge sets, locksets, and other hardware. Lubricate using a suitable lubricant compatible with door and frame coatings.
- C. Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions before owner's acceptance.
- D. Remove from project site and legally dispose of construction debris associated with this work.

3.05 PROTECTION

- A. Protect installed products and finished surfaces from damage during construction.

END OF SECTION

SECTION 081400

ACOUSTIC WOOD DOOR & STEEL FRAME ASSEMBLY

Part 1 - General

1.1 Work Included Supply Only of;

- A. Acoustic steel frames.
- B. Acoustic wood doors, swing type.
- C. Door gasketing along perimeter jambs & header.
- D. Door bottom gasketing.
- E. Acoustic glazing (if required).

1.2 Related Work

- A. Building frames into walls.
- B. Installation of doors and hardware.
- C. Drilling and tapping of doors and frames for surface mounted hardware.
- D. Drilling and tapping of doors for mortised templated hardware.
- E. Finish hardware.
- F. Finish painting.
- G. Fasteners for frame product in previously placed concrete, masonry or structural steel.

1.3 Requirements of Regulatory Agencies

- A. Install fire labelled steel frame products in accordance with NFPA-80, current edition.
- B. Product shall be tested in conformance with established test procedures for measuring acoustic performance and in particular with ASTM E90-90 and ASTM E413-87.

1.4 Compliance with Required Acoustic Performance

A. As part of the submittal process the manufacturer of the door/frame units shall submit independent test data from a recognized laboratory indicating compliance of the entire unit consisting of door, frame and sound seals with the Sound Transmission Class (STC) specified by the project architect or engineer.

1.5 Warranty

A. Material and workmanship shall be warranted by manufacturer for a period of three (3) years from the date of supply. Warranty shall apply to replacement or retrofit of product only.

1.6 Approved Manufacturers

A. Ambico Limited
1120 Cummings Avenue
Ottawa, Canada K1J 7R8
Tel: (613) 746-4663
Toll- Free: (888) 423-2224
Fax:: (800) 465-8561

Part 2 - Products

2.1 Materials

A. Steel Frames

1. Steel commercial grade zinc coat steel to ASTM A653.
2. Primer:
Rust inhibitive zinc chromate used for touch-up only.

B. Wood Doors

A. Doors to be 13/4" thick and shall be constructed with an acoustic core. A wood veneer or plastic laminate shall be applied to the core. Visible stiles and rails shall be matching to the species of the face veneer.

B. All tolerances shall be in compliance with ANSI/NWWDA.

2.2 Fabrication

A. Frames and doors shall be manufacturer's proprietary standard, tested as part of a fully operable assembly in conformance with ASTM E90-90 and ASTM E413-87 to provide the Sound Transmission Class (STC) specified.

B. Doors shall be blanked and reinforced for mortised templated hardware.

C. Frames shall be blanked, reinforced, drilled and tapped for mortised, templated hardware.

- D. Frames and doors shall be reinforced where required for surface mounted hardware.
- E. Frames shall be prepared for and supplied complete with manufacturer's proprietary design of frame gasketing system.
- F. Provide factory-applied, touch-up primer to frames at areas where zinc coating has been removed during fabrication.

2.3 Fabrication -Frames, Welded Type

- A. Frame product shall be accurately mitred and securely welded on the inside of the profile.
- B. Welded joints shall be ground to a smooth, uniform finish.
- C. Weld in two (2) temporary jamb spreaders per frame to maintain proper alignment during shipment.
- D. Glazing stops shall be accurately fitted, butted at corners and fastened to frame sections with counter-sunk, oval head, sheet metal, tamperproof screws.

2.4 Fabrication - Doors

- A. Doors shall be swing type, flush, with provision for acoustic glass as indicated on schedules.
- B. Door edges shall be matching in species to that of door face veneer.
- C. Doors shall be sealed and pre-finished (where required).
- D. Core shall be proprietary acoustic composite core as tested by manufacturer to meet specified STC rating.

2.5 Acoustic Glazing

- A. Acoustic glass shall be factory installed. The acoustic level of the glass shall conform to that of the door/frame unit.

2.6 Door Hardware

- A. A smooth flush threshold shall be supplied for the door bottom to seal against when the door is in the closed position.
- B. Perimeter and bottom acoustic gasketing shall be provided with each opening.

Part 3 - Execution

3.1 Site Storage and Protection of Materials

A. All materials shall be thoroughly inspected upon receipt and all discrepancies, deficiencies and/or damages shall be immediately reported in writing to the supplier.

3.2 Installation

A. Set frames plumb, square, level and at correct elevation in accordance with manufacturer's installation instructions.

B. Fire labelled frames shall be installed in accordance with NFPA-80, most current edition.

C. Secure anchorages and connections to adjacent construction.

D. Make allowance for deflection to ensure structural loads are not transmitted to frame product.

E. Install doors and hardware in accordance with hardware templates and manufacturer's instructions.

END OF SETCION

SECTION 08 14 76

BI-FOLDING WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. The requirements of the instructions to Bidders, General Conditions, Supplementary General Conditions and Section apply to all work hereinafter specified.
- B. This section shall include the furnishing of all tools, equipment and labor necessary to complete all folding door work shown on drawings and/or herein specified.
- C. Manufacturer shall furnish folding doors complete with hardware, jambs and all necessary mechanisms to provide complete operation. The folding doors hereinafter specified shall be installed by qualified factory trained craftsmen skilled in this trade.

1.02 RELATED SECTIONS

- A. 1.2.1 Section 03300 Cast-in-Place Concrete
- B. 1.2.2 Section 04200 Unit Masonry
- C. 1.2.3 Section 05100 Structural Metal Framing
- D. 1.2.4 Section 06100 Rough Carpentry
- E. 1.2.5 Section 06200 Finish Carpentry
- F. 1.2.6 Section 07920 Sealant and Caulking
- G. 1.2.7 Section 09250 Gypsum Board
- H. 1.2.8 Section 09300 Finish Ceilings
- I. 1.2.9 Section 09500 Acoustical Treatment
- J. 1.2.10 Section 09650 Finish Flooring
- K. 1.2.11 Section 09680 Carpet
- L. 1.2.12 Section 09900 Painting
- M. 1.2.13 Section 09950 Wall Coverings

1.03 SUBMITTALS

- A. One sample of each color material to be used on the project..
- B. Copies of properly identified manufacturer's literature with proposed catalog numbers identified.
- C. Complete shop drawings showing elevations of units, locations in the buildings, conditions at openings with wall thickness and materials, typical and special details of construction, location and installation requirements for hardware and operators, shape and thickness of materials, joints and connections and material finishes.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to job site and protect unsealed materials from abrasions.
- B. Identify each container with material name and identification number.
- C. Store materials under cover, protected from weather and construction activities. Safe storage of materials prior to installation is to be the responsibility of the general contractor.

PART 2 PRODUCTS

2.01 FOLDING DOORS

- A. Shall be manually operated wood, folding type as manufactured by Panelfold, Inc., Miami, Florida, U.S.A. and installed by an authorized representative of the manufacturer in openings prepared by others to Signature requirements B.

2.02 TRACK AND HANGERS

- A. Track shall be extruded aluminum. Hanger assemblies with two nylon wheels shall be suspended on alternate panels.
- B. A four-wheel truck hanger assembly shall be installed on each end post.

2.03 PANEL SURFACES

- A. Panels shall be specially laminated engineered wood core, bonded with water-resistant, plastic glue and surfaced with (specify one: wood veneer, wood grain vinyl, or textured vinyl).
- B. Genuine woods, wood grains, and colors from manufacturer's selectors.

2.04 CONNECTOR MOULDINGS

- A. Panels shall be connected by shaped mouldings of the same surface and color as the panels, except where noted.

2.05 TRIM

- A. Doors shall be supplied with (specify: decorative track; optional plain track with track mould to conceal track; or optional plain track with extruded aluminum sub-channel for recessed track).
- B. A jamb mould for jamb closure shall be furnished.

2.06 HARDWARE

- A. Handles, Touch-Bar automatic latches, all necessary screws, installation hardware and instructions shall be furnished.
- B. Security units shall be as specified: Privacy latch and emergency release; cylinder lock one side only; cylinder lock one side, privacy lock other; cylinder lock two sides.
- C. Master-keyed insert type cylinder with lazy cam and flat tail piece, by others, shall be installed in lieu of regularly furnished cylinder.

2.07 STACK FORMULA

- A. Approximately 1"/ft. (82mm/m) plus 3" (76mm) for each end post assembly.

2.08 HANGING WEIGHT

- A. Approximately 1.7 lbs./ft² (8kg/m²).

PART 3 EXECUTION

3.01 EXECUTION

- A. Before installation is commenced, inspect the opening.
- B. Surfaces shall be clean and dry.
- C. Concrete surfaces shall be free of excess mortar and lumps.
- D. Wood surfaces shall be well nailed and/or glued, nailed heads driven flush, and wood free of voids.
- E. Metal surfaces shall be free of grease, oil, dirt, rust, corrosion and welding slag, without sharp edges.

3.02 PREPARATION

- A. Open containers and verify that all required parts are available and undamaged before disposing of containers.
- B. Arrange materials in proper sequence to conform to manufacturer's information and installation instructions.

3.03 INSTALLATION

- A. Installer shall conform to the manufacturer's installation instruction sheets.
- B. Apply perimeter caulking and trim as required.
- C. Adjust locking hardware for accurate fit.

3.04 CLEANING

- A. Clean all wood, vinyl, wall carpet, panel fabric and plastic laminate surfaces to remove soil without using abrasive cleaners or solutions containing corrosive solvents.
- B. Remove debris from worksite.

3.05 DEMONSTRATION

- A. After all adjustments, lubrications and clean up, the installer shall demonstrate and instruct the proper operation, function and maintenance procedures for the walls.
- B. Deliver all keys, operation and maintenance manuals to the owner.

END OF SECTION

SECTION 08 53 00
PLASTIC WINDOW

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Factory fabricated vinyl (PVC) windows including glass and glazing, operable hardware, weatherstripping and insect screens.

1.02 RELATED SECTIONS

- A. Section 05400 - Cold Formed Metal Framing.
- B. Section 06100 - Rough Carpentry.
- C. Section 07900 - Joint Sealers.
- D. Section 09100 - Metal Support Systems.

1.03 REFERENCES

- A. AAMA/NWWDA 101/I.S.2-97 - Voluntary Standard for Aluminum and Poly (Vinyl Chloride) (PVC) Prime Windows and Glass Doors.
- B. NFRC 100-97 - Thermal Properties; National Fenestration Rating Council.
- C. NFRC 200-97 - Solar Heat Gain; National Fenestration Rating Council.
- D. ASTM D 3656 - Standard Specification for Insect Screening and Louver Cloth Woven from Vinyl-Coated Glass Fiber Yarn.
- E. ASTM D 3678 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Interior Profile Extrusions.
- F. ASTM D 4028 - Standard Specification for Solar Screening Woven from Vinyl-Coated Fiber Glass Yarn.
- G. ASTM D 4099 - Standard Specification for Poly (Vinyl Chloride) (PVC) Prime Windows/Sliding Glass Doors.
- H. ASTM E 774 - Standard Specification for Sealed Insulating Glass.
- I. IGCC - Classification of Insulating Glass Units; Insulated Glass Certification Council.
- J. U.S. Department of Energy - Energy Star Windows Program.

1.4 SUBMITTALS

- A. Submit under the provisions of Section 01300.

B. Product Data: Manufacturer's standard details and catalog data demonstrating compliance with referenced standards; include manufacturer's standard installation instructions.

C. Drawings: Manufacturer's product drawings showing details of fabrication, hardware, weatherstripping, fasteners, screens, glazing, accessories and other related items.

D. Verification Samples: Operating sample of each window type specified illustrating fabrication, hardware, glazing, screen and finish.

E. Test Reports: For each window type specified, furnish test reports from accredited independent testing laboratory certifying that identical or larger window units meet requirements specified for air infiltration, water penetration and structural performance by AAMA 101/I.S.2-97, for thermal performance by NFRC-97, and for seal integrity of insulating glass units by IGCC. Prior test reports to test standards other than those listed will not be accepted.

F. Closeout Submittals: Warranty documents, properly executed.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum ten (10) years experience producing vinyl (PVC) windows.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver windows to project site in undamaged condition; handle windows to prevent damage to components and to finishes.

B. Store windows out of contact with ground, protect windows from weather and construction traffic in well ventilated area.

1.7 WARRANTY

A. Furnish manufacturer's standard warranty against deficiencies in materials or fabrication.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Store windows out of contact with ground, protect windows from weather and construction traffic in well ventilated area.

B. Substitutions not permitted.

2.02 DOUBLE HUNG WINDOW UNITS

A. Acceptable Product: ALSIDE MODEL 0901

1. Grade: AAMA 101/I.S.2-97 H-LC35, for 44-inch wide by 77-inch high window unit; exceeding grade requirements as follows:

- a. Water test pressure: 5.25 pounds per square foot.
- b. Air infiltration: 0.14 cubic feet per minute per linear foot at 25 miles per hour.

2. Thermal performance, in accordance with NFRC 100-97, for 48-inch wide by 72-inch high window unit: U-Value 0.50.

3. Solar Heat Gain Coefficient, in accordance with NFRC 200-97, for 48-inch wide by 72-inch high window unit: U-Value 0.57.

4. Glazing: Sealed insulated glass unit, 13/16 inch unit thickness, with DSB glass.

2.03 FABRICATION

A. Window/Door Units: Assemble units completely in factory, including operating hardware and glazing

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Openings are in correct location, and of correct size, in accordance with approved shop drawings and manufacturer's installation instructions.

B. Installer's Examination:

- 1. Have installer of this section examine conditions under which construction activities of this section are to be performed, then submit written notification if such conditions are unacceptable.
- 2. Transmit two copies of installer's report to Architect within 24 hours of receipt.
- 3. Beginning construction activities of this section before unacceptable conditions have been corrected is prohibited.
- 4. Beginning construction activities of this section indicates installer's acceptance of conditions.

3.02 INSTALLATION

A. Install products specified in this section square, plumb and level, in accordance with approved shop drawings and manufacturer's installation instructions.

B. Installation of joint sealers is specified in Section 07900.

3.3 ADJUSTING

A. Adjust operating hardware for correct operation in accordance with manufacturer's installation instructions.

3.4 CLEANING

A. Clean interior and exterior surfaces free of labels, mortar, plaster, paint, joint sealers and other foreign matter to prevent damage to weatherstrip and to prevent interference with operation of hardware.

3.5 PROTECTION

A. Protect ventilators and operating parts from dirt and damage caused by subsequent construction activities.

B. Replace units damaged by subsequent construction activities.

END OF SECTION

SECTION 08 56 01

Aluminum Windows

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Factory fabricated vinyl (PVC) windows including glass and glazing, operable hardware, weatherstripping and insect screens.

1.2 RELATED SECTIONS

A. Section 05400 - Cold Formed Metal Framing.

B. Section 06100 - Rough Carpentry.

C. Section 07900 - Joint Sealers.

D. Section 09100 - Metal Support Systems.

1.3 REFERENCES

A. AAMA/NWWDA 101/I.S.2-97 - Voluntary Standard for Aluminum and Poly (Vinyl Chloride) (PVC) Prime Windows and Glass Doors.

B. NFRC 100-97 - Thermal Properties; National Fenestration Rating Council.

C. NFRC 200-97 - Solar Heat Gain; National Fenestration Rating Council.

D. ASTM D 3656 - Standard Specification for Insect Screening and Louver Cloth Woven from Vinyl-Coated Glass Fiber Yarn.

E. ASTM D 3678 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Interior Profile Extrusions.

F. ASTM D 4028 - Standard Specification for Solar Screening Woven from Vinyl-Coated Fiber Glass Yarn.

G. ASTM D 4099 - Standard Specification for Poly (Vinyl Chloride) (PVC) Prime Windows/Sliding Glass Doors.

H. ASTM E 774 - Standard Specification for Sealed Insulating Glass.

I. IGCC - Classification of Insulating Glass Units; Insulated Glass Certification Council.

J. U.S. Department of Energy - Energy Star Windows Program.

1.4 SUBMITTALS

A. Submit under the provisions of Section 01300.

B. Product Data: Manufacturer's standard details and catalog data demonstrating compliance with referenced standards; include manufacturer's standard installation instructions.

C. Drawings: Manufacturer's product drawings showing details of fabrication, hardware, weatherstripping, fasteners, screens, glazing, accessories and other related items.

D. Verification Samples: Operating sample of each window type specified illustrating fabrication, hardware, glazing, screen and finish.

E. Test Reports: For each window type specified, furnish test reports from accredited independent testing laboratory certifying that identical or larger window units meet requirements specified for air infiltration, water penetration and structural performance by AAMA 101/I.S.2-97, for thermal performance by NFRC-97, and for seal integrity of insulating glass units by IGCC. Prior test reports to test standards other than those listed will not be accepted.

F. Closeout Submittals: Warranty documents, properly executed.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum ten (10) years experience producing vinyl (PVC) windows.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver windows to project site in undamaged condition; handle windows to prevent damage to components and to finishes.

B. Store windows out of contact with ground, protect windows from weather and construction traffic in well ventilated area.

1.7 WARRANTY

A. Furnish manufacturer's standard warranty against deficiencies in materials or fabrication.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: ALSIDE Window Systems, P.O. Box 2010, Akron, Ohio 44309; Telephone: (800) 257-4335, Fax: (330) 922-5387.

B. Substitutions not permitted.

2.2 NEW CONSTRUCTION HORIZONTAL SLIDING WINDOW UNITS

A. Acceptable Product: ALSIDE MODEL 0102.

1. Grade: AAMA 101/I.S.2-97 HS-R35, for 72-inch wide by 48-inch high window unit; exceeding grade requirements as follows:

- a. Water test pressure: 5.25 pounds per square foot.
- b. Air infiltration: 0.10 cubic feet per minute per linear foot at 25 miles per hour.

2. Thermal performance, in accordance with NFRC 100-97, for 72-inch wide by 48-inch high window unit: U-Value 0.50.

3. Thermal performance, in accordance with NFRC 100-97, for 72-inch wide by 48-inch high window unit: U-Value 0.30. 4. Solar Heat Gain Coefficient, in accordance with NFRC 200-97, for 72-inch wide by 48-inch high window unit: U-Value 0.63.

5. Solar Heat Gain Coefficient, in accordance with NFRC 200-97, for 72-inch wide by 48-inch high window unit: U-Value 0.34. 6. Glazing: Sealed insulated glass unit, 3/4 inch unit thickness.

7. Glazing: Low-E sealed insulating glass unit, 3/4 inch unit thickness, and argon gas fill.

8. All windows shall have the U.S. Department of Energy - Energy Star Conformance Label.

9. Sealed Insulating Glass Units: Conform to ASTM E 774, Level CBA.

10. Frame: PVC extrusions, fusion-welded construction, mitered corners, weeps in sill for positive drainage, extruded PVC nailing fin four (4) sides.

11. Sash: PVC extrusions, fusion-welded narrow line construction, mitered corners, lift-out operation of operable sash unit, with full interlocking meeting rail, full sash capture at jamb, cam-type locks with keepers.

12. Insect screening: Roll-formed or extruded aluminum channel frames, with 18 by 16

13. Muntins: Colonial grid installed between outer and inner glass panes during fabrication of insulating glass units.

2.3 FABRICATION

A. Window/Door Units: Assemble units completely in factory, including operating hardware and glazing.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Openings are in correct location, and of correct size, in accordance with approved shop drawings and manufacturer's installation instructions.

B. Installer's Examination:

1. Have installer of this section examine conditions under which construction activities of this section are to be performed, then submit written notification if such conditions are unacceptable.
2. Transmit two copies of installer's report to Architect within 24 hours of receipt.
3. Beginning construction activities of this section before unacceptable conditions have been corrected is prohibited.
4. Beginning construction activities of this section indicates installer's acceptance of conditions.

3.2 INSTALLATION

A. Install products specified in this section square, plumb and level, in accordance with approved shop drawings and manufacturer's installation instructions.

B. Installation of joint sealers is specified in Section 07900.

3.3 ADJUSTING

A. Adjust operating hardware for correct operation in accordance with manufacturer's installation instructions.

3.4 CLEANING

A. Clean interior and exterior surfaces free of labels, mortar, plaster, paint, joint sealers and other foreign matter to prevent damage to weatherstrip and to prevent interference with operation of hardware.

3.5 PROTECTION

A. Protect ventilators and operating parts from dirt and damage caused by subsequent construction activities.

B. Replace units damaged by subsequent construction activities.

END OF SECTION

Guide Specifications- Section 08610

The WD 66 System, the Folding or Paired Panel Wood Framed Opening Glass Wall System

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Sliding/bi-folding wood and glass door system, including wood/aluminum frame, threshold, panels, sliding/bi-folding and locking hardware, weather stripping, glass and glazing; designed to provide an opening glass wall or storefront, with sizes and configurations as shown on drawings and specified herein, with WD 66/o [**OR** 66/u], the Folding [**OR** Paired Panel (available only with WD 66/o)] Wood Framed Opening Glass Wall System as supplied by NANA WALL SYSTEMS, INC.

1.02 SUBMITTALS

A. Shop Drawings: Indicate dimensioning, general construction, component joining, connections and locations, and hardware locations.

B. Product Data: Manufacturer's literature including Owner's Manual and test data listing performance criteria.

1.03 QUALITY ASSURANCE

A. Manufacturer: Provide complete, precision built, engineered, pre-fitted unit by a single manufacturer.

1.04 WARRANTY

A. Provide manufacturer's standard warranty against defects in materials and workmanship.

B. Warranty Period: One year from date of manufacture.

1.05 SITE CONDITIONS, DELIVERY, STORAGE AND HANDLING

A. Condition wood components to average prevailing relative humidity before installation.

B. Do not subject wood components to extreme nor rapid changes in heat or humidity.

C. Do not use forced heat to dry out building.

D. Store flat in dry, well ventilated area out of direct sunlight.

PART 2 - PRODUCTS

2.01 SUPPLIER

A. NANA WALL SYSTEMS, INC.

707 Redwood Highway, Mill Valley, California 94941

Telephone: (415) 383-3148

website: www.nanawallsystems.com

(800) 873-5673

email: info@nanawallsystems.com

FAX: (415) 383-0312

2.02 MATERIALS

A. Frame and Panels: From manufacturer's standard profiles, provide head jamb, side jambs, and panels with dimensions shown on drawings. Provide standard bottom rail width [**OR** 11"].

1. Wood: Solid, triple laminated, kiln dried, clear meranti [**OR** European pine] [**OR** other wood as selected] with matching solid wood glazing stops. Primed for paint [**OR** sand sealed for stain].

B. Glass: Provide manufacturer's standard glass and glazing, 15/16" insulating clear tempered [**OR** 1/4" laminated] [**OR** 1/4" tempered] [**OR** 15/16" insulating Low-E tempered] [**OR** 15/16" double laminated] [**OR** glass to be acquired and glazed separately. Exact glass dimensions to be provided by manufacturer. ASTM C 1048 Kind FT, select glazing quality float glass; fully **tempered** safety glass complying with applicable codes. Provide APTK or EPDM gaskets and stops for dry glazing per manufacturer's instructions. Stops to provide for total glass thickness of 24 mm (15/16") [**OR** 6 mm (1/4")].

C. Locking Hardware and Handles: Provide manufacturer's standard flat handle and concealed two point locking hardware operated by 180 degree turn of handle between each pair of bi-folding panels and on swing panels of configurations with a swing panel.

[**OR** for models with a swing panel, on primary swing panel, provide manufacturer's standard nylon handles on the inside and outside, YALE compatible lock set with three point locking operated by 180 degree turn of handle. [**OR** possible for inward opening units only, provide manufacturer's standard nylon handles on other panels.]]

[**OR** for models with a swing panel, on primary swing panel, provide manufacturer's standard nylon lever handles on the inside and outside, YALE compatible lock set with one point lockable latch, and separate dead bolt (available only for panels less than 7' high) [**OR** separate dead bolt with 2 additional locking points for panels more than 7' high]. Turn of key or thumb turn operates lock and depression of handles withdraws latch. [**OR** possible for inward opening units only, provide matching manufacturer's standard nylon handles on other panels.]]

[**OR** for models with a swing panel, on primary swing panel, provide HEWI 550.33 ADA pull handles with separate YALE compatible lock set and dead bolt.]

[**OR** for inward models without a swing panel, on lead bi-fold panel, provide manufacturer's standard nylon handle on inside, flat handle on outside, YALE compatible lock set with two point locking operated by 180 degree turn of handle.]

1. Handle finish: dark brown, RAL 8077 [**OR** white, RAL 9016] [**OR** dark gray, RAL 7021][**OR** white aluminum, RAL 9006].

2. Nylon handle color: closest match to flat handle color from available colors.

3. Aluminum locking rods capped by Polyamide at top and bottom tracks.

4. Provide handle height centered at 41 3/8" [**OR** as specified] from bottom of panel.

D. Sliding/Bi-Folding Hardware: Provide manufacturer's standard combination sliding and bi-folding hardware with top and bottom tracks.

1. For each pair of bi-folding panels, for top hung system WD 66/o, provide four wheeled coated with toughened Polyamide upper running carriage and lower running carriage [**OR** for floor mounted system WD 66/u, provide upper guide carriage and lower running carriage. The running gear to be floor mounted and to lie above the water run-off level. Carrying capacity of lower running carriage to be 440 lbs.].

2. Provide manufacturer's standard dark bronze, E6 C34 [**OR** clear, E6 EV1] anodized aluminum hinges and stainless steel hinge pins.

3. Adjustment: Provide system capable of specified amount of adjustments without removing panels from tracks.

E. Other Components:

1. Threshold: Provide anodized dark bronze, E6 C34clear [**OR** clear E6 EV1] aluminum raised sill thermally broken with 3/4" polyamide plastic [**OR** non thermally broken flush sill (available only with WD 66/o system)].

2. Upper track: Provide aluminum track with matching wood cladding on both sides.

3. Weather stripping: Provide manufacturer's standard double layer APTK, EPDM, or brush seals at both the inner and outer edge of door panels or on frame for sealing between panels and between panel and frame.

4. Provide tapered pins or machine screws for connecting frame components.

2.03 FABRICATION

A. Use triple laminated frame and panel profiles, hinges, sliding and folding hardware, locking hardware and handles, threshold and track, glass and glazing and weather stripping as specified herein to make a folding glass wall. Factory pre-assemble as is standard for manufacturer and ship with all components and installation instructions.

B. Sizes and Configurations: See drawings for selected custom dimensions within maximum frame sizes possible as indicated in manufacturer's literature. See drawings for selected number of panels and configuration. Inward [**OR** outward] opening unit.

2.04 ACCESSORIES

(Edit for project requirements.)

A. Provide the Opening Screen Wall, a motorized, overhead, retractable, rolling solar/insect screen, in dark brown [**OR** white] powder coated aluminum. Provide weather sealed SOMFY tubular motor concealed in a roll tube, a three position switch, a protective box, a load bar and vinyl coated screen. Looking from inside for screens for inward opening units and outside for screens for outward opening units, switches on right [**OR** left].

B. Provide matching side lites, transoms, corner posts, or single or double doors as per drawings provided.

PART 3 - EXECUTION

3.01 ERECTION

A. Because of the large dimensions involved and the weight and movement of the panels, verify the structural integrity of the header with the deflection limited to less than $L/720$ of the span with a maximum deflection of $3/8"$.

B. Examine surfaces of openings and verify dimensions; verify rough openings are level, plumb, and square, with no unevenness, bowing, or bumps on floor.

C. Installation of units constitutes acceptance of existing conditions.

3.02 INSTALLATION

A. Install frame in accordance with manufacturer's recommendations and installation instructions.

B. Installer to provide anchorage devices and to securely and rigidly fit frame in place, absolutely level, straight, plumb and square. Install frame in proper elevation, plane and location, and in proper alignment with other work.

C. If necessary, provide drain connections from lower track.

D. Install panels, handles and lock set in accordance with manufacturer's recommendations and installation instructions.

E. If necessary, adjust hardware for proper operation.

F. Finishing: Field finish under Section 09900 -Painting; seal and finish promptly after installation and prior to exposure to weather in accordance with manufacturer recommendations.

G. Accessories: Screens; install in accordance with manufacturer's recommendations and installation instructions.

END OF SECTION

SECTION 08 71 00
DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Lock- and latchsets.
- B. Pull handles.
- C. Hinges, door closers, stops.
- D. Other accessory items.

1.02 RELATED SECTIONS

- A. Section 28 13 00 - Security Access System: Connections to locks activated by security system.
- B. Section 28 30 00 - Fire Alarm System: Connections to locks activated by fire alarm system.

1.03 REFERENCES

- A. ANSI/BHMA A156.13 - American National Standard for Mortise Locks and Latches; 2002.
- B. ANSI/BHMA A156.18 - American National Standard for Materials and Finishes; 2000.
- C. ANSI/DHI A115.1 - Specifications for Preparation of 1-3/8" and 1-3/4" Standard Steel Doors and Steel Frames for Series 1000 Mortise Locks and Latches; 1990.

1.04 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. [[Product Data](#)]: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings: Complete hardware schedule, indicating exactly which items are to be used on each door, using the nomenclature used in this specification for ease of review by Architect.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Experienced hardware installer.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Provide secure lock-up for hardware delivered to site in advance of installation.

1.07 EXTRA MATERIALS

- A. Provide the following additional items of each type:
 - 1. Locksets: _____.
 - 2. Closers: _____.
 - 3. Hinges: _____.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturer: FSB USA; 55 Ferris Street, Brooklyn, NY 11231. ASD. Tel: (718)625-1900. Fax: (718)625-1930. www.fsbusa.com.
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 25 00.

2.02 MATERIALS - GENERAL

- A. Provide all door hardware necessary for proper operation of doors and as specified.
- B. Comply with applicable codes in regard to fire rated hardware and egress requirements.

2.03 LOCKS AND LATCHES

- A. Lock and Latch Trim:
 - 1. Lever handles both sides, FSB Design _____.
 - 2. Escutcheon plates both sides, FSB Design _____.
 - 3. Roses both sides, FSB Design _____.
 - 4. Cylinder rings, where applicable, FSB Design _____.
 - 5. Thumbturns, where applicable, FSB Design _____.
 - 6. Material: Stainless steel, satin finish; similar to ANSI/BHMA 630 (US 32D).
 - 7. Material: Aluminum, natural anodized; similar to ANSI/BHMA 628, with 10 micrometer thick oxidized layer.
 - 8. Material: Stainless steel, mirror polished.
 - 9. Material: Stainless steel, matt finish.

10. Material: Stainless steel with brass colored physical vapor deposition coating.
 11. Material: Aluminum, anodized to look like german silver, with 10 micrometer thick oxidized layer.
 12. Material: Aluminum, anodized to look like brass, with 10 micrometer thick oxidized layer.
 13. Material: Aluminum, anodized to look like light bronze, with 10 micrometer thick oxidized layer.
 14. Material: Aluminum, anodized to look like dark bronze, with 10 micrometer thick oxidized layer.
- B. Locksets and Latchsets: Mortise locks, ANSI/BHMA A156.13, Series 1000, Grade 1; field reversible, accommodating standard U.S. mortise cylinders.
1. Acceptable Product: FSB 8801 Series, standard backset; UL listed for use on fire-rated doors.
 2. Backset: 2-3/4 inches (70 mm).
 3. Backset: 2-1/2 inches (64 mm).
 4. Backset: 3-3/4 inches (95 mm).
 5. Backset: 5 inches (127 mm).
 6. Backset: 6 inches (152 mm).
 7. Latchbolts: Two-piece mechanical anti-friction type, oil impregnated sintered stainless steel; 1/2 by 1 inch (12 by 25 mm) with 3/4 inch (19 mm) throw.
 8. Acceptable Product: FSB 8805 Series, narrow backset.
 9. Backset: 1-1/4 inches (32 mm).
 10. Backset: 1-1/2 inches (38 mm).
 11. Backset: 1-3/4 inches (44 mm).
 12. Backset: 2 inches (51 mm).
 13. Backset: 2-1/4 inches (57 mm).
 14. Latchbolts: One-piece solid brass, 1/2 by 1 inch (12 by 25 mm) with 3/4 inch (19 mm) throw.
 15. Door Thickness: 1-3/4 inches (44 mm).
 16. Door Thickness: 2 inches (51 mm).
 17. Door Thickness: 2-1/4 inches (57 mm).
 18. Door Thickness: 1-3/8 inches (35 mm).
 19. Door Thickness: _____.
 20. Trim: As specified above.
 21. Deadbolts: Solid forged stainless steel with free-rotating hardened steel saw-proof inserts; 9/16 by 1-3/16 inch (14 by 30 mm) with 1 inch (25 mm) throw.
 22. Faceplates: Wrought Type 304 non-magnetic stainless steel.
 23. Strikes: Same material as face plates; ANSI A115.1 universal curved lip style unless otherwise required; provide closed dust boxes in metal frames.
 24. Cases: Steel sheet, 0.093 inch (2.36 mm) thick with corrosion resistant zinc dichromate finish; 5/16 inch (8 mm) square oil impregnated, copper infiltrated sintered steel hubs; high-carbon steel compression springs; 3/16 inch (5 mm) square thumbturn spindles on diamond; to fit 1-1/2 inch (38 mm) center-to-center throughbolted trim with positive alignment.
 25. Armor Fronts: Adjustable from flat to beveled 1/8 inch in 2 inches (3 mm in 51 mm).

26. Electrically Controlled Locks: Provide solenoid operation of hub upon activation by systems provided by others; fail safe or fail secure as specified for function; 12 or 24 V AC or DC as required by activating system.
27. Functions: As specified in ANSI/BHMA A156.13; lever handles both sides unless otherwise indicated:
 - a. Dummy Trim: Operative dummy handle both sides; FSB Set L.
 - b. Passage: F01; no locking, latchbolt; FSB Set C.
 - c. Privacy: F19; deadbolt by thumbturn inside and emergency key outside; both bolts by inside handle, automatically unlocking outside handle; FSB Set Set E.
 - d. Office: F04; lockable by toggle-action stop and key, may be left unlocked; no deadbolt; FSB Set I.
 - e. Classroom: F05; key required to lock, may be left unlocked; no deadbolt; FSB Set G.
 - f. Two-Key Entry: F09; key inside sets to locked/unlocked; different key for outside; no deadbolt; FSB Set F.
 - g. Entry, Deadbolt: F12; lockable by toggle-action stop and key, may be left unlocked; deadbolt by key and thumbturn; both bolts retracted by inside handle; FSB Set H.
 - h. Entry, Deadbolt: F21; lockable by toggle-action stop and key, may be left unlocked; deadbolt by key and thumbturn; both bolts retracted by inside handle, automatically unlocking outside handle; FSB Set B.
 - i. Entry, Deadbolt: F20; lockable by toggle-action stop and key, may be left unlocked; deadbolt by key and thumbturn; both bolts retracted by inside handle; auxiliary deadlatch; FSB Set K.
 - j. Security Entry: Electrically controlled, fail-secure; FSB Set J electrified, with solenoid unlocking hub when activated by security system; auxiliary deadlatch.
 - k. Always-Locked (Storeroom): F07; outside handle rigid; auxiliary latchbolt, no deadbolt; FSB Set J.
 - l. Hotel: F15; always locked; latchbolt by handle inside and master key outside; deadbolt by thumbturn inside and service key outside; both bolts retracted by inside handle; auxiliary deadlatch; FSB Set D.
 - m. Store Door: F14; must be unlocked during occupied hours; no emergency egress without key FSB Set A.
 - n. Stairwell: Electrically controlled, fail-safe; FSB Set J electrified, key on stair side, stair side handle active when power is cut, hub locked when activated by security system; auxiliary deadlatch.
 - o. Auxiliary Deadbolt: F17; key outside, thumbturn inside; no handles; FSB Set O.
 - p. Auxiliary Deadbolt, Lockable Both Sides: F16; keyed both sides; no handles; FSB Set N.
 - q. Auxiliary Deadbolt, Unoccupied: F18; no egress when locked; no handles; FSB Set M.

C. Latchsets and Mortise Bolts: Tubular latches and mortise deadbolts, for standard 1 inch (25 mm) diameter bore; field reversible; FSB 8802 Series.

1. Backset: 2-3/4 inches (70 mm).

2. Backset: 2-3/8 inches (60 mm).
3. Door Thickness: 1-3/8 inches (35 mm).
4. Door Thickness: 1-3/4 inches (44 mm).
5. Door Thickness: 2 inches (51 mm).
6. Door Thickness: 2-1/4 inches (57 mm).
7. Door Thickness: _____.
8. Latchbolts: One-piece solid brass, satin nickel finish; 5/8 by 3/4 inch (16 by 19 mm) with 1/2 inch (12.7 mm) throw.
9. Deadbolts: One-piece solid brass; 5/8 by 3/4 inch (16 by 19 mm) with 3/4 inch (19 mm) throw.
10. Cases: Steel sheet, 0.03 inch (0.78 mm) thick, stainless steel or zinc dichromate coated; solid brass or zinc dichromate coated steel hubs with one-way rotation for levers; high-carbon steel compression springs; to fit 1-1/2 inch (38 mm) center-to-center throughbolted trim with positive alignment.
11. Armor Fronts: Adjustable from flat to beveled 1/8 inch in 2 inches (3 mm in 51 mm).
12. Faceplates: Wrought stainless steel, brass, or bronze.
13. Trim: As specified above; use 65 mm roses on doors pre-bored for cylindrical locks (2-1/8 inch diameter face bore).
14. Strikes: Same material as face plates; ANSI A115.1 universal curved lip style unless otherwise required; provide closed dust boxes in metal frames.
15. Functions For 1-3/8 Inch (35 mm) Door Thickness:
 - a. Single Dummy Trim: Fixed lever one side, no trim on other side.
 - b. Double Dummy Trim: Fixed levers both sides.
 - c. Passage: Tubular latchset, no locking; FSB Set R with 65 mm diameter spring assisted rose, 7/8 inch (22 mm) diameter edge bore.
 - d. Privacy: Tubular latchset with pushbutton in rose to lock/unlock hub, emergency handle release inside, and emergency key outside; FSB Set S with 65 mm diameter spring assisted rose, 7/8 inch (22 mm) diameter edge bore.
16. Functions For 1-3/4 Inch (44 mm) and Greater Door Thickness:
 - a. Single Dummy Trim: Fixed lever one side, no trim on other side.
 - b. Double Dummy Trim: Fixed levers both sides.
 - c. Passage: Tubular latchset, no locking; FSB Set R with 65 mm diameter spring assisted rose, 7/8 inch (22 mm) diameter edge bore.
 - d. Passage: Tubular latchset, no locking; UL listed, tested for over 400,000 operating cycles; FSB Set P, 1 inch (25 mm) diameter edge bore.
 - e. Privacy: Tubular latchset with pushbutton in rose to lock/unlock hub, emergency handle release inside, and emergency key outside; FSB Set S with 65 mm diameter spring assisted rose, 7/8 inch (22 mm) diameter edge bore.
 - f. Privacy: Tubular latchset plus separate mortise bolt with thumbturn inside and no outside trim; FSB Sets P and T, 1 inch (25 mm) diameter edge bore.
 - g. Privacy: Tubular latchset plus separate mortise bolt with thumbturn inside and occupancy indicator outside; FSB Sets P and U, 1 inch (25 mm) diameter edge bore.
 - h. Auxiliary Deadbolt: Thumbturn inside, no outside key or trim; FSB Set

T, 1 inch (25 mm) diameter edge bore.

- i. Auxiliary Deadbolt: Thumbturn inside, occupancy indicator outside; FSB Set U, 1 inch (25 mm) diameter edge bore.

D. Lock Cylinders: U.S. standard mortise cylinders.

1. Type: 6-pin tumbler type.
2. Type: _____.
3. Acceptable Manufacturers: _____.
4. Keying: Masterkeyed as determined by Owner.
5. Keying: Grandmasterkeyed as determined by Owner.
6. Keying: _____.
7. Keys: Brass; provide 5 of each master key and 2 of each change key.

2.04 DOOR HANGING AND CONTROLLING HARDWARE

- A. Hinges: _____.
- B. Door Closers: _____.
- C. Door Stops: FSB Design _____.

2.05 OTHER HARDWARE

- A. Material and Finish: Same as locksets.
- B. Pull Handles: FSB Design _____.
- C. Flush Pulls: FSB Design _____.
- D. Bell Pushes: FSB Design _____.
- E. Signs: Filled etched symbols on 4 inch (100 mm) square plates; "Men", "Women", "Wheelchair", "Left/Right Arrow".

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions using up-to-date templates obtained from manufacturer.
- B. Adjust hardware and doors for proper operation and free swing without binding or racking.

3.04 PROTECTION

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

3.05 HARDWARE SETS

END OF SECTION

SECTION 08 81 00
GLASS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Glass, including float glass, reflective glass, glass for insulated glass units and spandrel glass.
- B. Related Sections: Section(s) related to this section include:
 - 1. Glazing: Division 8 Glazing Section.

1.02 REFERENCES

- A. General: Standards listed by reference, including revisions by issuing authority, form a part of this specification section to extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation.
- B. ASTM International:
 - 1. ASTM C1036 Standard Specification for Flat Glass.
 - 2. ASTM E1300 Standard Practice for Determining Load Resistance of Glass in Buildings.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide glass products that have been manufactured and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

1.04 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.
- B. Product Data: Submit product data, including manufacturer's SPEC-DATA™ product sheet, for specified products.: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.
- C. Samples: Submit selection and verification samples for finishes, colors and textures.
- D. Quality Assurance Submittals: Submit the following:
 - 1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
 - 2. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria, and physical requirements.
 - 3. Fabricator's Field Reports: Fabricator's field reports specified herein.
- E. Closeout Submittals: Submit the following:
 - 1. Operation and Maintenance Data: Operation and maintenance data for installed products in accordance with Division 1 Closeout Submittals (Maintenance Data and Operation Data) Section. Include methods for maintaining installed products, and precautions against cleaning materials and methods detrimental to finishes and performance.
 - 2. Warranty: Warranty documents specified herein.

1.05 QUALITY ASSURANCE

- A. Qualifications:
 - 1. [Fabricator] [And] [Installer] Qualifications: Utilize a [Fabricator] [And] [Installer] experienced in performing work of this section and specialized in installation of work comparable to that required for this project.
 - a. Certificate: When requested, submit certificate indicating qualification.
 - 2. Fabricator Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable

installer and approving application method.

- B. Regulatory Requirements: Float glass shall meet the current requirements of the ASTM C 1036 “standard specification for flat glass” glazing quality
- C. Preinstallation Meetings: Conduct preinstallation meeting to verify project requirements, substrate conditions, manufacturer and fabricator installation instructions, and warranty requirements. Comply with Division 1 Project Management and Coordination (Project Meetings) Section.

1.06 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Division 1 Product Requirements Sections.
- B. Ordering: Comply with fabricator's ordering instructions and lead time requirements to avoid construction delays.
- C. Packing, Shipping, Handling and Unloading: Deliver products to site under provisions of Section 01 65 00
- D. D. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- E. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by fabricator. Store and protect products under provisions of Section 01 66 00

1.07 PROJECT CONDITIONS

- A. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

1.08 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.

B. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.

1. Warranty Period: Products are the subject of written warranty statements, which are available upon request.

1.09 MAINTENANCE

A. Extra Materials: Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Division 1 Closeout Submittals (Maintenance Materials) Section.

2. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra materials.

PART 2 - PRODUCTS

2.01 GLASS

A. Manufacturer: Visteon Float Glass Operations.

1. Contact: 5555 South 129th E. Ave Tulsa, OK 74134; Telephone: 800-331-2607; Ph: 313-755-0088; (Technical Manager); Fax: 918-254-5244; Web site: www.visteon.com/floatglass.

B. Proprietary Product(s): Visteon [Versalux] [Versalux R] [Versalux 2000] [Versalux 2000R] and [Versalux 2000T].

1. Product Types and Options: Clear Float Glass
 - a. Visible Light Transmittance: 82%
 - b. Shading Coefficient: .891.
 - c. Visible Reflectance: 15.
2. Product Colors: Clear
3. Glass Dimensions: ½" thick or ¾" thick
4. Material Standards: Provide glass materials in compliance with the

following:

- a. ASTM C1036 Standard Specification for Flat Glass.
- b. ASTM E1300 Standard Practice for Determining Load Resistance of Glass in Buildings.

2.02 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted.

2.03 RELATED MATERIALS

- A. Related Materials: Refer to related materials listed in Related Sections paragraph herein for related materials, including glazing materials.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with [Manufacturer's] [And] [Fabricator's] product data, including product technical bulletins, product catalog installation instructions and product carton instructions for installation.

3.02 ACCEPTABLE FABRICATORS AND INSTALLERS

- A. Guardian Industries
- B. Visteon Float Glass Operations

3.03 EXAMINATION

- A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions.
 - 1. Verify installation tolerances; weep system; frame and edge clearances; glass-frame member joints.

3.04 PREPARATION

- A. Surface Preparation: Clean and prepare glazing channels and other framing members to receive glass. Remove coatings and other harmful materials that will prevent glass and glazing installation required for performance requirements specified.

3.05 INSTALLATION

- A. Glass Installation:
 - 1. Install glass in prepared glazing channels and other framing members. Provide bite on glass, minimum edge and face clearances, and glazing material tolerances recommended by manufacturer.
 - 2. Install setting blocks in rabbets as recommended by referenced glazing standards and manufacturer's recommendations.
 - 3. Set glass lites in each series with uniform pattern, draw, bow and similar characteristics.
- B. Installation Reference Standard(s): Comply with glass manufacturer's instructions, glazing materials manufacturer's instructions, and reference standards, unless indicated otherwise.
- C. Related Products Installation: Refer to related products listed in Related Sections paragraph herein for related products installation, including glazing products installation.

3.06 FIELD QUALITY REQUIREMENTS

- A. Fabricator's Field Services: Upon Owner's request, provide fabricator's field service consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with fabricator's instructions.

3.07 CLEANING

- A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.

3.08 PROTECTION

- A. Protection: Protect installed product and finish surfaces from damage during construction.

END OF SECTION

SECTION 09 26 00

VENEER PLASTER

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Gypsum plaster bases for the support of gypsum veneer plaster used as a finish for ceilings.

1.02 RELATED SECTIONS

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

- 1. C 35, Specification for Inorganic Aggregates for Use in Gypsum Plaster.**
- 2. C 587, Specification for Gypsum Veneer Plaster.**
- 3. C 588, Specification for Gypsum Base for Veneer Plasters.**
- 4. C 645, Specification for Non-Load (Axial) Bearing Steel Studs, Runners (Track), and Rigid Furring Channels for Screw Application of Gypsum Board.**
- 5. C 843, Specification for Application of Gypsum Veneer Plaster.**
- 6. C 844, Specification for Application of Gypsum Base to Receive Gypsum Veneer Plaster.**
- 7. C 1047, Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.**
- 8. D 2394, Method for Simulated Service Testing of Wood and Wood-Base Finish Flooring.**

1.03 REFERENCES

A. 05 40 00 Structural cold-formed metal framing

B. 06 11 00 Wood framing

C. 07 24 00 Exterior information and finishing systems

1.04 DELIVERY, STORAGE, AND HANDLING

A. Packaging and Shipping: Have materials shipped in manufacturer's original packages showing manufacturer's name and product brand name.

B. Storage and Protection: Store materials inside and protected from damage by the elements. Protect ends, edges, and faces of gypsum veneer base from damage. Protect metal framing and accessories from bending.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Comply with ASTM C 843.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Gold Bond Building Products, National Gypsum Co.

- 1. Veneer Plaster Base:**
 - a. Regular: Gold Bond Kal-Kore Regular, plain.**
 - b. Fire-Rated: Gold Bond Kal-Kore Fire-Shield and Fire-Shield G.**
 - c. Regular, Foil-Backed: Gold Bond Kal-Kore Regular, Foil-Backed.**
 - d. Fire-Rated, Impact-/Penetration-Resistant: Kal-Kore Fire-Shield Type X Hi-Impact.**
- 2. Gypsum Plaster:**
 - a. Base Plaster: Gold Bond Kal-Kote Base Coat Plaster.**
 - b. Finish Plaster: Gold Bond Kal-Kote Smooth Finish.**
 - c. Finish Plaster: Gold Bond Kal-Kote Texture Finish.**
 - d. One Coat Plaster: Gold Bond Uni-Kal Veneer Plaster.**
 - e. One Coat Plaster: Gold Bond X-KALibur Extended Set Veneer Plaster.**
- 3. Accessories:**
 - a. Joint Reinforcing Tape: Gold Bond Paper Tape.**
 - b. Joint Reinforcing Tape: Gold Bond Kal-Mesh.**

2.02 MATERIALS

A. Metal Framing:

- 1. Studs: See Section 09250.**
- 2. Main Runner Channels: 2 in. cold rolled steel channel, weighing 590 lbs. per 1000 lin. ft. with min. base steel of 0.054 in., galvanized or painted.**
- 3. Main Runner Channels: 1-1/2 in. cold rolled steel channel, weighing 475 lbs. per 1000 lin. ft. with min. base steel of 0.054 in., galvanized or painted.**
- 4. Cross Furring Channels: 3/4 in. cold rolled steel channel, weighing 300 lbs. per 1000 lin. ft. with min. base steel of 0.054 in., galvanized or painted.**
- 5. Rigid Furring Channels: 7/8 in. hat shaped channels, weighing 287 lbs. per 1000 lin. ft. with min. base steel of 0.0179 in., galvanized, and complying with ASTM C 645.**

6. **Resilient Furring Channels:** 1/2 in. hat shaped channel with resilient legs, weighing 220 lbs. per 1000 lin. ft. with min. base steel of 0.019 in., galvanized.

B. Wood Framing: See Section 06100.

C. Veneer Plaster Base:

1. **Regular:** A gypsum core lathing panel surfaced with absorptive paper on front, back, and long edges and complying with ASTM C 588 (Gold Bond Kal-Kore, Regular).
 - a. Thickness: 3/8 in. or 1/2 in.
 - b. Width: 4 ft.
 - c. Length: 8 ft. through 16 ft.
 - d. Edges: Tapered.
2. **Fire-Rated:** A gypsum core lathing panel with additives to enhance the fire resistance of the core and surfaced with absorptive paper on front, back, and long edges and complying with ASTM C 588, Type X.
 - a. Thickness: 1/2 in. (Gold Bond Kal-Kore Fire-Shield G) or 5/8 in. (Gold Bond Kal-Kore Fire-Shield and Fire-Shield G).
 - b. Width: 4 ft.
 - c. Length: 8 ft. through 16 ft.
 - d. Edges: Tapered.
3. **Regular, Foil-Backed:** A gypsum core lathing panel surfaced with absorptive paper on front, back, and long edges; backed with aluminum foil; and complying with ASTM C 588 (Gold Bond Kal-Kore, Regular Foil-Backed).
 - a. Thickness: 3/8 in. or 1/2 in.
 - b. Width: 4 ft.
 - c. Length: 8 ft. through 16 ft.
 - d. Edges: Tapered.
4. **Fire-Rated, Impact-/Penetration-Resistant:** A gypsum core lathing panel with additives to enhance the fire resistance of the core and surfaced with absorptive paper on front and long edges; backed with GE Lexan film; and complying with ASTM C 588.
 1. Thickness: 5/8 in. with 0.010 Lexan film (Kal-Kore Fire-Shield Type X Hi-Impact 1000), 5/8 in. with 0.020 Lexan film (Kal-Kore Fire-Shield Type X Hi-Impact 2000), 5/8 in. with 0.030 Lexan film (Kal-Kore Fire-Shield Type X Hi-Impact 3000), 5/8 in. with 0.081 Lexan film (Kal-Kore Fire-Shield Type X Hi-Impact 8000).
 2. Width: 4 ft.
 3. Length: 8 ft. through 12 ft.
 4. Edges: Tapered.
 5. Penetration Resistance: As follows when tested in accordance with ASTM D 2394:

D. Gypsum Plaster:

- 1. Base Plaster: High strength gypsum plaster complying with ASTM C 587 (Gold Bond Kal-Kote Base Coat Plaster).**
- 2. Finish Plaster: Gypsum plaster for smooth finish complying with ASTM C 587 (Gold Bond Kal-Kote Smooth Finish).**
- 3. Finish Plaster: Gypsum plaster for textured finish complying with ASTM C 587 (Gold Bond Kal-Kote Texture Finish).**
- 4. One Coat Plaster: Gypsum plaster for single component application complying with ASTM C 587 (Gold Bond Uni-Kal Veneer Plaster).**
- 5. One Coat Plaster: Extended set gypsum plaster for single component application complying with ASTM C 587 (Gold Bond X-KALibur Extended Set Veneer Plaster).**

E. Sand: ASTM C 35.

F. Water: Potable.

2.03 MIXES

A. Proportions and Procedures: In accordance with ASTM C 842 and the manufacturer's recommendations.

PART 3 EXECUTION

3.01 INSTALLATION

A. In accordance with the following ASTM Standards and manufacturer's recommendations

3.02 CLEANING

A. Remove plaster and protective materials from accessories and from adjacent surfaces.

END OF SECTION

SECTION 09 27 00

PLASTER FABRICATIONS

PART 1 GENERAL:

1.01 SECTION INCLUDES:

- A. Manufacturer of GRG (Glass Fiber Reinforced Gypsum) Forms

1.02 RELATED SECTIONS:

- A. Light gauge metal framing.
- B. Veneer gypsum plaster.
- C. Gypsum board.
- D. Finishing glass fiber reinforced gypsum.
- E. Miscellaneous metals.

1.03 REFERENCES:

Samples and shop drawings to conform to Section 01200

- A. Samples:
Samples submitted as required by architect.
- B. Shop Drawings:
Submit shop drawings completely detailing prefabricated glass fiber reinforced gypsum members, including locations, sizes and shapes of members, proposed jointing arrangements, details of anchorages and supports, suspension systems, outlet boxes, and other items which occur in or are affected by prefabricated gypsum members shall be prepared at the factory by manufacturer only for those items indicated on approved shop drawings.

1.04 STANDARDS OF PERFORMANCE, DESIGN AND QUALITY:

- A. Manufactures Qualifications:
Melton Classics, Inc. has a demonstrated capability to produce GRG products of the quality and scope required for any project.
- B. All GRG forms shall match approved samples.
- C. All GRG forms will be installable according to details submitted in shop drawings.

PART 2 PRODUCTS:

2.01 MANUFACTURER:

Melton Classics, Inc.
P.O. Box 465020
Lawrenceville, GA 30042
(770) 963-3060 (800) 963-3060 Fax: (770) 962-6988

2.02

MATERIALS:

- A. Description: Glass Fiber Reinforced Gypsum (GRG)
 - 1. Pre molded GRG parts are fabricated to details and dimensions shown.
 - 2. Finished product shall conform to the following standards.

PHYSICAL PROPERTIES OF GRG "FIBROCAL"

- a. Shell Thickness:
3/16" minimum except for small components which may be 1/8" minimum, large components such as wall panels shall be of the thickness recommended by the manufacturer for the size and location of components.
 - b. Weight: 1.5 lbs. per square foot
 - c. Flexural Strength: 4,192 psi
 - d. Tensile Strength: 1,340 psi
 - e. Compressive Strength: 5,800 psi
 - f. Density: 110 lbs. per cubic foot
 - g. Hardness (Barcol): 105
 - h. Flammability:
Flame Spread 0
Smoke Developed 0
ASTM E-84 Class A
 - i. Glass Content: 38.7%
- 3. All parts to contain supports as required to keep within allowable tolerances.
 - 4. Finish surfaces shall be true or textured according to design requirements.

2.03

FABRICATION:

- A. Molds to be constructed of reinforced fiberglass to produce units conforming to the required profiles, dimensions and tolerances.
- B. Allowable Tolerances:
 - 1. Dimensional Tolerances: $\pm 1/8"$
 - 2. Wall Thickness: Nominal 3/16"
 - 3. Out of Plumb: $\pm 1/8"$
 - 4. Bowing: L/360 Maximum

PART 3 EXECUTION

3.01 **INSTALLATION**

- A. General:
Employ only workmen experienced, skilled and trained on this type of quality erection work.
- B. Workmanship:

Install work of this section complete, straight, plumb, level, in true alignment and securely anchored.

- C. Erection:
GRG forms shall be installed per drawings, including the approved shop drawings, and the manufacturer's written recommendations and instruction for this project.
- D. Sealing and Caulking:
Shall conform to requirements of Caulking and Sealing Section 07900 and requirements indicated and specified herein.
 - 1. Joints and Sealants: Joints (quantity, sizes, and shapes) indicated on contract drawings are minimum requirements.
- E. Finishing Materials:
 - 1. Fasteners:
As indicated on approved shop drawings and in accordance with manufacturer's printed recommendations.
 - 2. Joint treatment materials:
 - a. General: ASTM C-475; type recommended by the manufacturer for the application indicated, except as otherwise indicated.
 - b. Joint tape: Perforated type.
 - c. Joint Compound: Ready Mixed vinyl-type for interior use.
 - (1) Grade: 2 separate grades; one specifically for bedding tapes and filling depressions, and one for topping and sanding.
 - 3. Miscellaneous Materials:
 - a. General: Provide auxiliary material for work of types and grades recommended by manufacturer.
 - b. Adhesive: Special adhesive recommended for laminating gypsum plaster.
- F. Replacements:
 - 1. In-place GRG forms may be rejected for the following reasons.
 - a. Nonconformance to detail requirements specified previously.
 - b. Nonconformance with approved samples.
 - c. Nonconformance to specified fabrication or installation tolerance.
 - d. Damage beyond satisfactory field repair, as determined by the Architect.

3.02

CLEANUP:

General:

Perform cleaning procedures as recommended by GRG unit manufacturer.

END OF SECTION

GYPSUM BOARD

IT IS ASSUMED THAT THE GENERAL CONDITIONS BEING USED ARE AIA A201.

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Metal framing for the support of gypsum board partitions and ceilings.
2. Gypsum board and joint treatment products.
3. Accessories for the installation and trimming of gypsum board partitions and ceilings.
4. Cement board and fasteners and joint treatment products.

B. Related Sections:

IF PROJECT INCLUDES GYPSUM BOARD SUPPORTED BY WOOD FRAMING THEN RETAIN REFERENCE TO SECTION 06100.

1. Section 06100, Rough Carpentry.
2. Section 09215, Veneer Plaster.
3. Section 09265, Area Separation Walls.
4. Section 09950, Prefinished Gypsum Wall Panels.

USE THE PARAGRAPH BELOW TO IDENTIFY ALTERNATES DESCRIBED IN DIVISION 1, SECTION 01030, THAT INCLUDE WORK OF THIS SECTION.

C. Alternates:

1.02 REFERENCES

A. American National Standards Institute (ANSI):

1. A108.11, American National Standard for Interior Installation of Cementitious Backer Units.
2. A118.4, American National Standard Specifications for Latex-Portland Cement Mortar.
3. A118.9, Test Methods and Specifications for Cementitious Backer Units.

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

1. C 36, Specification for Gypsum Wallboard.
2. C 79, Test Method for Gypsum Sheathing Board.
3. C 442, Specification for Gypsum Backing Board and Coreboard.
4. C 473, Test Methods for Physical Testing of Gypsum Panel Products.
5. C 514, Specification for Nails for the Application of Gypsum Wallboard.

6. C 630, Specification for Water-Resistant Gypsum Backing Board.
7. C 645, Specification for Non-Load (Axial) Bearing Steel Studs, Runners (Track), and Rigid Furring Channels for Screw Application of Gypsum Board.
8. C 754, Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Board.
9. C 840, Specification for Application and Finishing of Gypsum Board.
10. C 931, Specification for Exterior Gypsum Soffit Board.
11. C 954, Specification for Steel Drill Screws for the Application of Gypsum Board or Metal Plaster Bases to Steel Studs from 0.33 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
12. C 1002, Specification for Steel Drill Screws for the Application of Gypsum Board or Metal Plaster Bases.
13. C 1047, Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
14. C 1280, Specification for Application of Gypsum Sheathing Board.
15. C 1325, Specification for Fiber-Mat Reinforced Non-Asbestos Cement Interior Substrate Sheets.
16. D 1037, Test Methods for Evaluating Properties of Wood-Based Fiber and Particle Panel Materials.
17. D 2197, Test Methods for Adhesion of Organic Coatings by Scrape Adhesion.
18. D 2394, Method for Simulated Service Testing of Wood and Wood-Base Finish Flooring.
19. D 4060, Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.
20. D 4977, Test Method for Granule Adhesion to Mineral Surfaced Roofing by Abrasion.
21. E 695, Standard Method of Measuring Relative Resistance of Wall, Floor, and Roof Construction to Impact Loading.

C. Gypsum Association (GA):

1. GA-214, Recommended Specifications: Levels of Gypsum Board Finish.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Packaging and Shipping: Have materials shipped in manufacturer's original packages showing manufacturer's name and product brand name.

B. Storage and Protection: Store materials inside and protected from damage by the elements. Protect ends, edges, and faces of gypsum boards from damage. Protect steel studs and accessories from bending.

1.07 PROJECT CONDITIONS

A. Environmental Requirements: Establish and maintain application and finishing environment in accordance with ASTM C 840.

PART 2 PRODUCTS

2.01 MANUFACTURERS

PROPRIETARY PRODUCT NAMES MAY BE LISTED IN THIS ARTICLE OR IN THE "MATERIALS" ARTICLE BELOW. LISTING THEM IN BOTH ARTICLES IS OVERKILL AND INVITES COORDINATION ERRORS.

A. Gold Bond Building Products, National Gypsum Co.

1. Gypsum Board:

- a. Regular Board: Gold Bond Regular Gypsum Wallboard.
- b. Fire-Rated Board: Gold Bond Fire-Shield Wallboard.
- c. Fire-Rated Board: Gold Bond Fire-Shield G Wallboard.
- d. Fire-Rated Impact-Resistant Board: Gold Bond Fire-Shield Type X Hi-Impact 1000.
- e. Fire-Rated Impact-Resistant Board: Gold Bond Fire-Shield Type X Hi-Impact 2000.
- f. Fire-Rated Impact-Resistant Board: Gold Bond Fire-Shield Type X Hi-Impact 3000.
- g. Fire-Rated Impact-Resistant Board: Gold Bond Fire-Shield Type X Hi-Impact 8000.
- h. Abuse-Resistant Board: Gold Bond Hi-Abuse Wallboard.
- i. Fire-Rated Abuse-Resistant Board: Gold Bond Fire-Shield Type X Hi-Abuse Wallboard.
- j. Flexible Board: 1/4" High Flex Wallboard.
- k. Water-Resistant Backing Board: Gold Bond MR Board.
- l. Fire-Rated Water-Resistant Backing Board: Gold Bond Fire-Shield MR Board.
- m. Fire-Rated Water-Resistant Backing Board: Gold Bond Fire-Shield G MR Board.
- n. Ceiling Board: Gold Bond 1/2 in. High Strength Ceiling Board.
- o. Sheathing Board: Gold Bond Regular Gypsum Sheathing.
- p. Fire-Rated Sheathing Board: Gold Bond Fire-Shield Gypsum Sheathing.
- q. Shaftwall Coreboard: Gold Bond Fire-Shield Shaftliner.
- r. Exterior Gypsum Soffit Board: Gold Bond Soffit Board.
- s. Fire-Rated Exterior Gypsum Soffit Board: Gold Bond Fire-Shield Soffit Board.

2. Joint Treatment:

- a. Tape: Gold Bond Paper Joint Tape.
- b. Tape: Gold Bond Multi-Flex Tape Bead.
- c. Tape: Gold Bond Sta-Smooth HS Tape.
- d. Compound: Gold Bond ProForm Multi-Use Compound.
- e. Compound: Gold Bond ProForm All Purpose Ready-Mix Joint Compound.
- f. Compound: Gold Bond ProForm Lite Ready-Mix Joint Compound.
- g. Compound: Gold Bond Triple-T Compound.
- h. Compound: Gold Bond ProForm Ready-Mix Topping Compound.

- I. Compound: Gold Bond Easy Finish All Purpose Ready-Mix Joint Compound.
- j. Compound: Gold Bond Easy Finish Light Weight Ready-Mix Joint Compound.
- k. Compound: Gold Bond Easy Finish Ready-Mix Topping Compound.
- l. Compound: Gold Bond Sta-Smooth Joint Compound.
- m. Compound: Gold Bond Sta-Smooth Lite Compound.
- n. Compound: Gold Bond Sta-Smooth HS (High Strength).

3.Textured Coatings:

- a. Ceiling Coating: Gold Bond Perfect Spray, Fine.
- a. Ceiling Coating: Gold Bond Perfect Spray, Medium.
- a. Ceiling Coating: Gold Bond Perfect Spray, Coarse.
- b. Ceiling Coating: Gold Bond Perfect Spray II.
- c. Ceiling Coating: Gold Bond Spray Quick, Fine Finish.
- c. Ceiling Coating: Gold Bond Spray Quick, Medium Finish.
- c. Ceiling Coating: Gold Bond Spray Quick, Course Finish.
- d. Wall Coating: Gold Bond Perfect Spray EM, Spatter + Knockdown.
- d. Wall Coating: Gold Bond Perfect Spray EM, Spatter Finish.
- d. Wall Coating: Gold Bond Perfect Spray EM, Orange Peel.

4.Cement Board:

- a. Backer Board: Gold Bond Permabase Cement Board.
- b. Underlayment: Gold Bond Permabase Underlayment.

IF SPECIFYING BY THE PROPRIETARY METHOD, ADD MANUFACTURERS AND PRODUCT NAMES FOR METAL FRAMING AND ACCESSORIES. FOLLOW THE FORMAT IN THE NEXT ARTICLE.

2.02 MATERIALS

A. Metal Framing:

STUDS BELOW ARE 25 GAGE.

- 1. Studs: 1-5/8 in., 2-1/2 in., 3-5/8 in., 4 in. and 6 in. C shaped studs, weighing 312 lbs., 370 lbs., 448 lbs., 472 lbs. and 607 lbs. per 1000 lin. ft. with min. base steel of 0.0179 in., galvanized, and complying with ASTM C 645.

STUDS BELOW ARE 22 GAGE.

- 1. Studs: 1-5/8 in., 2-1/2 in., 3-5/8 in., 4 in. and 6 in. C shaped studs, weighing 389 lbs., 467 lbs., 692 lbs., 707 lbs. and 776 lbs. per 1000 lin. ft. with min. base steel of 0.0255 in., galvanized, and complying with ASTM C 645.

STUDS BELOW ARE 20 GAGE.

1. Studs: 2-1/2 in., 3-5/8 in., 4 in. and 6 in. C shaped studs weighing 579 lbs., 717 lbs., 747 lbs. and 971 lbs. per 1000 lin. ft. with min. base metal of 0.0312 in., galvanized and complying with ASTM C 645.

TRACK BELOW IS 25 GAGE WITH 1 IN. LEGS.

2. Track: 1-5/8 in., 2-1/2 in., 3-5/8 in., 4 in. and 6 in. U shaped track with 1 in. legs, weighing 244 lbs., 303 lbs., 378 lbs., 404 lbs. and 539 lbs. per 1000 lin. ft. with min. base metal of 0.0179 in., galvanized and complying with ASTM C 645.

TRACK BELOW IS 25 GAGE WITH 1-1/4 IN. LEGS.

2. Track: 1-5/8 in., 2-1/2 in., 3-5/8 in., 4 in. and 6 in. U shaped track with 1-1/4 in. legs, weighing 278 lbs., 337 lbs., 412 lbs., 438 lbs. and 572 lbs. per 1000 lin. ft. with min. base metal of 0.0179 in., galvanized and complying with ASTM C 645.

TRACK BELOW IS 25 GAGE WITH HEMMED LEGS.

2. Track: 1-5/8 in., 2-1/2 in., 3-5/8 in., 4 in. and 6 in. U shaped track with hemmed legs, weighing 278 lbs., 353 lbs., 432 lbs., 459 lbs. and 600 lbs. per 1000 lin. ft. with min. base metal of 0.0179 in., galvanized and complying with ASTM C 645.

TRACK BELOW IS 22 GAGE WITH NOMINAL 1-1/8 IN. LEGS.

2. Track: 1-5/8 in., 2-1/2 in., 3-5/8 in., 4 in. and 6 in. U shaped track with 1.177 in. legs, weighing 352 lbs., 430 lbs., 650 lbs., 663 lbs. and 739 lbs. per 1000 lin. ft. with min. base metal of 0.0225 in., galvanized and complying with ASTM C 645.

TRACK BELOW IS 20 GAGE WITH NOMINAL 1-1/4 IN. LEGS.

2. Track: 2-1/2 in., 3-5/8 in., 4 in. and 6 in. U shaped track with 1.177 in. legs, weighing 545 lbs., 664 lbs., 713 lbs. and 945 lbs. per 1000 lin. ft. with min. base metal of 0.0312 in., galvanized and complying with ASTM C 645.
3. Main Runner Channels: 2 in. cold rolled steel channel, weighing 590 lbs. per 1000 lin. ft. with min. base steel of 0.054 in., galvanized or painted.

SELECT 2 in. CHANNEL ABOVE OR 1-1/2 in. CHANNEL BELOW.

4. Main Runner Channels: 1-1/2 in. cold rolled steel channel, weighing 475 lbs. per 1000 lin. ft. with min. base steel of 0.054 in., galvanized or painted.
5. Cross Furring Channels: 3/4 in. cold rolled steel channel, weighing 300 lbs. per lin. ft. with min. base steel of 0.054 in., galvanized or painted.
6. Rigid Furring Channels: 7/8 in. hat shaped channels, weighing 287 lbs. per 1000 lin. ft. with min. base steel of 0.0179 in., galvanized, and complying with ASTM C 645.
7. Resilient Furring Channels: 1/2 in. hat shaped channel with resilient legs, weighing 220 lbs. per 1000 lin. ft. with min. base steel of 0.019 in., galvanized.

8. Z Furring Channels: 1 in., 1-1/2 in. and 2 in. Z shaped channels, weighing 201 lbs., 236 lbs. and 268 lbs. per 1000 lin. ft. with min. base steel of 0.0179 in., galvanized, and complying with ASTM C 645.

VERIFY CROSS REFERENCE BELOW.

B. Wood Framing: See Section 06100.

C. Regular Gypsum Board: A gypsum core wall panel surfaced with paper on front, back, and long edges and complying with ASTM C 36 (Gold Bond Regular Gypsum Wallboard).

1. Thickness: 1/4 in., 3/8 in. or 1/2 in.
2. Width: 4 ft.
3. Length: 6 ft. through 16 ft.
4. Edges: Square, Tapered, or Beveled Taper (Gold Bond Sta-Smooth Edge).

D. Fire-Rated Gypsum Board: A gypsum core wall panel with additives to enhance fire resistance of the core and surfaced with paper on front, back, and long edges and complying with ASTM C 36, Type X.

1. Thickness: 1/2 in. (Gold Bond Fire-Shield G), 5/8 in. (Gold Bond Fire-Shield), or 5/8 in. (Gold Bond Fire-Shield G).
2. Width: 4 ft.
3. Length: 6 ft. through 16 ft.
4. Edges: Square, Tapered, or Beveled Taper (Gold Bond Sta-Smooth Edge).

E. Fire-Rated Impact/Penetration-Resistant Gypsum Board: A gypsum core wall panel with additives to enhance fire resistance of the core and surfaced with paper on front, back, and long edges with a GE Lexan film bonded to the back side to enhance impact/penetration resistance; and complying with ASTM C 36, Type X.

1. Thickness: 5/8 in. with 0.010 Lexan film (Gold Bond Fire-Shield Type X Hi-Impact 1000), 5/8 in. with 0.020 Lexan film (Gold Bond Fire-Shield Type X Hi-Impact 2000), 5/8 in. with 0.030 Lexan film (Gold Bond Fire-Shield Type X Hi-Impact 3000), 5/8 in. with 0.081 Lexan film (Gold Bond Fire-Shield Type X Hi-Impact 8000).
2. Width: 4 ft.
3. Length: 8 ft. through 12 ft.
4. Edges: Square, Tapered, or Beveled Taper (Gold Bond Sta-Smooth Edge).
5. Penetration Resistance: 264 ft.-lbs. without penetration (Gold Bond Fire-Shield Type X Hi-Impact 1000), 846 ft.-lbs. without penetration (Gold Bond Fire-Shield Type X Hi-Impact 2000), 1450 ft.-lbs. without penetration (Gold Bond Fire-Shield Type X Hi-Impact 3000), 2188 ft.-lbs. without penetration (Gold Bond Fire-Shield Type X Hi-Impact 8000).

F. Abuse-Resistant Gypsum Board: A gypsum core wall panel with additives to enhance surface indentation resistance, and impact resistance of the core and surfaced with

abrasion resistant paper on front and long edges with heave liner paper bonded to the back side; and complying with ASTM C 36, Type X (Gold Bond Hi-Abuse Wallboard).

1. Thickness: 1/2 in.
2. Width: 4 ft.
3. Length: 8 ft. through 12 ft.
4. Edges: Tapered.
5. Impact Resistance: No failure after 100 impacts when tested in accordance with ASTM E 695, modified.
6. Indentation Resistance: Not less than the following loads to produce the indicated depth of surface indentation when tested in accordance with ASTM D 1037, modified:
 - a. 0.100 in.: 232 lbs.
 - b. 0.200 in.: 469 lbs.
7. 3M Surface Abrasion Resistance: Not greater than the following depths when tested using the indicated number of cycles in accordance with ASTM D 4977, modified:
 - a. 50: 0.000 in.
 - b. 100: 0.000 in.
 - c. 150: 0.001 in.
 - c. 200: 0.001 in.
 - d. 250: 0.001 in.
9. Taber Surface Abrasion Resistance: Not greater than the following depths when tested using the indicated number of cycles in accordance with ASTM D 4060, modified:
 - a. 25: 0.002 in.
 - a. 50: 0.004 in.
 - b. 75: 0.007 in.
 - c. 100: 0.009 in.
 - d. 125: 0.010 in.
10. Impact/Penetration Resistance Rating: Not less than 48 ft.-lbs. When tested in accordance with ASTM D 2394, modified.

G. Fire-Rated Abuse-Resistant Gypsum Board: A gypsum core wall panel with additives to enhance fire resistance, surface indentation resistance, and impact resistance of the core and surfaced with abrasion resistant paper on front and long edges with heave liner paper bonded to the back side; and complying with ASTM C 36, Type X (Gold Bond Fire-Shield Type X Hi-Abuse Wallboard).

1. Thickness: 5/8 in.
2. Width: 4 ft.
3. Length: 8 ft. through 12 ft.
4. Edges: Tapered.
5. Impact Resistance: No failure after 100 impacts.

6. Indentation Resistance: Not less than the following loads to produce the indicated depth of surface indentation when tested in accordance with ASTM D 1037, modified:

- a. 0.100 in.: 232 lbs.
- b. 0.200 in.: 469 lbs.

7. Scrape/Mar Resistance: Not greater than the following depths when tested using the following loads in accordance with ASTM D 2197, modified:

- a. 500 gr.: 0.000 in.
- b. 1000 gr.: 0.001 in.
- c. 1500 gr.: 0.002 in.
- d. 2000 gr.: 0.003 in.

8. 3M Surface Abrasion Resistance: Not greater than the following depths when tested using the indicated number of cycles in accordance with ASTM D 4977, modified:

- a. 50: 0.001 in.
- b. 250: 0.001 in.
- c. 500: 0.002 in.
- d. 1000: 0.003 in.

9. Taber Surface Abrasion Resistance: Not greater than the following depths when tested using the indicated number of cycles in accordance with ASTM D 4060, modified:

- a. 25: 0.002 in.
- a. 50: 0.004 in.
- b. 75: 0.005 in.
- c. 100: 0.007 in.
- d. 125: 0.008 in.
- e. 150: 0.010 in.

10. Impact/Penetration Resistance Rating: Not less than 72 ft.-lbs. When tested in accordance with ASTM D 2394, modified.

H. Water-Resistant Gypsum Backing Board: A gypsum core wall panel with additives to enhance the water resistance of the core; surfaced with water repellant paper on front, back, and long edges; and complying with ASTM C 630 (Gold Bond MR Board).

- 1. Thickness: 1/2 in.
- 2. Width: 4 ft.
- 3. Length: 6 ft. through 16 ft.
- 4. Edges: Tapered.

I. Fire-Rated Water-Resistant Gypsum Backing Board: A gypsum core wall panel with additives to enhance the fire resistance of the core and the water resistance of the core; surfaced with water repellant paper on front, back, and long edges; and complying with ASTM C 630, Type X.

1. Thickness: 1/2 in. (Gold Bond Fire-Shield G MR Board) or 5/8 in. (Gold Bond Fire-Shield MR Board).
2. Width: 4 ft.
3. Length: 6 ft. through 16 ft.
4. Edges: Square, Tapered, or Beveled Taper (Gold Bond Sta-Smooth Edge).

J. Gypsum Ceiling Board: A gypsum core ceiling panel with additives to enhance the sag resistance of the core and surfaced with paper on front, back, and long edges (Gold Bond High Strength Ceiling Board).

1. Thickness: 1/2 in.
2. Width: 4 ft.
3. Length: 6 ft. through 16 ft.
4. Edges: Tapered.

K. Gypsum Sheathing Board: A gypsum core sheathing panel with additives to enhance the water resistance of the core; surfaced with water repellant paper on front, back, and long edges; and complying with ASTM C 79.

1. Regular Board, 2 ft. by 8 ft.: 1/2 in. thick with tongue and groove edge (Gold Bond Regular Gypsum Sheathing).
2. Regular Board, 4 ft. by 8 ft. or 9 ft. or 10 ft.: 1/2 in. thick with square edge (Gold Bond Jumbo Gypsum Sheathing).
3. Fire-Rated Board (Type X): 5/8 in. thick by 4 ft. wide by 8 ft. or 9 ft. or 10 ft. long with additives in the core to enhance fire resistance (Gold Bond Fire-Shield Jumbo Gypsum Sheathing).

L. Shaftwall Coreboard: A gypsum core shaftwall panel with additives to enhance fire resistance of the core and surfaced with water repellant paper on front, back, and long edges and complying with ASTM C 442, Type X.

1. Thickness: 1 in. (Gold Bond Fire-Shield Shaftliner).
2. Width: 2 ft.
3. Length: 7 ft. through 14 ft.
4. Edges: Beveled.

M. Exterior Gypsum Soffit Board: A gypsum core soffit panel with additives to enhance the sag resistance of the core; surfaced with water repellant paper on front, back, and long edges; and complying with ASTM C 931 (Gold Bond Soffit Board).

1. Thickness: 1/2 in.
2. Width: 4 ft.
3. Length: 8 ft. through 12 ft.
4. Edges: Beveled Taper (Gold Bond Sta-Smooth Edge).

N. Fire-Rated Exterior Gypsum Soffit Board: A gypsum core soffit panel with additives to enhance the fire-resistance and the sag resistance of the core; surfaced with water repellant paper

on front, back, and long edges; and complying with ASTM C 931, Type X (Gold Bond Fire-Shield Soffit Board).

1. Thickness: 5/8 in.
2. Width: 4 ft.
3. Length: 8 ft. through 12 ft.
4. Edges: Beveled Taper (Gold Bond Sta-Smooth Edge).

O. Joint Treatment:

1. Tape: 2-1/16 in. wide paper reinforcing tape (Gold Bond Paper Joint Tape).
2. Tape: 2 in. wide paper reinforcing tape with metal strips laminated along the center crease to form inside and outside corners (Gold Bond Multi-Flex Tape Bead).
3. Tape: 2 in. wide self adhering fiberglass tape (Gold Bond Sta-Smooth HS Tape).
4. Compound: Drying type pre-mixed vinyl base compound (Gold Bond ProForm Multi-Use Compound, Gold Bond ProForm All Purpose Ready-Mix Joint Compound, regular grade and machine grade, Gold Bond ProForm Lite Ready-Mix Joint Compound, Gold Bond Easy Finish All Purpose Ready-Mix Joint Compound, and Gold Bond Easy Finish Light Weight Joint Compound).
5. Compound: Drying type job mixed vinyl base compound (Gold Bond Triple-T Compound).
6. Compound: Drying type vinyl base topping compound, pre-mixed (Gold Bond ProForm Ready-Mix Topping Compound, Gold Bond Easy Finish Ready-Mix Topping Compound).
7. Compound: Setting type job mixed chemical-hardening compound (Gold Bond Sta-Smooth Joint Compound, Sta-Smooth Lite Compound, and Sta-Smooth HS).

P. Textured Coatings:

IF THIS SECTION IS BEING EDITED TO BE GENERIC, THEN ADD INDICATION OF TEXTURE(S) BELOW OR INDICATE THAT ARCHITECT WILL SELECT TEXTURE.

1. Ceiling Coating: Compound of minerals and clays for mixing with a mineral or polystyrene aggregate and water (Gold Bond Perfect Spray, Perfect Spray II, and Spray Quick).
2. Wall Coating: Compound of minerals and clays for mixing with water (Gold Bond Perfect Spray EM).

Q. Cement Board:

1. Backer Board: Cementitious, water durable, board; surfaced with fiberglass reinforcing mesh on front and back; long edges wrapped; and complying with ANSI A118.9 and ASTM C 1325 (Gold Bond Permabase Cement Board).
 - a. Thickness: 1/2 in. or 5/8 in.
 - b. Width: 2 ft. 8 in., 3 ft., or 4 ft.
 - c. Length: 4 ft., 5 ft., 6 ft., or 8 ft.
 - d. Edges: Tapered.

- e. Density: 71.7 lbs. per cu. ft.
 - f. Water Absorption: Not greater than 5.24 percent when tested for 24 hours in accordance with ASTM C 473.
2. Underlayment: Cementitious, water durable, board; surfaced with fiberglass reinforcing mesh on front and back; long edges wrapped; and complying with ANSI A118.9 and ASTM C 1325 (Gold Bond Permabase Underlayment).
- a. Thickness: 5/16 in.
 - b. Width: 3 ft. or 4 ft.
 - c. Length: 5 ft.
 - d. Edges: Tapered.
 - d. Density: 71.7 lbs. per cu. ft.
 - e. Water Absorption: Not greater than 5.24 percent when tested for 24 hours in accordance with ASTM C 473.
3. Fasteners:
- a. Nails: 1-1/2-in. long, hot dipped galvanized, and in accordance with FS FF-N-105B, Type 2, Style 20.
- ## SELECT NAILS OR SCREWS TO CONFORM TO PROJECT REQUIREMENTS.
- b. Screws: Rock-On Hi-Lo by ITW Buildex, 1-1/4 in. long.
- ## USE ABOVE FOR WOOD AND 22 GA., OR LIGHTER, STEEL FRAMING. USE BELOW FOR 20 GA., OR HEAVIER, STEEL FRAMING.
- c. Screws: Rock-On S-12 by ITW Buildex, 1-1/4 in. long.
4. Joint Treatment:
- a. Tape: Alkali-resistant fiberglass mesh tape intended for use with cement board.
 - b. Compound: Latex-portland cement mortar in accordance with ANSI A118.4.
- ## VERIFY DESCRIPTIONS OF METAL ACCESSORY PRODUCTS WITH MANUFACTURER.

PART 3 EXECUTION

3.01 INSTALLATION

A. General: In accordance with the following reference standards and manufacturer's recommendations:

- 1. Metal Framing: ASTM C 754.
- 2. Gypsum Sheathing Board: ASTM C 1280.
- 3. Gypsum Board and Joint Treatment: ASTM C 840.

4. Cement Board and Joint Treatment: ANSI A108.11.
2. Manufacturer's Recommendations:
 - a. "Gypsum Construction Guide;" National Gypsum Co.

B. Finishing: In accordance with GA-214 as follows:

1. Level 1: Plenums and service corridors.
2. Level 2: Water resistant gypsum backing board scheduled to receive tile.
3. Level 3: Gypsum board scheduled to receive heavy or medium textured coatings and heavy-grade wall coverings.
4. Level 4: Gypsum board scheduled to receive light textured coatings and light-grade wall coverings.
5. Level 5: All other gypsum board.

3.02 PROTECTION

REVISE BELOW IF OTHER THAN AIA GENERAL CONDITIONS ARE USED.

A. Protect gypsum board installations from damage and deterioration until the date of Substantial Completion.

END OF SECTION

SECTION 09 29 00

WATER RESISTANT GYPSUM WALLBOARD

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Water resistant Gypsum wallboard sheathing and gypsum wallboard and joint treatment.

1.02 RELATED SECTIONS

A. Section 09 21 00 – Gypsum Wall Board: Assemblies.

1.03 REFERENCES

A. ASTM C36 – Gypsum Wallboard.

B. ASTM C442 – Gypsum Backing and Board Coreboard.

C. ASTM C475 – Joint Compound and Joint Tape for Finishing Gypsum Board.

D. ASTM C630 – Water- Resistant Gypsum Backing Board.

E. ASTM C840 – Application and Finishing of Gypsum Board.

F. ASTM C1002 – Steel Drill Screws for Application of Gypsum Board or Metal Plaster Bases.

G. ASTM C1280 – Application of Gypsum Sheathing Board.

H. GA-214 – Recommended Specification: Levels of Gypsum Board Finishing

I. GA-216 – Recommended Specifications for Application and Finishing of Gypsum Board.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original and unopened packages, containers, or bundles, with brand names and manufacturer' labels intact and legible.

B. Store materials in dry location, fully protected from weather and direct exposure to sunlight.

C. Stack gypsum board products flat and level, properly supported to prevent sagging or damage to ends and edges.

D. Store corner bead and other metal and plastic accessories to prevent bending, sagging, distortion or other mechanical damage.

E. Damaged or deteriorated materials shall be removed from the Project and replaced.

F. Commence interior applications only after the structure is completely weather tight.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Temperature: Maintain temperature in areas of installation at not less than 55 degrees F for at least 24 hours before installation begins and for not less than 48 hours after joint finishing has been completed.

B. Ventilation: Provide controlled ventilation during joint finishing operations to eliminate excessive moisture.

PART 2 PRODUCTS

2.01 MATERIALS

A. Standard Gypsum Board: ASTM C36; maximum available in length in place; ends square cut, tapered edges.

B. Moisture Resistant Gypsum Board: ASTM C630; maximum available in place; ends square cut, tapered edges.

C. Gypsum Backing Board: ASTM C442; standard and fire rated types; maximum available size in place.

2.02 ACCESSORIES

A. Control Joints: Roll-formed zinc; No. 093 by United States Gypsum Company or similar product.

B. End Stops: "J" shaped trim, hot-dipped galvanized steel, where wall openings occur and where wallboard abuts other surfaces.

C. Corner beads: Formed to an angle of 90 degrees and shall be hot-dipped galvanized steel of type recommended by manufacturer.

D. Fasteners: ASTM C1002, Type S12 and GA-216; Self-drilling type; lengths as recommended by gypsum board manufacturer for project conditions.

E. Laminated Adhesive: Specially manufactured for securing wallboard to wallboard, wallboard to masonry, wallboard to furring, or wallboard to wood or steel studs.

F. Joint Treatment: Taping and compounds shall be types recommended by the manufacturer of the wallboard.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install gypsum board in accordance with ASTM C841, GA-216 and GA-600.

3.02 FIELD QUALITY CONTROL

- A. Field testing will be performed under provisions of Section 01 45 00.

END OF SECTION

SECTION 09 29 16

INTERIOR NONSTRUCTURAL METAL STUDS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Metal studs for interior, non-structural walls.

1.02 RELATED SECTIONS

- A. Section 09 22 16 – Nonstructural Metal Framing.
- B. Section 05 41 00 – Structural Metal Stud Framing.

1.03 REFERENCES

- A. ASTM C645 – Nonstructural Steel Framing Members.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of Section 01 65 00.
- B. Store and protect products under provisions of Section 01 66 00.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Metal studs: ASTM C645, Drywall (Nonstructural) studs; 25-gauge; 0.0188-inch thickness; 1.5" X 3.5" dimensions; product code STN-350S125-18 (ST-Series™) manufactured by Dietrich Metal Framing.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install metal studs in conjunction with Section 09 20 00.

3.02 FIELD QUALITY CONTROL

- A. Field testing will be performed under provisions of Section 01 45 00.

END OF SECTION

SECTION 09 51 23
ACOUSTIC CEILING TILES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Acoustical Ceiling Panels.

1.02 RELATED SECTIONS

- A. Section 09 26 13 – Veneer Plastering: Gypsum Veneer Plastering.
- B. Section 09 51 00 – Ceilings: Suspended Acoustical Ceilings.

1.03 REFERENCES

- A. ASTM C423 – Standard Specification for Testing Noise Reduction Coefficient.
- B. ASTM E34 – Standard Test Method for Surface Burning Characteristic of Building Materials.
- C. ASTM C580 – Standard Practice for Application of Ceiling Suspension for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of Section 01 65 00.
- B. Deliver and store materials in manufacturer's original unopened containers with brands, names and production lot numbers clearly marked on these containers.
- C. Storage and Protection are to comply with manufacturer's recommendations.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Panels do not require special environmental conditions.
- B. Systems may be installed at any stage of construction.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Whiteline Acoustical Ceiling Panels: Sag Resistant foam panel consisting of lightweight, open-cell willtec® foam, laminated on both sides with white fleece.
 - 1. Density: 0.5 to 0.7 pounds per cubic foot.

2. Tensile Strength: ASTM D3574-77, 8 PSI
3. Elongation: ASTM D3574-77, 8 percent
4. Flammability: ASTM E84, Class 1
5. Flame spread: 5
6. Smoke density: 10

B. Select sizes from the following list. Custom sizes or tiles larger than 24"x48" may have longer lead time.

1. Size: Nominal 24 inch by 24 inch by 0.6 inch.
2. Size: Nominal 24 inch by 48 inch by 0.6 inch
3. Size: Nominal 48 inch by 48 inch by 0.6 inch.
4. Size: Nominal 48 inch by 96 inch by 0.6 inch.
5. Size: Custom sizes available.
6. Face finish: Smooth.
7. Color: [White] [Custom colors are available].

C. Sound Absorption Coefficients (for lay-in panels): Type E mountings (16 inch air space), ASTM C423-90a.

Frequencies (Hz)	125	250	500	1,000	2,000	4,000	NRC
0.6 inch:	0.62	0.58	0.55	0.76	0.81	0.82	0.70

2.02 SUSPENSION SYSTEM

- A. Suspension System: Refer to Section 09 53 00, 09 51 00 for acoustical panel support system.
- B. Suspension System: [Architect to insert acoustical tile ceiling system suspension system specifications here.]

PART 3 EXECUTION

3.01 INSTALLATION

- A. Coordinate with mechanical and electrical installers in locating and spacing fixtures, diffusers, and similar items located in ceiling.
- B. Lay out pattern per reflected ceiling plans. Where not otherwise indicated, lay out in such manner that margins on opposite sides of rooms are equal or greater than 1/2 panel in width.
- C. Where acoustical ceilings of different heights abut, install acoustical material matching ceiling at vertical surface at ceiling break match ceiling, unless otherwise indicated.
- D. Suspension system: Refer to Section 09 51 00 for installation requirements.

or

- E. Suspension System: [Architect to insert acoustical tile ceiling system suspension system installation requirements here.]
- F. Acoustical Panels:
 - 1. Refer to manufacturer's written installation instructions.
 - 2. Install lay in acoustical ceiling panels flush and level in suspension system.
 - 3. Install panels with hand protection to avoid soiling.
 - 4. Press panels from above to set into grids. Do not pull from face.

3.02 CLEANING

- A. Clean adjacent surfaces and remove unused product and debris from site.
- B. After installation is completed, clean soiled surfaces of materials.
- C. Remove and reinstall improperly installed material.
- D. Remove damaged or discolored material, or material that cannot be properly cleaned, and install new material.

END OF SECTION

ACOUSTICAL CEILING TILE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Acoustical Ceiling Panels. Versatile, deep-sculpted appearance, lightweight, and easy, low-cost installation. Standard and custom designs.
- B. Lay-in and adhesive applied installations.

APPLICATION LOCATIONS WHERE MAXIMUM NOISE REDUCTION IS REQUIRED WITH HIGH STYLING.

1.02 RELATED SECTIONS

- A. Section 09120 – Acoustical Suspension Systems
- B. Section 09510 – Suspended Acoustical Ceilings
- C. Section 09250 – Gypsum Board Systems
- D. Section 09260 – Gypsum Board Assemblies
- E. Division 14 – Fire Suppression Equipment
- F. Division 15 – Mechanical. Diffusers, vents and other mechanical items.
- G. Division 16 – Electrical. Lights and other ceiling mounted electrical items.

1.03 REFERENCES

- A. ASTM C423: Standard Specification for Testing Noise Reduction Coefficient.
- B. ASTM E84: Standard Test Method for Surface Burning Characteristic of Building Materials
- C. ASTM E580: Standard Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint.

1.04 SYSTEM DESCRIPTION

- A. Acoustical Performance Requirements: NRC (Noise Reduction Coefficient) complying with ASTM C423-90a.

1.05 SUBMITTALS

- A. Comply with Section [01300] [01330] [01340]
- B. Product Data: Manufacturer's technical data for each type of panel and baffle including fire-resistive characteristics, finishes, details of installation, and the following:
 - 1. Manufacturer's installation instructions.

2. Certified test reports indicating compliance with Performance Requirements specified herein.
 - C. 2 full size sets of samples of each specified panel for color selection
 - D. Closeout submittals: Comply with Section [01700]
 1. Operating and Maintenance Manual
 2. Extra Material for Owner's stock.
 3. Material Safety Data Sheets (MSDS).
- 1.06 QUALITY ASSURANCE
- A. Single Source Responsibility: Obtain panel units for entire Project
 - B. Manufacturer's Qualifications: Firm with not less than Closeout Submittals: Comply with Section [3] [] years experience in manufacturing of products similar in complexity to those required for this Project.
 - C. Installer's Qualifications: Firm with not less than [3] [] years experience in installation of products similar in complexity to those required for this Project, including specific requirements indicated.
 1. Successfully completed not that less [5] [] comparable scale projects.
- 1.07 DELIVERY, STORAGE AND HANDLING
- A. Comply with Section [01600] [].
 - B. Deliver and store materials in manufacturer's original unopened containers with brands, names, and production lot numbers clearly marked on these containers.
 - C. Storage and Protection: Comply with manufacturer's recommendations.
 1. Store products in a cool, dry place out of direct sunlight.
 2. Protect from the elements and from damage.
- 1.08 PROJECT CONDITIONS
- A. Environmental Requirements within building:
 1. Panels do not require special environmental conditions.
 2. Systems may be installed at any stage of construction.
- 1.09 SCHEDULING
- A. Do not install acoustical ceilings until work to be performed in plenum space above is completed, tested, and approved.
- 1.10 WARRANTY
- A. Provide manufacturer's written warranty per Section [01795].

1.11 MAINTENANCE

A. Extra Materials for Owner's Stock: Deliver not less than **[3 percent]** **[5 percent]** **[1 carton]** **[_____]** of each type, color, and pattern of material, exclusive of material required to properly complete installation.

1. Furnish Extra Materials from same production run to verify run for color.
2. Package replacement materials with protective covering, identified with appropriate labels.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Illbruck Architectural Products inc. 3800 Washington Avenue North Minneapolis, Minnesota 55412.

1. Telephone: 1-800-662-0032 1-612-520-3620
2. Fax: 1-612-521-5639
3. Website: www.illbruck-archprod.com
4. Email: sales@illbruck-archprod.com

B. Substitutions: Comply with Section **[01600]** **[01630]**.

2.02 MAUFACTURED UNITS

SELECT THE FOLLOWING SYSTEM FOR LAY-IN INSTALLED PANELS.

A. Acoustical Ceiling Panels (for lay-in applications): Sag resistant acoustical foam panel consisting of lightweight, open-cell willtec® foam core, with applied *Hypalon*® finish surface, adhered to 5/8 inch foil backed, honeycomb substrate.

1. Density: 0.5 to 0.7 pounds per cubic foot.
2. Tensile Strength: 8 PSI.
3. Flammability: Class 1 per ASTM E84.
4. Flame Spread: 25
5. Smoke Density: 65

THIRTEEN SCULPTURED DESIGNS AVAILABLE CUSTOM DESIGN CEILING TILES ARE AVAILABLE. CONTACT ILLBRUCK ARCHITECTURAL PRODUCTS FOR MORE INFORMATION.

6. Patterned Design: [Crosspoint], [Allusion], [Mosaic], [Matrix 2], [Vision], [Horizon], [Panorama], [Spectrum], [Classic], [Matrix 4], [Matrix 6], [TriLine Corner], [TriLine].
7. Flat Design: **[Basix 1]** **[Basix 2]**

8. Custom Design: Provide custom CNC routing of patterns, images, and designs as indicated on Drawings.
9. Size: Nominal 24 inch by 24 inch.
10. Panel Thickness: 2-3/8 inch total thickness. (Patterned panels and Basix 2)
11. Panel Thickness: 1-5/8 inch total thickness. (Basix 1)

EDIT NOTE: CUSTOM COLORS ARE AVAILABLE.

EDIT NOTE: HYPALON USED IN THESE MATERIALS HAS BEEN SPECIALLY FORMULATED BY DUPONT CORPORATION FOR ILLBRUCK TO IMPROVE STAIN RESISTANCE AND CLEANABILITY.

12. Standard Colors: Hypalon-coated [**Arctic White**] [**Black Onyx**] [**Gray Mist**] [**Almond**]
13. Special Order Colors: Hypalon-coated [**Dove**] [**Ocean**] [**Sunset**] [**Wheat**] [**Mica**] [**Jasper**]. Minimum orders and longer lead time may apply.
14. [**Custom colors are available**]. Minimum orders and longer lead time may apply.
15. Sound Absorption Coefficients (for lay-in panels): Type E mountings (16 inch air space), ASTM C423-90a.

<u>Frequencies (Hz)</u>	<u>125</u>	<u>250</u>	<u>500</u>	<u>1,000</u>	<u>2,000</u>	<u>4,000</u>	<u>NRC</u>
Basix 1:	0.63	0.54	0.81	1.24	1.30	1.36	0.95
Basix 2:	0.43	0.73	1.18	1.44	1.44	1.54	1.20
CONTOUR Pat.	0.61	0.67	1.01	1.33	1.43	1.56	1.10

SELECT THE FOLLOWING SYSTEM FOR ADHESIVE APPLIED PANELS

- B.** Acoustical Ceiling Panels (for adhesive applied applications): No-sag acoustical foam panel consisting of lightweight, open-cell willtec® foam core, with applied *Hypalon*® finish surface, **and without 5/8 inch foil backed, honeycomb substrate.**

1. COUNTOUR Ceilings
 - a. Density: 0.5 to 0.7 pounds per cubic foot.
 - b. Tensile Strength: 8 PSI.
 - c. Flammability: Class 1 per ASTM E84.
 - d. Flame Spread: 25
 - e. Smoke Density: 65

THIRTEEN SCULPTURED DESIGNS AVAILABLE CUSTOM DESIGN CEILING
TILES ARE AVAILABLE. CONTACT ILLBRUCK ARCHITECTURAL PRODUCTS
FOR MORE INFORMATION.

- f. Patterned Design: [Crosspoint], [Allusion], [Mosaic], [Matrix 2],
[Vision], [Horizon], [Panorama], [Spectrum], [Classic], [Matrix 4],
[Matrix 6], [TriLine Corner], [TriLine].
- g. Flat Design: Basix
- h. Custom Design: Provide custom CNC routing of patterns, images,
and designs as indicated on Drawings.
- i. Size: Nominal 24 inch by 24 inch.
- j. Panel Thickness: 1-3/4 inch total thickness.

EDIT NOTE: CUSTOM COLORS ARE AVAILABLE.

EDIT NOTE: HYPALON USED IN THESE MATERIALS HAS BEEN SPECIALLY
FORMULATED BY DUPONT CORPORATION FOR ILLBRUCK TO IMPROVE STAIN
RESISTANCE AND CLEANABILITY.

- k. Standard Colors: Hypalon-coated [**Arctic White**] [**Black Onyx**]
[**Gray Mist**] [**Almond**]
- l. Special Order Colors: Hypalon-coated [**Dove**] [**Wheat**] [**Ocean**]
[**Sunset**] [**Mica**] [**Jasper**]. Minimum orders and longer lead time may
apply.
- m. [**Custom colors are available**]. Minimum orders and longer lead
time may apply.
- n. Sound Absorption Coefficients (for adhesive applied panels): Type A
mountings, ASTM C423-90a.

<u>Frequencies (Hz)</u>	<u>125</u>	<u>250</u>	<u>500</u>	<u>1,000</u>	<u>2,000</u>	<u>4,000</u>	<u>NRC</u>
Basix:	0.08	0.17	0.60	0.88	0.88	0.93	0.65
Patterns:	0.22	0.29	0.79	0.93	0.94	1.00	0.75

2.03 SUSPENSION SYSTEM

SELECT THE FOLLOWING SUSPENSION SYSTEM ARTICLE, AND ONE OF THE
TWO PARAGRAPHS, WHEN INSTALLING PANELS BY LAY-IN APPLICATION.
THIS ARTICLE IS NOT NECESSARY FOR ADHESIVE APPLIED PANEL
APPLICATIONS.

- A. Suspension System: Refer to Section [**09120**] [**09510**] for acoustical panel
support system.

OR

- B. Suspension System: [Architect to insert acoustical tile ceiling system
suspension system specifications here.]

SELECT THE FOLLOWING ACCESSORIES ARTICLE WHEN INSTALLING PANELS WITH ADHESIVE. THIS ARTICLE IS NOT NECESSARY FOR LAY-IN PANEL APPLICATIONS.

2.04 ACCESSORIES

- A. Adhesive: Non-toxic, water-based adhesive, for use with foam products.
 - 1. Illbruck AcouSTIC™ foam adhesive or approved substitute.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper and or timely completion.
 - 1. Do not proceed until unsatisfactory conditions have been corrected.

USE THE FOLLOWING PREPARATION ARTICLE FOR ADHESIVE APPLIED INSTALLATIONS ONLY.

3.02 PREPARATION

- A. Prior to installing ceiling panels, make certain that surfaces to which adhesive will be applied are clean and free of dust, dirt, and other residues that would inhibit a proper bond.

3.03 INSTALLATION

- A. General Installation:
 - 1. Coordinate with mechanical and electrical installers in locating and spacing fixtures, diffusers, and similar items located in ceiling.
 - 2. Lay out pattern in compliance with reflected ceiling plans. Where not otherwise indicated, lay out in such manner that margins on opposite sides of rooms are equal or greater than 1/2 tile in width.
 - 3. Where acoustical ceilings of different heights abut, install acoustical material matching ceiling at vertical surface at ceiling break match ceiling, unless otherwise indicated.
- B. Suspension system: Refer to Section **[09120]** **[09510]** for installation.

OR

- C. Suspension System: [Architect to insert acoustical tile ceiling system suspension system installation requirements here.]
- D. Acoustical Panels:
 - 1. Refer to manufacturer's written installation instructions.

USE THE FOLLOWING THREE PARAGRAPHS FOR ADHESIVELY APPLIED INSTALLATION.

2. Cut adhesive tube end to produce a 1/4 inch bead
3. Apply adhesive to panels per manufacturer's recommended pattern and press panel firmly into place per manufacturer's installation requirements.
4. Install panels true to lines and plane indicated.

USE THE FOLLOWING PARAGRAPH FOR LAY-IN APPLIED INSTALLATION.

5. Install lay in acoustical ceiling panels flush and level in suspension system.
6. Basix panels (non-patterned panels) : Use straight edge to cut panels to fit.
 - a. Sculpted Panels: Manufacturer recommends use of Basix style where non-full sized panels occur.

CUTTING OF SCULPTED PANELS MAY BE DONE, HOWEVER STRAIGHT CUT PANELS AT WALL IS RECOMMENDED. BECAUSE OF THE FINISH SURFACE, DO NOT ATTEMPT TO BEVEL CUT SCULPTED PANELS. CONSULT MANUFACTURER FOR SPECIFIC CUTTING INSTRUCTIONS.

7. Install panels with hand protection to avoid soiling.
8. Install panels having a directional pattern or to conform to custom design.
9. Press panels from above to set into grids. Do not pull from face.

3.04 CLEANING

- A. Clean adjacent surfaces and remove unused product and debris from site.
- B. After installation is completed, clean soiled surfaces of materials.
- C. Remove and reinstall improperly installed material.
- D. Remove damaged or discolored material, or material that cannot be properly cleaned, and install new material.

END OF SECTION

SECTION 09641

PREFINISHED WOOD STRIP FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Prefinished hardwood strip flooring.

B. Related sections:

1. Section 03300 - Cast-in-Place Concrete: Concrete slab to receive wood flooring.
2. Section 06100 - Rough Carpentry: Wood sub floor to receive wood flooring.
3. Section 06200 - Finish Carpentry: Wood base for wood floor.

1.2 REFERENCES

A. NOFMA - National Oak Flooring Manufacturers Association Grading Standards.

1.3 SUBMITTALS

A. Provide in accordance with Section 01330 - Submittal Procedures:

1. Documentation showing compliance with manufacturer and installer qualifications specified in Paragraph 1.4.
2. Product data for hardwood flooring.
3. Shop drawings indicating floor joint pattern, attachment and termination details, and provisions for expansion and contraction.
4. Three [6 inches] [152 mm] minimum length samples of hardwood flooring illustrating grain, finish, color range, and sheen.
5. Manufacturer's installation instructions.
6. Manufacturer's recommended maintenance procedures and maintenance materials.
7. Copy of warranty required by paragraph 1.6 for review by Architect.

1.4 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacture of prefinished hardwood flooring with 5 years successful experience.

B. Installer: Company specializing in installing hardwood flooring with minimum 5 years successful experience.

Select/Clear Grade: Uniform color, no knots, and longest average lengths of the three available grades.

Natural/No. 1 Grade: Variable color, some small pin knots, and some mineral coloring.

Rustic/No. 2 Grade: Varying colors, solid knots, and mineral streaks.

C. Hardwood shall meet grading requirements of NOFMA. Provide species and grade stamp on underside of each piece of flooring.

D. Hardwood shall be kiln dried with moisture content ranging from 6 to 9 percent.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Do not install wood flooring until wet construction work and majority of overhead work is completed.

B. Provide permanent heat, light, and ventilation prior to installation.

C. Maintain room temperature at 65 degrees F for 2 days prior to delivery of materials, during installation, and after installation.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Bellawood, 1104 Roslyn Road. Colonial Heights, Virginia 23834; 804-524-9460.

B. Manufacturers of equivalent products submitted and approved in accordance with Section 01630 - Product Substitution Procedures.

2.2 SOLID HARDWOOD STRIP FLOORING

A. Type: [3/8 inch] [10 mm] thick, prefinished, solid hardwood strip flooring.

1. Species: [Bolivian Rosewood] [Brazilian Cherry] [Brazilian Koa (Tigerwood)] [Brazilian Mesquite] [Purple Heart] [American Cherry] [Northern Maple] [Red Oak] [Santos Mahogany] [Golden Teak] [Brazilian Teak].

2. Grade: Select/Clear.

3. Width: [3 inches.] [76 mm.]

4. Length: Random lengths with [72 inches] [1829 mm] maximum and [36 inches] [914 mm] average.

5. Edge: Tongue and groove.

6. End: End matched, tongue and groove.

B. Type: [1/2 inch] [13 mm] thick, prefinished, solid hardwood strip flooring.

1. Species: [Australian Cypress] [Brazilian Cherry Lite] [Red Oak] [Maple].
2. Grade: Natural.
3. Width: [3 inches.] [76 mm.]
4. Length: Random lengths with [72 inches] [1829 mm] maximum and [36 inches] [914 mm] average.
5. Edge: Tongue and groove.
6. End: End matched, tongue and groove.

C. Type: [3/4 inch] [19 mm] thick, prefinished, solid hardwood strip flooring.

1. Species: [American Cherry] [American Walnut] [Ash] [Australian Cypress] [Beech] [[Birch] [Bolivian Rosewood] [Brazilian Cherry] [Brazilian Cherry Lite] [Brazilian Walnut] [Northern Maple] [Purple Heart] [Red Oak] [Santos Mahogany] [White Oak] [Brazilian Koa (Tigerwood)] [Brazilian Teak] [Golden Teak] [Bloodwood].
2. Grade: [Select/Clear.] [Natural No. 1] [Rustic No. 2.]
3. Width: [[2-1/4] [3-1/4] [4] [5] [6] inches.] [[57] [83] [102] [127] [152] mm.]
4. Length: Random lengths with [72 inches] [1829 mm] maximum [and [55 inches] [1397 mm] average].
5. Edge: Tongue and groove.
6. End: End matched, tongue and groove.

2.3 ENGINEERED WOOD STRIP FLOORING

A. Type: [7/16 inch] [11 mm] thick, prefinished, engineered wood strip flooring.

1. Construction: 5 ply fabricated by laminating 2 mm thick hardwood veneer ply to 4 ply wood base.
2. Veneer species: [American Cherry] [Brazilian Cherry] [Maple] [Red Oak].
3. Veneer grade: Select/Clear.
4. Width: [3 inches.] [76 mm.]
5. Length: Random lengths with [72 inches] [1829 mm] maximum and [55 inches] [1397 mm] average.
6. Edge: Tongue and groove.
7. End: End matched, tongue and groove.

B. Type: [9/16 inch] [14 mm] thick, prefinished, engineered, 3 strip wood flooring.

1. Construction: 4 ply fabricated by laminating 3.5 mm hardwood veneer ply to 3 ply wood base. Veneer ply to consist of 3 equal wood strips.
2. Veneer species: [Brazilian Cherry] [Maple] [Red Oak] [Horizontal Natural Bamboo] [Horizontal Carbonized Bamboo].
3. Veneer grade: Select/Clear.
4. Width: [7 inches.] [178 mm.]
5. Length: [72 inches] [1829 mm].
6. Edge: Tongue and groove.
7. End: End matched, tongue and groove.

C. Type: [5/8 inch] [16 mm] thick, prefinished, engineered bamboo strip flooring.

1. Construction: 3 ply solid bamboo strip flooring fabricated with hot glue mechanical press process.
2. Bamboo type: [Vertical natural] [Horizontal natural] [Vertical carbonized] [Horizontal carbonized] color and pattern.
3. Width: [3-5/8 inches.] [92 mm.]
4. Length: [[36] [72] inches] [[914] [1829] mm].
5. Edge: Tongue and groove.
6. End: End matched, tongue and groove.

2.4 FACTORY FINISHING

A. Factory machine sand hardwood strip flooring to smooth even finish with no evidence of sander marks. Use 3 sequential sanding operations.

B. Apply one seal coat followed by 7 finish coats of photo reactive urethane. Cure by ultra-violet light. 5 finish coats shall be aluminum oxide based.

C. Total finish thickness; 3.2 mils.

2.5 ACCESSORIES

A. Sub floor filler: White premix latex type as recommended by flooring manufacturer.

B. Adhesive: Waterproof type as recommended by flooring manufacturer.

C. Vapor retarder:

1. [Black polyethylene sheeting, 6 mils thick.] [Rosin paper.]

2. Tape: Reinforced, self-adhesive, [2 inches] [51 mm] minimum width.

D. Underlayment: [1/8 inch] [3 mm] thick foam underlayment in [48 inches] [1219 mm] wide rolls: Bellawood Foam as provided by Bellawood Hardwood Floors.

PART 3 - EXECUTION

Adhesive applied over concrete substrate. Method suitable for 3/8 and 3/4 solid flooring and 7/16, 9/16, and 5/8 inch (11, 14, and 16 mm) engineered flooring.

Stapled to plywood or board sub floor. Method suitable for 7/16, 9/16, and 5/8 inch (11, 14, and 16 mm) engineered flooring.

Floated over resilient foam layer with flooring strip edges glued. Method suitable only for 9/16 inch (14 mm) engineered flooring.

3.1 PREPARATION

A. Allow wood flooring materials to become acclimated to finished building heat and humidity before installing.

B. Coordinate installation of hardwood flooring with construction of wood sub floor specified in Section 06100 - Rough Carpentry. Ensure that framing members are rigid and sub floor is level, smooth, and securely attached with ends over firm bearing.

C. Coordinate installation of hardwood flooring with construction of concrete substrate specified in Section 03300 - Cast-in-Place Concrete.

1. Coordinate required depth of recess with installation of concrete sub floor such that wood flooring is flush with adjacent floor finishes.

2. Prior to installation, inspect concrete substrate to determine existence of moisture, major cracking or settlement, deterioration of concrete, oil, grease, and other deficiencies that might adversely affect installation of wood flooring. Ensure:

a. Concrete is completely cured, 30 days minimum.

b. Moisture content of substrate is within 4 percent of wood flooring to be installed.

c. Curing compound has not been applied to slabs scheduled to receive adhesive installed wood flooring.

d. Verify that concrete slab has neutral alkalinity.

e. Concrete surfaces are smooth, flat, and free from irregularities. Maximum acceptable variation in any direction shall be [1/8 inch in 10 feet.] [3 mm in 3 m.]

3. Fill low spots, cracks, joints, holes, and other defects, with floor filler. Apply, trowel, and float filler to leave smooth, flat, hard surface. Prohibit traffic until cured.

D. Report deficiencies to Architect and do not proceed with flooring installation until resolution.

E. Vacuum or broom clean floor surfaces immediately before installation.

3.2 INSTALLATION

A. Install flooring in accordance with manufacturer's instructions and approved shop drawings.

B. Allow [3/8 inch] [10 mm] voids for expansion and movement of wood flooring at walls and permanent obstructions.

C. Spread adhesive with appropriate notched trowel. After spreading adhesive, promptly apply flooring. Spread only enough adhesive to permit installation of flooring materials before initial set.

D. Adhere wood flooring strips without cracks and voids. Ensure that each floor strip is completely adhered to substrate.

E. Immediately remove excess adhesive from pre-finished surface of wood flooring.

F. Lay hardwood strip flooring over wood sub floor parallel with length of room.

G. Blind staple flooring to sub floor with power driver. Space fasteners at [12 inches.] [305 mm.]

H. Vapor retarder: Place sheet over sub floor. Lap edges and ends [6 inches] [152 mm] minimum and tape seal. Spot glue in place.

I. Install foam underlayment over vapor retarder. Butt joints without overlapping.

J. Lay hardwood strip flooring over foam underlayment parallel with length of room. Join wood flooring strips with adhesive.

K. Exercise care that adhesive is not applied to pre-finished wood surface. Immediately remove adhesive smears from finish.

3.3 CLEANING AND PROTECTION

A. Remove unused materials and debris. Clean floor surface.

B. Protect completed wood flooring from construction operations with heavy paper or plywood sheets. Take necessary precautions to eliminate damage from dropped objects.

C. Instruct Owner's designated representatives in wood flooring maintenance.

END OF SECTION

SECTION 09 81 00
SOUNDPROOFING INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

Acoustical Insulation for interior walls

1.02 RELATED SECTIONS

- A. 09 29 16- Interior Non-Structural Metal Studs
- B. 09 21 16- 1.02- GYMPSON BOARD ASSEMBLY

1.03 REFERENCES

- A. ASTM C 665- QUIETZONE ACOUSTIC BATTS

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of Section 01 65 00.
- B. Store and protect products under provisions of Section 01 66 00.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Insulation must be kept dry prior to installation

PART 2 PRODUCTS

2.01 MATERIALS

- A. This fiber glass acoustic batt insulation is engineered to absorb sound vibrations.

QuietZone Acoustic Batts can be installed between interior walls, floors and ceilings constructed with standard wood studs or QuietZone Acoustic Wall Framing. Dimensions:

15" x 93" and 3.5" thick.

PART 3 EXECUTION

3.01 INSTALLATION

A. Between Metal Studs

Friction-fit insulation between studs after cover material has been installed on one side of the cavity. Use wire or metal straps to hold insulation in place in applications without a cover material or where the stud depth is larger than the insulation thickness. When faced insulation is used, the attachment flanges may be taped to the face of the metal stud prior to applying the interior finish.

B. Between Wood Studs

Friction-fit unfaced insulation between studs after cover material has been installed on one side of the cavity. Use wire or metal straps to hold insulation in place in applications without a cover material. When faced insulation is used, staple attachment flanges to face or side of stud every 8 to 12 inches to prevent gaps along the edge of the vapor retarder.

3.02 FIELD QUALITY CONTROL

- A. FIELD TESTING WILL BE PERFORMED UNDER PROVISIONS OF SECTION 01 45 00.
- B. Always check with your local building code official regarding local requirements affecting installation of all building components.

END OF SECTION

SECTION 09 93 00

STAINS AND TRANSPARENT FINISHES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wood stains and transparent finishes.
- B. Wood repair products.

1.02 RELATED SECTIONS

- A. Section 06200 - Finish Carpentry: Wood items for transparent finish.
- B. Section 06400 - Architectural Woodwork: Wood items for transparent finish.
- C. Section 09900 - Paints and Coatings: Opaque finishes.

1.03 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. [Product Data]: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and finishes.
- D. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color and finish on wood of type to be finished.

1.04 QUALITY ASSURANCE

- A. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Finish areas designated by Architect.
 - 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
 - 3. Refinish mock-up area as required to produce acceptable work.

1.05 DELIVERY, STORAGE, AND HANDLING

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

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

1.06 PROJECT CONDITIONS

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

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturer: Minwax Company; 10 Mountainview Road, Upper Saddle River, NJ 07458-1934. ASD. Tel: (201) 818-7500 or (800) 523-9299. Fax: (201) 818-7605. www.minwax.com.
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.02 MATERIALS - GENERAL REQUIREMENTS

- A. Stains and Coatings - General:
 - 1. Unless otherwise indicated, provide factory-mixed materials. Mix coatings to correct consistency in accordance with manufacturer's instructions before application. Do not reduce, thin, or dilute coatings or add materials unless such procedure is specifically described in manufacturer's product instructions.
 - 2. Supply each material in quantity required to complete entire project's work from a single production run.
- B. Back Primer for Transparent-Finished Woodwork:
 - 1. Same as finish coat.
 - 2. 1 coat nitrocellulose lacquer sanding sealer; Minwax Lacquer Sanding Sealer (for use under lacquer).
 - 3. 1 coat vinyl toluene copolymer; Minwax Sanding Sealer (for use under polyurethane).
- C. Wood Filler: Use one of the following, as appropriate to repair required:
 - 1. Shallow Nicks and Scratches: Minwax Blend-Fil Pencil.
 - 2. Minor Scratches, Gouges, and Nail Holes: Minwax Wood Putty.
 - 3. Gouges, Holes, Knot Holes, and Damaged Areas: Two-part, Minwax High Performance Wood Filler or Minwax Stainable Wood Filler.
 - 4. To Reinforce Decayed Wood: Minwax High Performance Wood Hardener.
- D. Stain Touch-Up: Minwax Wood Finish Stain Marker.

- E. Shellac, Lacquer, and Varnish Remover: Minwax Antique Furniture Refinisher.
- F. Application Accessories: Provide all primers, sealers, cleaning agents, tools, cleaning cloths, sanding materials, and clean-up materials required.

2.03 INTERIOR FINISH SYSTEMS

- A. Interior Wood - Natural Oiled Finish: Including trim, molding, and _____.
 - 1. Low Luster Finish: 2 coats tung oil, hand rubbed; Minwax Tung Oil Finish.
 - 2. Low Luster Finish: 3 coats tung oil, hand rubbed; Minwax Tung Oil Finish.
- B. Interior Wood - Natural Clear Finish: Floors, Stairs and _____.
 - 1. Satin: 3 coats linseed oil-modified polyurethane; Minwax Fast-Drying Polyurethane.
 - 2. Satin: 3 coats linseed oil-modified polyurethane; Minwax Super Fast-Drying Polyurethane for Floors.
 - 3. Satin, Minwax Water Based:
 - a. 1 base coat, water dispersible oil-modified urethane; Minwax Water Based Base Coat.
 - b. 3 finish coats, water dispersible oil-modified urethane; Minwax Water Based Polyurethane for Floors.
 - 4. Semi-Gloss: 3 coats linseed oil-modified polyurethane; Minwax Fast-Drying Polyurethane.
 - 5. Semi-Gloss: 3 coats linseed oil-modified polyurethane; Minwax Super Fast-Drying Polyurethane for Floors.
 - 6. Semi-Gloss, Minwax Water Based:
 - a. 1 base coat, water dispersible oil-modified urethane; Minwax Water Based Base Coat.
 - b. 3 finish coats, water dispersible oil-modified urethane; Minwax Water Based Polyurethane for Floors.
 - 7. Gloss: 3 coats linseed oil-modified polyurethane; Minwax Fast-Drying Polyurethane.
 - 8. Gloss: 3 coats linseed oil-modified polyurethane; Minwax Super Fast-Drying Polyurethane for Floors.
 - 9. Gloss, Minwax Water Based:
 - a. 1 base coat, water dispersible oil-modified urethane; Minwax Water Based Base Coat.
 - b. 3 finish coats, water dispersible oil-modified urethane; Minwax Water Based Polyurethane for Floors.
- C. Interior Wood - Natural Clear Finish: Including trim, doors, frames, cabinets, paneling, and _____, not for use on floors or stairs
 - 1. Satin: 2 coats linseed oil-modified polyurethane; Minwax Fast-Drying Polyurethane.
 - 2. Satin: 3 coats acrylic copolymer/aliphatic polyurethane; Minwax Polycrylic Protective Finish.
 - 3. Satin: 3 coats nitrocellulose lacquer; Minwax Clear Brushing Lacquer.
 - 4. Satin: 4 coats nitrocellulose lacquer; Minwax Clear Brushing Lacquer.

5. Semi-Gloss: 2 coats linseed oil-modified polyurethane; Minwax Fast-Drying Polyurethane.
6. Semi-Gloss: 3 coats acrylic copolymer/aliphatic polyurethane; Minwax Polycrylic Protective Finish.
7. Semi-Gloss: 3 coats nitrocellulose lacquer; Minwax Clear Brushing Lacquer.
8. Semi-Gloss: 4 coats nitrocellulose lacquer; Minwax Clear Brushing Lacquer.
9. Gloss: 2 coats linseed oil-modified polyurethane; Minwax Fast-Drying Polyurethane.
10. Gloss: 3 coats acrylic copolymer/aliphatic polyurethane; Minwax Polycrylic Protective Finish.
11. Gloss: 3 coats nitrocellulose lacquer; Minwax Clear Brushing Lacquer.
12. Gloss: 4 coats nitrocellulose lacquer; Minwax Clear Brushing Lacquer.

D. Interior Wood - Natural Clear Finish: Including trim, doors, frames, and _____, not for use on floors or stairs.

1. Preparation as specified by manufacturer.
2. Satin: 2 coats polyurethane; Minwax Wipe-On Poly.
3. Satin: 3 coats polyurethane; Minwax Wipe-On Poly.
4. Gloss: 2 coats polyurethane; Minwax Wipe-On Poly.
5. Gloss: 3 coats polyurethane; Minwax Wipe-On Poly.

E. Interior Wood Finish - Floors and Stairs:

1. Stain: Minwax Wood Finish.
 - a. 1 coat modified linseed oil/hydrocarbon resin stain; Minwax Wood Finish.
 - b. 2 coats modified linseed oil/hydrocarbon resin stain; Minwax Wood Finish.
 - c. 1 coat modified linseed oil/hydrocarbon resin stain; Wood Finish Aerosol Spray.
 - d. 2 coats modified linseed oil/hydrocarbon resin stain; Wood Finish Aerosol Spray.
 - e. Colors: Indicated on drawings.
 - f. Colors: To be selected by Architect from manufacturer's full range of available colors.
 - g. Color as follows:
 - 1) Cherry 235
 - 2) Colonial Maple 223
 - 3) Dark Walnut 2716
 - 4) Driftwood 2126
 - 5) Early American 230
 - 6) Ebony 2718
 - 7) English Chestnut 233
 - 8) Fruitwood 241
 - 9) Golden Oak 210B
 - 10) Golden Pecan 245
 - 11) Ipswich Pine 221
 - 12) Jacobean 2750
 - 13) Natural 209
 - 14) Pickled Oak 260
 - 15) Provincial 211
 - 16) Puritan Pine 218

- 17) Red Mahogany 225
 - 18) Red Oak 215
 - 19) Special Walnut 224
 - 20) Sedona Red 222
2. Stain: Minwax Gel Stain.
 - a. 1 coat thixotropic soya alkyd non-drip stain and finish; Minwax Gel Stain.
 - b. 2 coats thixotropic soya alkyd non-drip stain and finish; Minwax Gel Stain
 - c. Colors: Indicated on drawings
 - d. Colors: To be selected by Architect from manufacturer's full range of available colors.
 - e. Color as follows:
 - 1) Aged Oak
 - 2) Antique Maple
 - 3) Brazilian Rosewood
 - 4) Cherrywood
 - 5) Chestnut
 - 6) Honey Maple
 - 7) Mahogany
 - 8) Walnut
 3. Satin: 2 coats linseed oil-modified polyurethane; Minwax Fast-Drying Polyurethane.
 4. Satin: 2 coats linseed oil-modified polyurethane; Minwax Super Fast-Drying Polyurethane for Floors.
 5. Satin: 3 coats water dispersible oil-modified urethane; Minwax Water Based Polyurethane for Floors.
 6. Semi-Gloss: 2 coats linseed oil-modified polyurethane; Minwax Fast-Drying Polyurethane.
 7. Semi-Gloss: 2 coats linseed oil-modified polyurethane; Minwax Super Fast-Drying Polyurethane for Floors.
 8. Semi-Gloss: 3 coats water dispersible oil-modified urethane; Minwax Water Based Polyurethane for Floors.
 9. Gloss: 2 coats linseed oil-modified polyurethane; Minwax Fast-Drying Polyurethane.
 10. Gloss: 2 coats linseed oil-modified polyurethane; Minwax Super Fast-Drying Polyurethane for Floors.
 11. Gloss: 3 coats water dispersible oil-modified urethane; Minwax Water Based.
- F. Interior Wood - Stain with Clear Finish - Oil-Based Stain: Including trim, doors, frames, cabinets, paneling, and _____, but not floors or stairs.
1. On Softwoods: 1 coat Minwax Pre-Stain Wood Conditioner.
 2. Stain: Minwax Wood Finish.
 - a. 1 coat modified linseed oil/hydrocarbon resin stain; Minwax Wood Finish.
 - b. 2 coats modified linseed oil/hydrocarbon resin stain; Minwax Wood Finish.
 - c. Colors: Indicated on drawings.
 - d. Colors: To be selected by Architect from manufacturer's full range of available colors.
 - e. Color as follows:
 - 1) Colonial Maple 223

- 2) Cherry 235
 - 3) Dark Walnut 2716
 - 4) Driftwood 2126
 - 5) Early American 230
 - 6) Ebony 2718
 - 7) English Chestnut 233
 - 8) Fruitwood 241
 - 9) Golden Oak 210B
 - 10) Golden Pecan 245
 - 11) Ipswich Pine 221
 - 12) Jacobean 2750
 - 13) Natural 209
 - 14) Pickled Oak 260
 - 15) Provincial 211
 - 16) Puritan Pine 218
 - 17) Red Mahogany 225
 - 18) Red Oak 215
 - 19) Sedona Red 222
 - 20) Special Walnut 224
3. Stain: Wood Finish Aerosol Spray.
 - a. 1 coat modified linseed oil/hydrocarbon resin stain; Wood Finish Aerosol Spray.
 - b. 2 coats modified linseed oil/hydrocarbon resin stain; Wood Finish Aerosol Spray.
 - c. Colors: Indicated on drawings.
 - d. Colors: To be selected by Architect from manufacturer's full range of available colors.
 - e. Color as follows:
 - 1) Cherry 235
 - 2) Dark Walnut 2716
 - 3) Early American 230
 - 4) Golden Oak 210B
 - 5) Golden Pecan 245
 - 6) Provincial 211
 - 7) Red Mahogany 225
 - 8) Red Oak 215
 - 9) Special Walnut 224
 4. Stain: Minwax Pastels.
 - a. 1 coat alkyd and oil-modified polyurethane stain; Minwax Pastels.
 - b. 2 coats alkyd and oil-modified polyurethane stain; Minwax Pastels.
 - c. Colors: Indicated on drawings.
 - d. Colors: To be selected by Architect from manufacturer's full range of available colors.
 - e. Color as follows:
 - 1) Pale Grey
 - 2) Slate Blue
 - 3) Summer Straw
 - 4) Winter White
 5. Stain: Minwax Gel Stain.

- a. 1 coat thixotropic soya alkyd non-drip stain and finish; Minwax Gel Stain.
 - b. 2 coats thixotropic soya alkyd non-drip stain and finish; Minwax Gel Stain.
 - c. Colors: Indicated on drawings.
 - d. Colors: To be selected by Architect from manufacturer's full range of available colors.
 - e. Color as follows:
 - 1) Aged Oak
 - 2) Antique Maple
 - 3) Brazilian Rosewood
 - 4) Cherrywood
 - 5) Chestnut
 - 6) Honey Maple
 - 7) Mahogany
 - 8) Walnut
6. Low Luster Finish: 2 coats paste wax, hand rubbed; Minwax Paste Finishing Wax.
 7. Satin: 2 coats linseed oil-modified polyurethane; Minwax Fast-Drying Polyurethane.
 8. Satin: 3 coats acrylic copolymer/aliphatic polyurethane; Minwax Polycrylic Protective Finish.
 9. Satin: 3 coats nitrocellulose lacquer; Minwax Clear Brushing Lacquer.
 10. Satin: 4 coats nitrocellulose lacquer; Minwax Clear Brushing Lacquer.
 11. Satin: 2 coats polyurethane; Minwax Wipe-On Poly.
 12. Satin: 3 coats polyurethane; Minwax Wipe-On Poly.
 13. Semi-Gloss: 2 coats linseed oil-modified polyurethane; Minwax Fast-Drying Polyurethane.
 14. Semi-Gloss: 3 coats acrylic copolymer/aliphatic polyurethane; Minwax Polycrylic Protective Finish.
 15. Semi-Gloss: 3 coats nitrocellulose lacquer; Minwax Clear Brushing Lacquer.
 16. Semi-Gloss: 4 coats nitrocellulose lacquer; Minwax Clear Brushing Lacquer.
 17. Gloss: 3 coats nitrocellulose lacquer; Minwax Clear Brushing Lacquer.
 18. Gloss: 4 coats nitrocellulose lacquer; Minwax Clear Brushing Lacquer.
 19. Gloss: 2 coats polyurethane; Minwax Wipe-On Poly.
 20. Gloss: 3 coats polyurethane; Minwax Wipe-On Poly.
- G. Interior Wood - Stain with Clear Finish: Including trim, doors, frames, cabinets, paneling, and _____, not for use on floors or stairs.
1. 1 coat Minwax Water Based Pre-Stain Wood Conditioner.
 2. Stain: Minwax Water Based Wood Stain.
 - a. 1 coat water-based stain; Minwax Water Based Wood Stain.
 - b. 2 coats water-based stain; Minwax Water Based Wood Stain
 - c. Colors: Indicated on drawings.
 - d. Colors: To be selected by Architect from manufacturer's full range of available colors.
 - e. Color as follows:
 - 1) White Wash Pickling Stain
 - 2) White Oak
 - 3) Rose Wood
 - 4) English Oak

- 5) Vermont Maple
- 6) Colonial Pine
- 7) American Walnut
- 8) Natural Peach
- 9) Desert Sand
- 10) Natural Beige
- 11) Latte
- 12) Cocoa
- 13) Oriental Ginger
- 14) Cinnamon
- 15) Honey Comb
- 16) Terracotta
- 17) Summer Rose
- 18) Fruit Punch
- 19) China Red
- 20) Mandarin Orange
- 21) Spice
- 22) Honeydew
- 23) Parchment
- 24) Lemongrass
- 25) Harvest Grain
- 26) Mediterranean Olive
- 27) Mustard
- 28) Winter Moss
- 29) Coffee
- 30) Antique Jade
- 31) Verdigris
- 32) Green Tea
- 33) Forest Green
- 34) Botanical
- 35) Safari
- 36) Driftwood
- 37) Tender Green
- 38) Mint Cream
- 39) Baltic Green
- 40) Green Bayou
- 41) Northern Ivy
- 42) Early Spring
- 43) Onyx
- 44) Pearl Gray
- 45) Winter Sky
- 46) River Stone
- 47) Charcoal Gray
- 48) Island Water
- 49) Slate
- 50) Deep Ocean
- 51) Aegean
- 52) Blue Hawaii
- 53) Pale Pink

- 54) Buckskin
 - 55) Wild Berry
 - 56) Royal Mahogany
 - 57) Cherry Blossom
 - 58) Burgundy
 - 59) Dutch Chocolate
 - 60) Salmon
 - 61) Woodrose
 - 62) Cafe Latte
 - 63) Dusty Rose
 - 64) Antique Rose
 - 65) Sangria
 - 66) Cinnamon Toast
 - 67) Harvest Gold
 - 68) Olive Green
 - 69) Antique Red
 - 70) Rustic Orange
 - 71) Hunter Green
 - 72) Vintage Burgundy
 - 73) Midnight Blue
 - 74) Classic Black
- 3. Low Luster Finish: 2 coats paste wax, hand rubbed; Minwax Paste Finishing Wax.
 - 4. Satin: 2 coats linseed oil-modified polyurethane; Minwax Fast-Drying Polyurethane.
 - 5. Satin: 3 coats acrylic copolymer/aliphatic polyurethane; Minwax Polycrylic Protective Finish.
 - 6. Satin: 3 coats nitrocellulose lacquer; Minwax Clear Brushing Lacquer.
 - 7. Satin: 4 coats nitrocellulose lacquer; Minwax Clear Brushing Lacquer.
 - 8. Semi-Gloss: 2 coats linseed oil-modified polyurethane; Minwax Fast-Drying Polyurethane.
 - 9. Semi-Gloss: 3 coats acrylic copolymer/aliphatic polyurethane; Minwax Polycrylic Protective Finish.
 - 10. Semi-Gloss: 3 coats nitrocellulose lacquer; Minwax Clear Brushing Lacquer.
 - 11. Semi-Gloss: 4 coats nitrocellulose lacquer; Minwax Clear Brushing Lacquer.
 - 12. Gloss: 3 coats nitrocellulose lacquer; Minwax Clear Brushing Lacquer.
 - 13. Gloss: 4 coats nitrocellulose lacquer; Minwax Clear Brushing Lacquer.

H. Interior Wood - Stain with Clear Finish - One-Step: Including trim, doors, frames, cabinets, paneling, and _____, but not floors or stairs.

- 1. On Softwoods: 1 coat Minwax Pre-Stain Wood Conditioner.
- 2. Soft Luster: 2 coats thixotropic alkyd, soya oil-modified polyurethane stain and finish; Minwax Woodsheen Rubbing Oil Stain & Finish.
 - a. Colors: Indicated on drawings.
 - b. Colors: To be selected by Architect from manufacturer's full range of available colors.
 - c. Color as follows:
 - 1) Colonial Walnut
 - 2) Dove White

- 3) Manor Oak
- 4) Natural
- 5) Plantation Walnut
- 6) Rosewood
- 7) Windsor Oak
3. Satin: 2 coats soya uralkyd stain and finish; Minwax Polylshades.
4. Gloss: 2 coats soya uralkyd stain and finish; Minwax Polylshades.
 - a. Colors: Indicated on drawings.
 - b. Colors: To be selected by Architect from manufacturer's full range of available colors.
 - c. Color as follows:
 - 1) Antique Walnut
 - 2) Bombay Mahogany
 - 3) Classic Oak
 - 4) Honey Pine
 - 5) Natural Cherry
 - 6) Old Maple
 - 7) Pecan
 - 8) Royal Walnut
 - 9) Tudor

I. Interior Wood - Simulated Wood Grain Finish: Including trim, doors, frames, cabinets, and _____.

1. Minwax Gel Stain: 2 coats thixotropic soya alkyd non-drip stain and finish.
 - a. Colors: Indicated on drawings.
 - b. Colors: To be selected by Architect from manufacturer's full range of available colors.
 - c. Color as follows:
 - 1) Aged Oak
 - 2) Antique Maple
 - 3) Brazilian Rosewood
 - 4) Cherrywood
 - 5) Chestnut
 - 6) Honey Maple
 - 7) Mahogany
 - 8) Walnut
2. Use Minwax Graining Tool, match Architect's sample of finish.
3. Satin: 2 coats linseed oil-modified polyurethane; Minwax Fast-Drying Polyurethane.
4. Semi-Gloss: 2 coats linseed oil-modified polyurethane; Minwax Fast-Drying Polyurethane.
5. Gloss: 2 coats linseed oil-modified polyurethane; Minwax Fast-Drying Polyurethane.

2.04 EXTERIOR FINISH SYSTEMS

A. Exterior Wood - Natural Clear Finish: Including doors, trim, soffits, and _____.

1. Satin: 3 coats oil-modified polyurethane; Minwax Clear Shield.

2. Satin: 3 coats clear urethane; Minwax Helmsman Spar Urethane.
3. Semi-Gloss: 3 coats oil-modified polyurethane; Minwax Clear Shield.
4. Semi-Gloss: 3 coats clear urethane; Minwax Helmsman Spar Urethane.
5. Gloss: 3 coats clear urethane; Minwax Helmsman Spar Urethane.

B. Exterior Wood - Stained Finish: Including trim, doors, frames, and _____.

1. Minwax Gel Stain:
 - a. 1 coat thixotropic soya alkyd non-drip stain and finish, Minwax Gel Stain.
 - b. 2 coats thixotropic soya alkyd non-drip stain and finish, Minwax Gel Stain.
 - c. Colors: Indicated on drawings.
 - d. Colors: To be selected by Architect from manufacturer's full range of available colors.
 - e. Color as follows:
 - 1) Aged Oak
 - 2) Antique Maple
 - 3) Brazilian Rosewood
 - 4) Cherrywood
 - 5) Chestnut
 - 6) Honey Maple
 - 7) Mahogany
 - 8) Walnut
2. Satin: 3 coats oil-modified polyurethane; Minwax Clear Shield.
3. Satin: 3 coats clear urethane; Minwax Helmsman Spar Urethane.
4. Semi-Gloss: 3 coats oil-modified polyurethane; Minwax Clear Shield.
5. Semi-Gloss: 3 coats clear urethane; Minwax Helmsman Spar Urethane.
6. Gloss: 3 coats clear urethane; Minwax Helmsman Spar Urethane.

C. Exterior Wood - Simulated Wood Grain Finish: Including trim, doors, frames, and _____.

1. Minwax Gel Stain:
 - a. 1 coat thixotropic soya alkyd non-drip stain and finish.
 - b. 2 coats thixotropic soya alkyd non-drip stain and finish.
 - c. Colors: Indicated on drawings.
 - d. Colors: To be selected by Architect from manufacturer's full range of available colors.
 - e. Color as follows:
 - 1) Aged Oak
 - 2) Antique Maple
 - 3) Brazilian Rosewood
 - 4) Cherrywood
 - 5) Chestnut
 - 6) Honey Maple
 - 7) Mahogany
 - 8) Walnut
2. Satin: 3 coats oil-modified polyurethane; Minwax Clear Shield.
3. Satin: 3 coats clear urethane; Minwax Helmsman Spar Urethane.
4. Semi-Gloss: 3 coats oil-modified polyurethane; Minwax Clear Shield.
5. Semi-Gloss: 3 coats clear urethane; Minwax Helmsman Spar Urethane.
6. Gloss: 3 coats clear urethane; Minwax Helmsman Spar Urethane.

PART 3 EXECUTION

- A. Examination
 - 1. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- B. Preparation
 - 1. Clean surfaces thoroughly prior to installation.
 - 2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Installation
 - 1. Install in accordance with manufacturer's instructions.
 - 2. Stir before and during application as recommended by manufacturer.
 - 3. Do not apply to wet or damp surfaces.
 - 4. Apply using methods recommended by manufacturer.
 - 5. Apply without runs, drips, or sags, without brush marks, and with consistent sheen.
 - a. Apply at spreading rate required to achieve the manufacturer's recommended film thickness.
- D. Protection
 - 1. Protect installed products until completion of project.
 - 2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 123640

MARBLE COUNTER TOP

Part 1 GENERAL

1.01 DESCRIPTION

- A. Work under this section shall include furnishing of all marble counter tops as shown on contract drawing and specified herein.
- B. Related work specified elsewhere shall include marble counter top system.
- C. Work installed but furnished under other sections shall include marble counter top anchorage, caulking, sealants, and flashing.
- D. Marble counter top system shall meet minimum standards as recommended by Marble Institute of America. Marble shall meet requirements of ASTM-C-503 for group A marble.

1.02 SHOP-DRAWINGS

- A. Shop drawings shall be prepared showing all pertinent information for marble counter tops including size, location, and anchorage system. Fabrication shall proceed in accordance with approved shop drawings.
- B. Marble counter tops shall be (choose one) White Cherokee, White Georgia, Pearl Grey, Etowah Fleuri as fabricated by The Georgia Marble Company.
- C. Marble samples shall be furnished and submitted for approval. Samples shall show full range of color, markings, and characteristics, and finish of marble. Samples shall be clearly labeled and upon approval shall become standard of selection.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Marble shall be delivered to job site adequately braced to prevent chipping, cracking, and breaking.
- B. Marble stored at job site shall be protected from the elements and shall be stacked or braced to prevent undue stresses in marble.
- C. Marble shall be handled from fabricating plant through erection at job site by equipment designed and customarily used for conveyance of stone or other similar materials.

1.04 JOB CONDITIONS

- A. Marble installer shall ascertain that marble counter top anchorage system shall be completed and ready to accept marble prior to installation of marble.

1.05 PROTECTION

- A. Marble installer shall protect all adjacent areas and surfaces from damage due to Installation of marble.

- B. Installer shall protect all work, finished or unfinished, against damage caused by installer or other trades.
- C. Installer shall take all safety precautions necessary to prevent chipping or cracking of marble during execution of work.
- D. Marble installer shall program marble installation to meet approved construction schedule.

1.06 QUALITY CRITERIA

- A. Marble installer shall employ competent workmen in execution of work.
- B. Design and related criteria shall meet minimum standards of Marble Institute of America.

Part 2 PRODUCTS

2.01 MATERIALS

- A. Marble shall have characteristics as shown in the "ASTM C-503 Physical Test Requirements" table.
- B. Marble shall be domestically produced by The Georgia Marble Company.

Part 3 EXECUTION

- A. All work under this section shall be inspected by owner's representation prior to acceptance for recommendation of payment.
- B. All material in vicinity of, and adjacent to marble, shall be adequately prepared in accordance with manufacturers and The Georgia Marble Company requirements for installation of marble.
- C. All materials used in installation of marble shall be installed in accordance with manufacturer's requirements.
- D. After completion of work, all marble surfaces shall be carefully cleaned to remove dirt, stains, or other defacements. Under no circumstances shall wire brushes, harsh abrasive cleansers or acid be used to clean marble.

END OF SECTION

SECTION 12 36 40
STONE COUNTERTOPS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Countertops constructed of cut stone (granite, marble).

1.02 RELATED SECTIONS

- A. Section 04 44 00– Marble: Marble for the countertop material.
- B. Section 12 36 00 – Countertops: countertop installation guidelines.
- C. Section 07 19 00 – Water Repellants: countertop sealer for use with marble.

1.03 REFERENCES

- A. ASTM C503-05 – Standard Specification for Marble Dimension Stone.
- B. ASTM C97 – Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone.
- C. ASTM C99 – Test Methods for Modulus of Rupture of Dimension Stone.
- D. ASTM C119 – Terminology relating to Dimension Stone.
- E. ASTM C170 – Test Methods for Compressive Strength of Dimension Stone.
- F. ASTM C880 – Test Methods for Flexural Strength of Dimension Stone.
- G. ANSI A10.20 – Safety Requirements for Ceramic Tile, Terrazzo, and Marble Work.
- H. ANSI D2203-01 – Standard Test Method for Staining from Sealants.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of Section 01 65 00.
- B. Store and protect products under provisions of Section 01 66 00.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Maintain materials and surrounding air temperature to minimum 10 degrees C (40 degrees F) prior to, during, and 48 hours after completion of installation and sealant.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Marble: ASTM C503-05, edge cut, non-pulverized or broken
- B. Impregnating Sealant: ASTM C1401; clean dry; protected from dampness, freezing, or foreign matter, #404.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install mortar in conjunction with Sections 12 36 40 and 04 44 00.

3.02 FIELD QUALITY CONTROL

- A. Field testing will be performed under provisions of Section 01 45 00.

END OF SECTION

SECTION 22 41 19

Plumbing Fixture- Tub/Shower

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Bathtub/shower unit for the Efficiency Apartment bathroom

1.02 RELATED SECTIONS

- A. Section 22 10 00 - Plumbing Piping and Pumps
- B. Section 22 07 19 - Plumbing Piping Insulation

1.03 REFERENCES

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of Section 01 65 00.
- B. Store and protect products under provisions of Section 01 66 00.

PART 2 PRODUCTS

2.01 MATERIALS

- A. The enclosure shall be pre-drilled and equipped with the following factory installed accessories: 1) Two 24" (on back wall) and two 24" (on end walls) 1-1/2" diameter, 18 gauge stainless steel grab bars with 1-1/2" safety statute clearance, mounted with stainless steel bolts and secured from the rear with 3" x 3" x 11" gauge metal mounting plates. 2) Two soap trays molded 52" above floor on back wall and one soap tray at dam level on center of back wall. 3) Two wall brackets installed at 42" and 72" on valve wall and one located at 22" above floor at center of back wall for hand held shower. 4) 1" diameter 18 gauge stainless steel curtain rod. After grab bars, curtain rod and wall brackets have been factory installed, they will be sealed from backside making unit completely waterproof. 5) Ribbed floor for slip resistance.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install tub in accordance with section 22 11 00 and section 22 41 00

3.02 FIELD QUALITY CONTROL

- A. Field testing will be performed under provisions of Section 01 45 00.

END OF SECTION

SECTION 23 34 00**EXHAUST FAN VENTILATOR**

***** Active Ventilation Products, Inc. manufactures passive and powered exhaust ventilators, tube skylights, and combination skylight and ventilator units.

This guide can be used to prepare a specification for Aura Fan Ventilator, a roof mounted, wind-assisted, electric fan exhaust ventilator.

The specification section is organized by placing information in three standard parts:

PART 1 - GENERAL Describes administrative and procedural requirements.

PART 2 - PRODUCTS Describes materials, products, and accessories to be incorporated into the construction project.

PART 3 - EXECUTION Describes how the products will be installed at the construction site.

Throughout this product guide specification, references are made to other specification sections that might be contained in the project manual. These references are presented as examples and coordination reminders. For each project, these references will need to be revised to reflect actual sections being used.

Within the specification text, Imperial dimensions are presented first in brackets followed by System International Metric (SI) equivalents also in brackets. Depending on project requirements, either the Imperial or the SI metric equivalents will need to be deleted.

The specifier will need to edit this product specification for a specific project to reflect the options and applications being used. The guide section has been written so that most editing can be accomplished by deleting unnecessary requirements and options. Options are indicated by []. Notes to assist the specifier in selecting options and editing the specification guide are printed in bold and indicated with *****. For final editing, all brackets and notes will need to be deleted from the guide.

PART 1 - GENERAL**1.1 SUMMARY**

- A. Section includes: Roof mounted, wind assisted, electric fan exhaust ventilator including [roof mounting flanges] [extension collars] [roof adapters] [dampers].

***** Aura Fan Ventilator can be installed on asphalt shingle, clay and concrete tile, metal panel, and built-up and single ply membrane roofs. Select appropriate paragraph from the following to reflect project conditions. *****

- B. Section 07310 - Shingles: Asphalt shingle roofing to receive ventilator.
- C. Section 07320 - Roof Tiles: [Clay] [Concrete] tile roof system to receive ventilator.
- D. Section 07410 - Metal Roof Panels: Metal roof system to receive ventilator.
- E. Section 07500 - Membrane Roofing: [Built-up] [Single ply] membrane roofing to receive ventilator.
- F. Section 16100 - Wiring Methods: Electrical power for ventilator fan.

1.2 REFERENCES

****** List by number and full title reference standards referred to in remainder of specification section. ******

- A. National Fire Protection Association (NFPA): NFPA 70 - National Electric Code.

1.3 PERFORMANCE REQUIREMENTS

- A. Ventilators shall have been tested to:

- 1. Withstand [110 miles per hour] [177 kilometers per hour] wind without damage.

******* Amount of air exhausted with electric fan of Aura Fan Ventilator depends on ventilator diameter and horsepower of motor. Refer to Active Ventilation Products literature for air quantities mechanically exhausted by specific models. *******

- 2. Mechanically exhaust air from [_____] [inches] [mm] diameter ventilator using electric fan with [_____] HP motor: [_____] [CFM] [CMM].

******* When electric fan is not operating, Aura Fan Ventilator is designed to passively exhaust air. Quantity of air exhausted in this manner depends on wind speed and ventilator size. Refer to Active Ventilation Products literature for air quantities passively exhausted by specific models. *******

- 3. Passively exhaust air from [_____] [inches] [mm] diameter ventilator:
 - a. At [4 MPH] [6.4 KPH]: [_____] [CFM] [CMM].
 - b. At [5.2 MPH] [8.4 KPH]: [_____] [CFM] [CMM].
 - c. At [7.4 MPH] [11.9 KPH]: [_____] [CFM] [CMM].
 - d. At [9.8 MPH] [15.8 KPH]: [_____] [CFM] [CMM].
 - e. At [11 MPH] [17.7 KPH]: [_____] [CFM] [CMM].

1.4 SUBMITTALS

A. Provide in accordance with Section 01330 - Submittal Procedures:

1. Product data for ventilator, fan, motor, roof mounting flanges, [collar extensions] [roof adapters] [dampers]. Include data showing compliance with Paragraph 1.2.
2. Shop drawings: Indicate dimensions, construction, and installation details. Provide wiring diagram for electric fan and controls.
3. Manufacturer's installation and maintenance instructions.
4. Copy of warranty required by Paragraph 1.4 for review by Architect.

1.5 WARRANTY

A. Provide under provisions of Section 01780 - Closeout Submittals: Lifetime warranty to initial owner to cover defects in ventilator materials and workmanship.

PART 2 - PRODUCTS**2.1 ACCEPTABLE MANUFACTURERS**

A. Active Ventilation Products, Inc.

1. Address:

P.O. Box 1521
Newburgh, New York 12551-1521

2. Telephone: 800-247-3463 or 845-565-7770

3. FAX: 845-562-8963

4. Website: www.roofvents.com

5. E-mail: roofvents@aol.com

B. Requests to use equivalent products of other manufacturers shall be submitted in accordance with Section 01630 - Product Substitution Procedures.

2.2 PASSIVE EXHAUST VENTILATORS

******* Various models of Aura Fan Ventilator are manufactured by Active Ventilation Products, Inc. ranging in size from 6 to 48 inches (152 to 1219 mm) inside diameter. Model number refers to diameter of ventilator. For example No. AV-6 has 6 inches (152 mm)**

inside diameter. Edit the following paragraph to reflect model number required. *****

- A. Type: Roof mounted, circular, wind assisted, electric fan exhaust ventilator; Aura Fan Ventilator Model No. [AV-6] [AV-8] [AV-10] [AV-12] [AV-14] [AV-16] [AV-18] [AV-24] [AV-36] [AV-42] [AV-48].
- B. Material: Heavy gauge aluminum.

******* Aura Fan Ventilator is provided as mill finished aluminum or with powder paint coating. *******

- C. Finish of exposed to view surfaces: [Electrostatically applied powder paint coating. Color selected from manufacturer's standard range.] [Mill finished aluminum.]
- D. Construction: Cylinder shaped ventilator lid with slotted vertical vanes is mounted over propeller fan installed in inside cylinder and collar.

******* Bottom of ventilator lid is cone shaped diverter to direct air flow out of ventilator. As an option Aura Fan Ventilator can be equipped with backdraft damper positioned over propeller fan. Damper is cone shaped and takes the place of the cone in direction air flow outward. Damper is thermostatically controlled. Edit the following paragraph to reflect if cone or backflow damper is required. *******

1. Equip inside of ventilator lid with cone shaped [diverter] [thermostatically controlled backdraft damper] to direct air flow outward. Position above propeller fan.

******* Aura Fan Ventilator operates either electrically or passively. On some days Aura Fan Ventilator can provide needed ventilation without use of electric motor and hence conserve energy. *******

- E. Operation:

******* Standard fan control is an ON/OFF wall switch. Optional controls are timer, humidistat, or thermostat. *******

1. Electrical operation: Electric fan rotates exhausting air heat and moisture. Fan is controlled by [wall switch] [timer] [humidistat] [thermostat].
2. Passive operation: Outside air moving against slotted vanes is directed to creates venturi effect which pulls air from within [building] [attic] [_____] expelling heat and moisture.

******* Refer to Active Ventilation Products literature for ventilator dimensions, free vent area, and other attributes. Edit the following paragraphs to reflect selected model. *******

- F. Size:

1. Inside diameter: [_____] [inches] [mm].
2. Outside diameter: [_____] [inches] [mm].
3. Height: [_____] [inches] [mm].

******* Refer to Active Ventilation Products literature for horse power, RPM's, amperage, number of blades, and diameter for selected model. *******

- G. Electric fan: Integral propeller type fan and electric motor unit complying with NFPA 70 and listed by Underwriters' Laboratories, Inc. (UL) as suitable for the purpose indicated.
1. Horse power: [1/55] [1/25] [1/15] [1/3] [1/2] [3/4] HP.
 2. Speed: [_____] RPM.
 3. Amperage: [_____] amps.
 4. Propeller fan diameter: [_____] [inches] [mm].
 5. Number of propeller blades: [4] [5].

******* Various roof mounting flanges are provided to accommodate type of roofing system. Flanges are either square or round. Edit the following paragraph to reflect project requirements. *******

- H. Roof mounting flange: [_____] [inches] [mm] [square] [round] flange fabricated from [[0.025 inch] [0.6 mm] aluminum and designed to accommodate [shingle] [membrane] roofing.] [dead soft aluminum and capable of being formed to [clay] [concrete] roof tiles.]

******* Aura Fan Ventilator can be mounted directly on roof or one or more collar extensions can be added to provide a ventilator stack ranging in height from 1 to 18 inches (25 to 457 mm). Include the following paragraph if collar extensions are required. *******

- I. Collar extensions: Equip ventilator with extension collars to provide [_____] [inches] [mm] high stack.

******* Aura Fan Ventilator can be installed on built-up, single ply, shingle, tile, and metal roofs as well as on existing roof curbs, vents, and chimneys. Both flat and pitched roofs are suitable substrates although adapters may be required for steep pitches and some roof profiles. Contact Active Ventilation Products, Inc. for special mounting conditions. Edit the following paragraph to reflect project conditions. *******

- J. Roof adapters: Provide aluminum adaptor to accommodate [[_____] degrees roof pitch.] [[_____] roof profile.] [existing [roof curbs] [vents] [chimneys].]

- K. Sealants: Type as recommended by manufacturer for application and type of roof substrate.
- L. Fasteners: Corrosion resistant screws, nails, staples or other fasteners of type, size, and spacing as recommended by manufacturer for application and type of roof substrate.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Coordinate provision of fan ventilator with roof system specified in Section [_____] - [_____] to ensure compatibility of substrate to receive ventilator.
- B. Coordinate electrical requirements for electric fan to ensure proper power source, conduit, wiring, and boxes are provided.
- C. Examine site conditions and verify that structural supports and openings are properly sized, prepared, and ready to receive fan ventilator.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions and approved shop drawings. Coordinate with installation of roofing system, curbs, and flashings to ensure weathertightness.

******* Aura Fan Ventilators are typically located high on rear roof slope, below rigid line with single units centered and multiple units equally spaced. *******

- B. Locate ventilators as indicated on Drawings. Ensure openings do not conflict with roof framing members. Accurately cut opening in roof substrate using template and pilot hole.

******* Depending on type of roof system; nailers, rigid insulation, or rigid roof may be required. *******

- C. Install [preservative treated wood nailers] [rigid board roof insulation] [rigid roof board] as detailed on Drawings and approved shop drawings.
- D. Apply bituminous paint on aluminum surfaces in contact with dissimilar metals.

******* Include the following paragraph if Aura Fan Ventilator is installed on asphalt shingle roof. *******

- E. Roof mounting flange installation on shingle roof:
 - 1. At location of opening, ensure roofing nails are removed. Roll back up-slope shingles.

2. Apply sealant to bottom of roof mounting flange and between roof shingles to receive ventilator. Slide roof flange under up-slope shingles such that shingles cover one half of flange.
3. Anchor roof mounting flange securely to roof structure with 4 minimum fasteners per side.
4. Install sealants to fasteners and shingle edges to achieve weathertightness.

******* Include the following paragraph if Aura Fan Ventilator is installed on clay or concrete tile roof. *******

F. Roof mounting flange installation on [clay] [concrete] tile roof:

1. Prior to installation of roof tile, install lower flanged curb flashing to roof substrate over opening with appropriate fasteners.
2. Install sealants to fasteners and flashing edges to achieve weathertightness.
3. After roof tile is installed to level of ventilator and covers down-slope side of lower flashing, push ventilator mounting flange onto lower flashing.
4. Anchor up-slope side of dead soft aluminum roof mounting flange to roof substrate.
5. Install remaining tiles over up-slope portion of ventilator mounting flange. Form bottom portion of dead soft aluminum flange to profile of roof tiles.
6. Provide temporary cap over roof mounting flange opening.

******* Include the following paragraph if Aura Fan Ventilator is installed on metal panel roof system. *******

G. Roof mounting flange installation on metal panel roof:

1. Ensure openings are centered between ribs of metal roof panel and there is sufficient flat surface to accommodate roof mounting flange.
2. Apply butyl tape sealant to bottom of roof mounting flange around complete perimeter. Use nylon spacers between roof panel and flange to eliminate sealant migration due to compression.
3. Fasten roof mounting flange with self-tapping hex head coated fasteners with metal washer and neoprene sealing washer of size and spacing as recommended by manufacturer.
4. Provide temporary cap over roof mounting flange opening.

******* Include the following paragraph if Aura Fan Ventilator is installed as part of built-up membrane roofing system. *******

H. Roof mounting flange installation on built-up membrane roofing system:

1. Install roof mounting flange as part of built-up roof membrane. Provide temporary cap for flange opening.
2. Set mounting flange in plastic roofing cement.
3. Securely anchor flange to roof substrate with fasteners of type, size, and spacing recommended by manufacturer.
4. Install flexible base flashing over roof mounting flange as part of roofing operation.

******* Include the following paragraph if Aura Fan Ventilator is installed as part of single ply membrane roofing system. *******

I. Roof mounting flange installation on single ply membrane roofing system:

1. Install roof mounting flange as part of single ply membrane roofing. Provide temporary cap for flange opening.
2. Trim corners of mounting flange to provide smooth radius without sharp points.
3. Apply butyl tape sealant or roofing mastic to bottom of roof mounting flange. Set mounting flange over roof opening onto single ply roof membrane.
4. Securely anchor flange to roof substrate with fasteners of type, size, and spacing recommended by manufacturer.
5. Install piece of single ply roofing over roof mounting flange. Secure with adhesive, heat welding, or other procedure as part of roofing operation.

J. After roof system installation is complete, remove temporary cap and install ventilator collar onto mounting flange. Attach with fasteners and apply sealant to collar and flange joint.

K. Fan connection: Connect ventilator fan to modular connector system in accordance with NFPA 70. Test fan operation and controls. Correct deficiencies.

******* Include the following paragraph if automatic dampers are required. *******

L. Test dampers and adjust for proper operation.

END OF SECTION

Active Ventilation Products, Inc., P.O. Box 1521, Newburgh, New York 12551-1521

PHONE: 800-247-3463; FAX: 845-562-8963; WEBSITE: www.roofvents.com

SECTION 26 27 26
ELECTRIC RECEPTACLES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electric Receptacles for hallways.

1.02 RELATED SECTIONS

- A. Section 26 20 00 – Electric: Low – Voltage Electrical Transmission
- B. Section 26 26 00 – Electric: Power Distribution Units

1.03 REFERENCES

- A. LISTED TO UL943 CLASS A, 498 AND CERTIFIED TO CSA C22.2 NO. 42.
- B. RATED V-2 PER UL94
- C. NEMA - WD-1 & WD-6
- D. ANSI - WD-6

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of Section 01 65 00.
- B. Store and protect products under provisions of Section 01 66 00.
- C. Protect from moisture.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Flammability – Rated V-2 per UL94
- B. Operating Temperature - -35C to 65C

PART 2 PRODUCTS

2.01 MATERIALS

- A. Face Material - Engineering Grade Polymer
- B. Body Material - Polycarbonate
- C. Line Contacts - Brass Triple-Wipe .031 Thick

- D. Terminal Screws - Brass 10-32
- E. Grounding Screw - Brass 8-32
- F. Strap Material - Nickel-Plated Steel .050 Thick
- G. Clamps - Zinc-Plated Steel
- H. Ground Clip – Brass
- I. Internal Switch Contacts - Silver Alloy
- J. Face and body color – White alabaster

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install Receptacles in conjunction with Sections 26 20 00 and 26 26 00.

3.02 FIELD QUALITY CONTROL

- A. Field testing will be performed under provisions of Section 01 45 00.

END OF SECTION

SECTION 26 50 00

LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Included luminaries, lighting equipment, ballasts, dimming controls, and lighting accessories.

1.02 RELATED SECTIONS

- A. Section 25 36 26 – Integrated automation lighting.
- B. Section 26 09 23 – Lighting controls.
- C. Section 26 20 00 – Low-voltage electrical transmission.

1.03 REFERENCES

- A. Section 26 51 00 – Interior Lighting
- B. Section 26 52 00 – Emergency Lighting.
- C. Section 26 53 00 – Exit Signs
- D. Section 26 54 00 – Classified Location Lighting
- E. Section 26 55 00 – Special Purpose Lighting
- F. Section 26 56 00 – Exterior Lighting

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Provide secure lock-up for hardware delivered to site in advance of installation.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Do not reuse the product using any of the following methods unless permitted to do so by a governing authority: tipping (landfill), incineration, reuse, reconstitution (rebonding), recycling, pyrolysis.

PART 2 PRODUCTS

2.01 REQUIRED MATERIALS AND TOOLS

- A. Tape Measure

- B. Fine Sandpaper
- C. Caulking Gun
- D. Pencil
- E. Finishing Nails or Screws
- F. Countersinking Drill Bit and Drill
- G. ORAC STANDARD PLUS[®] (Wall Adhesive / Filler) *
- H. ORAC EXTRA FIX[®] (Joint Adhesive) *
- I. ORAC DECOR[®] Miter Box (or other brand)
- J. Saw or Compound Miter Saw
- K. Hammer and/or Screwdriver
- L. Utility Knife
- M. Sponge or Cloth

2.02 MANUFACTURERS

- A. ORAC DECOR[®] (ARCHITECTURAL PRODUCTS BY OUTWATER, L.L.C.)

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install mortar in conjunction with ORAC DECOR[®] instructions.

3.02 FIELD QUALITY CONTROL

- A. Field testing will be performed under provisions of the ORAC DECOR[®] company.

3.03 FINISH

- A. The ORAC DECOR[®] Collection is factory coated with a specially treated, high quality, UV resistant white primer finish, which produces a smooth, tough surface ready for painting, glazing or faux finishing.

END OF SECTION