

SECTION 03 00 00

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes cast-in-place concrete and control, expansion and contraction joint devices associated with concrete work.
- B. Work shall be conducted in accordance with General Conditions, Supplementary Conditions, Division 1 and the requirements of this section

1.02 REFERENCES

- A. American Concrete Institute (ACI):
 - 1. ACI 213R – Aggregate Concrete: Structural Lightweight
 - 2. ACI 301 – Standard Specification for Structural Concrete
 - 3. ACI 302.1 – Guide for Concrete Floor and Slab Construction
 - 4. ACI 305R – Hot Weather Concreting
 - 5. ACI 306.1 – Standard Specification for Cold Weather Concreting
 - 6. ACI 318 – Building Code Requirements for Structural Concrete
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM C31 – Making and Curing Concrete test Specimens in the Field
 - 2. ASTM C33 – Concrete Aggregates
 - 3. ASTM C42 – Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
 - 4. ASTM C94 – Ready-Mixed Concrete
 - 5. ASTM C150 – Portland Cement
 - 6. ASTM C231 – Air Content of Freshly Mixed Concrete by the Pressure Method
 - 7. ASTM C260 – Air Entraining Admixtures for Concrete
 - 8. ASTM C330 – Lightweight Aggregates for Structural Concrete
 - 9. ASTM C494 – Chemical Admixtures for Concrete

10. ASTM C881 – Epoxy-Resin-Base Bonding Systems for Concrete
11. ASTM C1017 – Chemical Admixtures for use in Producing Flowing Concrete
12. ASTM C1018 – Flexural Toughness and First-Crack Strength of Fiber-Reinforced Concrete (Using Beam with Third-Point Loading)
13. ASTM C1059 – Latex Agents for Bonding Fresh to Hardened Concrete
14. ASTM C1116 – Fiber-Reinforced Concrete and Shotcrete
15. ASTM D994 – Preformed Expansion Joint Filler for Concrete (Bituminous Type)

END OF SECTION

SECTION 03 10 00
CONCRETE FORMWORK

PART 1 GENERAL

1.01 DESCRIPTION

- A. Construct all formwork systems to provide only those lines and delineations indicated, unless otherwise approved by the Engineer, construct formwork to allow erection in proper sequence and to permit removal without damage to the finished concrete surfaces. Construct all formwork to the shapes, lines, and dimensions of concrete members with specified tolerances.

1.02 RELATED SECTIONS

- A. Section 02 30 00 – Earthwork.
- B. Section 03 20 00 – Concrete Reinforcement.
- C. Section 03 30 00 – Cast-in-Place Concrete.

1.03 REFERENCES

- A. ACI Specifications for Structural Concrete for Buildings, ACI 301.
- B. ACI Recommended Practice for Concrete Formwork, ACI 347.

1.04 QUALITY ASSURANCE

- A. Special Inspection: Notify the Engineer at least 48 hours before pouring concrete for review of forms and reinforcement. No concrete shall be placed without formwork and reinforcement review by Engineer.
- B. Inspection by Other Trades: Where items, such as anchors, fastenings, conduit, piping and other items are supplied by other trades and specified elsewhere in these Specifications, in the forms, obtain approval of their placement prior to placing any concrete.

1.04 HANDLING

- A. Protection of Forms: Design, construct, and erect all forms for reuse; withdraw projecting nails or other objects from contact surfaces before reusing; clean and completely recondition all forms prior to reuse; and repair any damage to forming surfacing cause during previous usage. Obtain approval for each reuse. Formwork with patches or repairs affecting appearance of the concrete surfaces will not be permitted.

- B. In order that reused forms will not contain patches resulting from alterations, reuse forms on identical sections only; reuse no forms showing excessive surface wear or other imperfections impairing quality of finish of concrete surface.
- C. Precautions: Contractor is responsible for the strength and suitability of the formwork.

PART 2 PRODUCTS

2.01 FORMS

- A. For Footings and Concrete Slabs: Fabricate forms of MDO plywood, metal, or plastic as judged best suited for shapes. Construct with a minimum of joints, sufficiently tight to prevent leakage.

2.02 INSERTS/SLEEVES

- A. Release agent with non-staining and non-interference characteristic with bonding capabilities of paints, plasters, adhesives, other surface coatings or materials. Contractor shall guarantee proper bonding of such subsequent coatings or materials applied over concrete.

PART 3 EXECUTION

3.01 PREPARATION

- A. All areas of formwork and concrete placement shall have an approved crushed rock base as specified and shown on the Drawings prior to executing formwork.

3.02 DESIGN AND CONSTRUCTION

- A. Erect forms to conform accurately to the shapes, dimensions, locations and profiles indicated. Fit joints between adjacent assembled panels and components tightly and seal with gasket material. Inspect all contact surfaces prior to concrete placement; verify that surfaces are clean, smooth, and free from foreign matter or imperfections affecting appearance of finished concrete.
- B. Camber: Design and erect formwork for anticipated deflection due to weight and pressure of fresh concrete. Provide positive means for adjustment of shores and struts to take up settlement during placement.

3.03 FORM TREATMENT

- A. Before erection of forming, plug and seal all cracks, holes, slits, gaps, and other “telegraphing” imperfections in contact surfaces. Apply bond-breaking

coating in amounts that will leave surfaces in proper condition to receive subsequent material application. Contractor shall be responsible for being certain that bond release coatings are applied only in amounts that will leave surfaces in proper condition to receive subsequent material application.

3.02 FORM REMOVAL

- A. Formwork designed for easy removal without damaging or marring finished surfaces of the concrete. Prying against face of concrete will not be permitted; where mechanical means are necessary to release forms, use wood wedges only and then only if approved by the Engineer.
- B. Removal Strength: Formwork for footings shall remain in place until concrete has hardened sufficiently to resist damage from the removal operations. Determine concrete removal strength based on test cylinders, field cured under the most unfavorable conditions prevailing for any portion of the work presented.

END OF SECTION

SECTION 03 20 00

CONCRETE REINFORCEMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Section includes reinforcing steel bars, welded wire fabric and accessories for cast in place concrete.
- B. Work shall be conducted in accordance with General Conditions, Supplementary Conditions, Division 1 and the requirements of this section

1.02 RELATED SECTIONS

- A. Section 03 11 00 – Concrete Forms and Accessories.
- B. Section 03 30 00 – Cast-in-Place Concrete.
- C. Section 03 35 00 – Concrete Finishing.
- D. Section 04 20 00 – Masonry Assemblies.

1.03 REFERENCES

- A. American Concrete Institute (ACI):
 - 1. ACI 301 – Structural Concrete.
 - 2. ACI 315 – Details and Detailing of Concrete Reinforcement.
- B. American Society for Testing and Materials (ASTM).
 - 1. ASTM A82 – Standard Specification for Steel Wire, plain, for Concrete Reinforcement.
 - 2. ASTM A185 – Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
 - 3. ASTM A615 – Deformed Steel Bars for Concrete Reinforcement.
- C. American Welding Society (AWS): D1.4 – Structural Reinforcing Code – Reinforcing steel.

1.04 SUBMITALS

- A. Section 01 60 00 – Product Requirements: Submittal procedures.

- B. Shop Drawings: Indicate bar sizes, spacings, splices, laps, locations, quantities of reinforcing steel, quantities of welded wire fabric, bending and cutting schedules, supporting and spacing devices and concrete coverage per ACI 315.
- C. Submit certified copies of mill test report of reinforcement materials analysis.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 301.
- B. Welder's Certificates: Submit under provisions of Section 01 60 00 – Product Requirements; welders employed on this Work shall have current AWS certificates, having qualified within the previous 12 months.

1.06 PROJECT CONDITIONS

- A. Coordinate with placement of formwork, embedded items, formed openings and other Work.

PART 2 PRODUCTS

2.01 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615, 60ksi yield grade; deformed billet steel bars, unfinished; ASTM A706 where reinforcing steel is to be welded.
- B. Stirrup Steel Wire: ASTM A82, unfinished.
- C. Steel Welded Wire Fabric (WWF): ASTM A185; in flat sheets (No Exceptions); unfinished.

2.02 ACCESSORY MATERIALS

- A. Tie Wire: Minimum 18 gage annealed type.
- B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions.
 - 1. Provide flat metal load bearing pad on bottom of chairs in slab on grade pours to prevent vapor retarder puncture.
 - 2. Provide PVC tips on all chairs in formed concrete slabs and structural members.

2.03 FABRICATION

- A. Fabricate concrete reinforcement in accordance with ACI 301.

- B. Weld reinforcement in accordance with ACI 301.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Place support and secure reinforcement against displacement; do not deviate from required position; place reinforcement accurately and securely using chairs, stirrups, ties, etc.; reinforcing shall be clean, free from rust, scale, ice and fabricated without kinks or bends not shown on shop drawings.
- B. Do not displace or damage vapor retarder or water barrier; repair tears with new vapor retarder or water barrier and tape waterproof patch on four edges.
- C. Accommodate placement of formed openings.
- D. Maintain Concrete Cover Around Reinforcing Including Stirrups and Ties as Follows:

<u>Item</u>	<u>Coverage</u>
Beams	1-1/2 inches
Supported Slabs and Joists	3/4 inch
Column Ties	1-1/2 inch
Walls (exposed to weather or backfill)	3 inches
Footings and Concrete Formed Against Earth	3 inches
Slabs on Fill	3 inches

- E. Wire Ties shall be tied inboard or bent inboard away from forms; wire tie tails shall not be in concrete area at all.
- F. Block Retaining Wall Dowels: Provide single row of No. 3 bars, 21 inches long, spaced 16 inches on centers and projecting 15 inches above top of footing; grout rebar cells full.

3.02 FIELD QUALITY CONTROL

- A. Section 01 40 00 – Quality Requirements: Testing and Inspection Services.
- B. The concrete testing laboratory shall review all reinforcing in place prior to pour.
- C. Notify Architect of any non-complying reinforcing immediately.
- D. Document misplaced reinforcing in a field review and forward a copy to the Architect; furnish a follow up report when misplacement is corrected.

END OF SECTION

SECTION 03 39 00
CONCRETE CURING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete curing using concrete wet cure covers.

1.02 RELATED SECTIONS

- A. Section 03 30 00 – Cast-in-Place Concrete.
- B. Section 03 70 00 – Mass Concrete.

1.03 REFERENCES

- A. AASHTO M 171 – Sheet Materials for Curing Concrete; 2001.
- B. ACI 308 – Standard Practice for Curing Concrete; 2001.
- C. ASTM C 156 – Standard Test Method for Water Retention by Concrete Curing Materials; 2002.
- D. ASTM D 882 – Standard Test Method for Tensile Properties of Thin Plastic Sheeting; 2001.
- E. ASTM D 1709 – Standard Test Methods for Impact Resistance of Plastic Film by the Free-Falling Dart Method; 2001.
- F. ASTM D 2103 – Standard Test Method for Polyethylene Film and Sheeting; 1997
- G. ASTM D 2582 – Standard Test Method for Puncture-Propagation Tear Resistance of Plastic Film and Thin Sheeting; 2000.
- H. ASTM D 3786 – Standard Test Method for Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics: Diaphragm Bursting Strength Tester Method; 1987.
- I. ASTM D 4533 – Standard Test Method for Trapezoid Tearing Strength of Geotextiles; 1991 (reapproved 1996).
- J. ASTM D 4545 – Standard Practice for Determining the Integrity of Factory Seams Used in Joining Manufactured Flexible Sheet Geomembranes; 1986 (reapproved 1999).
- K. ASTM D 4833 – Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products; 2000.

- L. ASTM D 5199 – Standard Test Method for Measuring Nominal Thickness of Geosynthetics; 2001.
- M. ASTM D 5735 – Standard Test Method for Tearing Strength of Nonwoven Fabrics by the Tongue (Single Rip) Procedure (Constant-Rate-of-Extension Tensile Testing Machine; 1995 (reapproved 2001).
- N. ASTM E 1347 – Standard Test Method For Color and Color-Difference Measurement by Tristimulus (Filter) Colorimetry; 1997

1.04 SUBMITTALS

- A. Submit under provisions of Section 01 30 00.
- B. [<http://www.arcacat.com/arcacatcos/cos39/arc39666.cfm>]: 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. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product and color of wet cure covers.

1.05 QUALITY ASSURANCE

- A. Preinstallation Meeting: Convene preinstallation meeting _ weeks before start of installation of wet cure covers. Require attendance of parties directly affecting work of this section, including Contractor, Architect, and installer. Review installation, protection, and coordination with other work.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in manufacturer's unopened packaging with product name and manufacturer clearly identified on labels.
- B. Store products in manufacturer's unopened packaging until ready for installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturer: Reef Industries, Inc., PO Box 750250, Houston, Texas 77275-0250/9209 Almeda Genoa Rd Houston, TX 77075. Tel: (800) 231-6074 or (713) 507-4200. Fax (713) 507-4295. E-Mail ri@reefindustries.com. www.reefindustries.com.
- B. Substitutions: Not permitted.

- C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.

2.02 MATERIALS

- 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. Concrete Wet Cure Covers: Armorlon Transguard(r) 4000; reusable.
 - 1. Material: Synthetic fiber mat with polyethylene sheet backing.
 - 2. Standard Weight: 52 lb/1,000 sq ft (25.4 kg/100 sq m), when tested in accordance with ASTM D 2103.
 - 3. Thickness: 42 mils (1.1 mm), when tested in accordance with ASTM D 5199.
 - 4. Grab Tensile, Machine Direction: 130 lbf (578 N), when tested in accordance with ASTM D 4632.
 - 5. Grab Tensile, Transverse Direction: 185 lbf (823 N), when tested in accordance with ASTM D 4632.
 - 6. Grab Elongation, Machine Direction: 65 percent, when tested in accordance with ASTM D 4632.
 - 7. Grab Elongation, Transverse Direction: 55 percent, when tested in accordance with ASTM D 4632.
 - 8. Trapezoidal Tear, Machine Direction: 34 lbf (151 N), when tested in accordance with ASTM D 4533.
 - 9. Trapezoidal Tear, Transverse Direction: 54 lbf (240 N), when tested in accordance with ASTM D 4533.
 - 10. Dart Impact: 1.5 lb (0.7 kg), when tested in accordance with ASTM D 1709.
 - 11. Hydraulic Burst: 190 psi (1.3 MPa), when tested in accordance with ASTM D 3786.
 - 12. Water Retention Moisture Loss: 0.0062 oz/sq in (2.7 g/sq m) and 0.0558 lbs/sq ft (0.272 kg/sq m), when tested in accordance with ASTM C 156.
 - 13. Reflectance: 79 percent, when tested in accordance with ASTM E 1347.
 - 14. Puncture Strength: 70 lb (31.8 kg), when tested in accordance with ASTM D 4833.
 - 15. Reflection and Moisture Retention: Complying with AASHTO M 171.
 - 16. Color: White.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas to receive wet cure covers. Notify Architect if areas are not acceptable. Do not begin installation until unacceptable conditions have been corrected.

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. Wet cure concrete in accordance with ACI 308 for _ days, minimum.
- B. Install wet cure covers in accordance with manufacturer's instructions.
- C. Install covers in largest practical widths.
- D. Thoroughly soak nonwoven synthetic side of covers.
- E. Install covers with white poly side up.
- F. Overlap adjoining covers a minimum of 18 inches.
- G. Weight all laps and outside edges to prevent displacement.
- H. Ensure intimate contact between covers and concrete surface by weighting and overlapping.
- I. Rewet covers as necessary.
- J. Install in accordance with manufacturer's instructions.

3.04 PROTECTION

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

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 04 05 19

Adjustable Masonry Anchors

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Masonry veneer anchors and ties.
- B. Stone veneer anchors and ties.

1.2 RELATED SECTIONS

- A. Section 04810 - Unit Masonry Assemblies.
- B. Section 04851 - Cut Stone Veneer.
- C. Section 04852 - Stone Masonry Veneer.
- D. Section 04853 - Cut Stone Assemblies.

1.3 REFERENCES

- A. ACI 530.1/ASCE 6/TMS 602 - Specification for Masonry Structures; 1995.
- B. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 1998.
- C. ASTM A 167 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip; 1996.
- D. ASTM A 240/A 240M - Standard Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels; 1998b.
- E. ASTM A 276 - Standard Specification for Stainless Steel Bars and Shapes; 1998b.
- F. ASTM A 479/A 479M - Standard Specification for Stainless and Heat-Resisting Steel Bars and Shapes for Use in Boilers and Other Pressure Vessels; 1997a.
- G. ASTM A 580/A 580M - Standard Specification for Stainless Steel Wire; 1998.
- H. ASTM A 641/A 641 M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 1998.
- I. 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.

- J. ASTM B 633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 1985 (Reapproved 1994).

1.4 DELIVERY, STORAGE, AND HANDLING

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

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Heckmann Building Products Inc., 1501 N. 31st Avenue, Melrose Park, IL 60160-2911. ASD. Tel: (708) 865-2403. Tel: (800) 621-4140. Fax: (708) 865-2640.
- B. Substitutions: Not permitted.

2.2 MATERIAL

- A. Material for Anchors and Ties in Exterior Walls:
1. Stainless steel.
 2. Hot-dip galvanized.
 3. Structural Plates, Angles, and Bars: Hot-dip galvanized.
- B. Material for Anchors and Ties Exposed to Air in Exterior Walls:
1. Stainless steel.
 2. Hot-dip galvanized.
- C. Material for Ties in Interior Wall Completely Embedded in Mortar Joints:
1. Mill galvanized.

2.3 MASONRY VENEER ANCHORS AND TIES

- A. Adjustable Two Piece Masonry Veneer Ties: Requires minimum 1-1/2 inches (38 mm) embedment in brick mortar or a minimum of one half of the thickness of a block wall with at least 5/8 inches (15.9 mm) mortar cover to the outside face.
1. Pos-I-Tie Anchors and Pos-I-Tie Wire Tie.
 - a. Pos-I-Tie Barrel Screws:
 - 1) Substrate and Screw Type:
 - a) Steel Studs: Self Drilling Screws.
 - b) Concrete, CMU, Brick or Wood: Tapcon screws.
 - c) Structural Steel: Dril-It screws.
 - 2) Barrel Length:
 - a) 5/8 inch (15.9 mm).
 - b) 1 inch (25.4 mm).
 - c) 1-1/2 inch (39 mm).
 - d) 2 inch (51 mm).

- e) 2-1/2 inch (63.5 mm).
 - f) 3 inch (76 mm).
 - g) 3-1/2 inch (89 mm).
 - b. Pos-I-Tie Wire Ties:
 - 1) Triangle Wire Tie
 - 2) Single Wire Tie
 - 3) Seismic Triangle Tie
 - c. Wire Tie Length:
 - 1) 3 inch (76 mm)
 - 2) 3-1/2 inch (89 mm)
 - 3) 4 inch (101.6 mm)
 - 4) 5 inch (127 mm)
- 2. Strap Anchors with Triangle Ties
 - a. Strap Anchor for attachment to backup using triangle ties
 - 1) Weld-On Anchor Rod No. 315:
 - a) 1/4 inch (6.3 mm) diameter by 5 inches (127 mm) long.
 - b) 1/4 inch (6.3 mm) diameter by 9 inches (228.6 mm) long.
 - 2) Weld-On Anchor Strap No. 315-B:
 - a) 12 Gauge (2.7 mm) by 3/4 inches (19 mm) by 9 inches (228.6 mm).
 - b) 12 Gauge (2.7 mm) by 7/8 inch (22.2 mm) x 6-1/2 inches (165 mm).
 - 3) Screw-On Anchor Strap No. 315-C:
 - a) 12 Gauge (2.7 mm) by 3/4 inches (19 mm) by 9 inches (228.6 mm)
 - b) 12 Gauge (2.7 mm) by 7/8 inches (22.2 mm) by 6-1/2 inches (165 mm)
 - 4) Screw-On Anchor Plate No. 315-D: 1-1/4 inches wide by 6 inches long:
 - a) 12 Gauge (2.7 mm).
 - b) 14 Gauge.
 - c) 16 Gauge.
 - b. Triangle Tie: No. 316 Triangle Tie 3/16 inch diameter (4.76 mm):
 - 1) 3 inch (76 mm) long.
 - 2) 3-1/2 inch (89 mm) long.
 - 3) 4 inch (101.6 mm) long.
 - 4) 5 inch (127 mm) long.
 - 5) 7 inch (178 mm) long.
 - 6) 9 inch (228.6 mm) long.
 - 7) 11 inch (279.4 mm) long.
- 3. Strap Anchors with Pintle Ties:
 - a. Strap Anchor for attachment to backup with Pintle tie
 - 1) Wire Veneer Anchor System No. 213: 14 Gauge (1.9 mm) backplate for use with following insulation thickness:
 - a) No Insulation.
 - b) 1 inch (25.5 mm) insulation.
 - c) 1-1/2 inches (38 mm) insulation.
 - d) 2 inches (51 mm) insulation.
 - e) 3 inches (76 mm) insulation.
 - b. Double Pintle Wire Tie No. 282: 3/16 inch diameter.
 - 1) 3-1/4 inch (82.5 mm) long.
 - 2) 4-1/4 inch (108 mm) long.

- 3) 5-1/4 inch (133.3 mm) long.
- c. Double eye rod anchor: No. 262.
 - 1) Diameter: 3/16 inch (4.76 mm).
 - 2) Length:
 - a) 2-3/4 inch (70 mm).
 - b) 4-3/4 inch (120 mm)
- d. Double anchor tie (pintle): No. 263
 - 1) Diameter: 3/16 inch (4.76 mm).
 - 2) Length:
 - a) 3 inch (76 mm).
 - b) 4 inch (102 mm)
 - c) 5 inch (127 mm).

2.4 STONE VENEER ANCHORS AND TIES

A. For Anchoring Into Edge of Dimension Stone Panels:

- 1. Dovetail Stone Pin Anchor No. 118: (Use with concrete backup containing No. 100 Dovetail Anchor Slot)
 - a. Metal Thickness:
 - 1) 3/16 inch (4.7 mm) - Standard
 - 2) 1/8 inch (3.1 mm) - Special.
 - 3) 12 gauge (2.7 mm) - Special.
 - b. Width: 1 inch (25.5 mm).
 - c. Length as indicated on the Drawings.
 - d. Length: _____ inches.
 - e. Pin:
 - 1) Welded.
 - 2) Loose.
 - 3) Diameter:
 - a) 1/4 inch (6.35 mm).
 - b) 3/8 inch (9.52 mm).
 - c) 1/2 inch (12.5 mm).
 - d) 5/8 inch (15.87 mm).
 - 4) Length: 3 inches (76 mm).
- 2. Channel Slot Pin Anchor No. 137: (Use with backup system with Channel Slots)
 - a. Metal Thickness:
 - 1) 3/16 inch (4.7 mm) - Standard
 - 2) 1/8 inch (3.1 mm) - Special.
 - 3) 12 gauge (2.7 mm) - Special.
 - b. Width: 1-1/4 inch (31.71 mm).
 - c. Length as indicated on the Drawings.
 - d. Length: _____ inches.
 - e. Pin:
 - 1) Welded.
 - 2) Loose.
 - 3) Diameter:

- a) 1/4 inch (6.35 mm).
- b) 3/8 inch (9.52 mm).
- c) 1/2 inch (12.5 mm).
- d) 5/8 inch (15.87 mm).
- 4) Length: 3 inches (76 mm).

B. For Anchoring Into Edge of Dimension Stone Panels: Use slot type;

1. Dovetail Bent Stone Anchor No.115 (For use with concrete backup with No. 100 Dovetail Anchor Slot)
 - a. Metal Thickness:
 - 1) 3/16 inch (4.7 mm) - Standard
 - 2) 1/8 inch (3.1 mm) - Special.
 - b. Width: 1 inch (25.5 mm).
 - c. Length as indicated on the Drawings.
 - d. Length: _____ inches.
 - e. Bend: 3/4 inch.
2. Dovetail Split-Bend Anchor No.117: Anchor (For use with concrete backup with No. 100 Dovetail Anchor Slot)
 - a. Metal Thickness:
 - 1) 3/16 inch (4.7 mm) - Standard
 - b. Width: 1-1/4 inch (31.75 mm).
 - c. Length as indicated on the Drawings.
 - d. Length: _____ inches.
 - e. Split Bend: 3/4 inch.
3. Channel Slot Bent Anchor No.135: (Use with backup system with Channel Slots)
 - a. Metal Thickness:
 - 1) 1/4 inch (6.35 mm).
 - 2) 3/16 inch (4.7 mm).
 - 3) 1/8 inch (3.17 mm).
 - 4) 11 gauge (3.0 mm).
 - 5) 12 gauge (2.7 mm).
 - 6) 16 gauge (1.5 mm).
 - b. Width as indicated on the Drawings.
 - c. Width: _____ inches.
 - d. Length as indicated on the Drawings.
 - e. Length: _____ inches.
 - f. Bend: 3/4 inch (19 mm).

2.5 DOVETAIL SLOT ANCHORS AND TIES

A. Standard Dovetail Slots and Ties:

1. Dovetail Slots: No.100 Standard Dovetail Anchor Slot.
 - a. Size: 1 inch (25 mm) wide by 1 inch (25 mm) deep by 5/8 inch (16 mm) throat.
 - b. Thickness:
 - 1) 20 Gauge (0.9 mm).
 - 2) 22 Gauge (0.76 mm).
 - 3) 24 Gauge (0.61 mm).

- 4) 26 Gauge (0.45).
 - 5)
2. For Use With Dovetail Slots: No.106; corrugated straps of length to suit application:
 - a. Gauge:
 - 1) 12 gauge.
 - 2) 16 gauge.
 - b. Width: 1 inch (25.5 mm).
 - c. Length from face of Concrete:
 - 1) Length as indicated on the Drawings.
 - 2) Length: _____ inches.
3. For Use With Dovetail Slots: No. 104; corrugated straps of length to suit application:
 - a. Gauge:
 - 1) 16 gauge (1.5 mm) - Standard.
 - b. Width: 1-1/2 inch (38 mm).
 - c. Length from face of Concrete:
 - 1) Length as indicated on the Drawings.
 - 2) Length: _____ inches.
 - 3)
4. For Use With Dovetail Slots: No.115; bent straps:
 - a. Thickness:
 - 1) 3/16 inch (4.7 mm).
 - 2) 1/8 inch (3.1 mm).
 - b. Width: 1 inch (25.5 mm).
 - c. Length from face of Concrete:
 - 1) Length as indicated on the Drawings.
 - 2) Length: _____ inches.
 - d. Bend: 3/4 inch (19 mm).
5. Ties:
 - a. Dovetail Triangle Tie No. 103: 12 Gauge (2.7 mm) clip factory assembled to a No. 316 Triangle tie 3/16 inch (4.76 mm) diameter by tie length of:
 - 1) 3 inch (76 mm).
 - 2) 4 inch (102 mm).
 - 3) 5 inch (127 mm).
 - 4) 9 inch (229 mm).
 - 5) 11 inch (279 mm).

2.6 MASONRY WALL STABILIZING ANCHORS

- A. For use in anchoring top of wall to structure while allowing vertical deflection.
 1. Type: No. 419; 12 Gauge (2.6 mm) plate with 3/8 inch (10 mm) diameter pin; plate anchored to structure overhead, pin sliding in plastic tube embedded in mortar at top of wall. Specify Type of Steel, Length of pin.
 2. Type: No. 420; 12 Gauge (2.6 mm) channel cap; attached to structure overhead. Specify Gauge, Length, Width, bend lengths, type of steel.
 3. Type: 138 Channel Slot Flat Anchor for structural beam with Welded Channel Slot:
 - a. Metal Thickness:
 - 1) 1/8 inch (3.1 mm).
 - 2) 11 gauge (3.0 mm).

- 3) 12 gauge (2.7 mm).
 - 4) 14 gauge (1.9 mm).
 - 5) 16 gauge (1.5 mm).
- b. Width: 1-1/4 inches (32 mm) wide.
- c. Length:
 - 1) As indicated on the Drawings.
 - 2) Define _____.
- 4. Type: 138-R Channel Slot Threaded Rod Anchor: Threaded rod welded 1 inch (25.5 mm) onto a 12 gauge (2.7 mm) dovetail clip 1 inch with end extending 1 inch beyond the face of the dove tail slot.
 - a. Rod diameter:
 - 1) 1/4 inch (6.35 mm).
 - 2) 3/8 inch (9.52 mm).
 - 3) 1/2 inch (12.5 mm).
 - 4) 5/8 inch (15.87 mm).
 - b. Length of rod:
 - 1) As indicated on the Drawings.
 - 2) Define _____.
 - c. Plastic Tube No. 421 over pin.
- 5. Type: No.121; threaded rod used with a No. 100 Dovetail Slot built into top of slab.
 - a. Dovetail anchor 12 gauge (2.5 mm) by 1 inch (25.5 mm) wide with length as indicated on the Drawings.
 - b. Diameter of threaded rod: 3/8 inch (9.52 mm).
 - c. Length of flat part from face of concrete: As indicated on the Drawings.
 - d. Length of threaded rod beyond flat part: As indicated on the Drawings.
 - e. Plastic Tube No. 421 over pin.
- 6. Type: No.109 Dovetail Flat Anchor used with a No. 100 Dovetail Slot built into top of slab.
 - a. Dovetail anchor 12 gauge (2.5 mm) by 1 inch (26 mm) wide with length as indicated on the Drawings.
 - b. Plastic Tube No. 421 over anchor.

2.7 ACCESSORIES

- A. Remedial Ties: No.391; Spiro Remedial Tie screw-in anchors.
 - 1. Length:
 - a. As indicated on the Drawings.
 - b. Define _____.
- B. Ledge Angle, Shelf Angle, and Lintel Angles:
 - 1. Anchors in Concrete:
 - a. No. 425; malleable iron wedge inserts, cast in place with reinforcing bar anchor.
 - 1) Size:
 - a) 3/4 inch (19 mm) regular
 - b) 3/4 inch (19 mm) long
 - b. No. 427 askew head bolts.
 - 1) Length:
 - a) As indicated on the Drawings.

- b) Define _____
- 2. Anchors in Concrete: Cast-in-place studded anchor plates as detailed.
- 3. Anchors to Steel: No. 700 series; field welded.

- C. Control Joint Fillers: No. 352; flexible rubber seals fitting in sash block reveals.
 - 1. Length:
 - a. As indicated on the Drawings.
 - b. Define _____.

- D. Control Joint Anchors: Tie masonry together while allowing movement.
 - 1. Type: No.350 Heavy Duty Control Joint Anchor.
 - 2. Type: No.351 Corrugated Control Joint Anchor.
 - 3. Type: No. 353 Debonded Shear Anchor.

PART 3 EXECUTION

3.1 PREPARATION

- A. Clean materials thoroughly prior to installation.

3.2 INSTALLATION

- A. Install in masonry anchors and accessories in accordance with manufacturer's printed instructions.
- B. Concrete unit masonry installation is specified in Section 04810.
- C. Brick masonry installation is specified in Section 04810
- D. Stone masonry installation is specified in Section 04850

3.3 PROTECTION

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

END OF SECTION

Section 04 05 23

Weep Holes

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Cellular weep vents embedded in mortar joints of masonry walls.

1.2 SUBMITTALS

A. Provide in accordance with Section 01330 - Submittal Procedures:

1. Product data and installation instructions.
2. [2 by 2] [51 by 51 mm] minimum sample of weep vent in selected color.

PARTS 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Advanced Building Products, Inc., P.O. Box 98, Springvale, Maine 04083; 800-252-2306; www.advancedflashing.com

B. Manufacturers of equivalent products submitted and approved in accordance with Section 01630 - Product Substitutions Procedures.

2.2 PRODUCTS

A. Weep vents:

1. Type: Cellular, honeycomb design, polypropylene weep vents for embedding in masonry wall mortar joints; Mortar Maze Weep Vent System as manufactured by Advanced Building Products, Inc.
2. Material: High density polyethylene and impervious to water and resistant to UV degradation.

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Advanced Building Products, Inc., P.O. Box 98, Springvale, Maine 04083
TEL: 800-252-2306; FAX: 207-490-2998; WEBSITE: www.advancedflashing.com

***** Mortar Maze Weep Vents are provided in two sizes. *****

3. Size: [[3/8 by 2-1/2 by 3-3/8] [3/8 by 3-1/2 by 3-1/2] inches.] [[10 by 64 by 89] [10 by 89 by 89] mm].

***** Advanced Building Products, Inc. provides Mortar Maze Weep Vents in several colors to match typical mortar colors. *****

4. Color: [Selected by Architect from manufacturer's full range.] [Match mortar color.]

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install weep vents as part of masonry wall construction and in accordance with manufacturer's installation instructions. Coordinate with installation of through wall flashings.

B. Locate weep vents at [wall bases, above door and window openings, above bond beams, and other through wall flashings.] [At locations detailed on Drawings.] Space at [_____] [inches] [mm] maximum.

C. Embed weep vents in vertical mortar head joints. Tool joints to prevent obstruction of weep spouts.

END OF SECTION

SECTION 04 21 13

BRICK

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Ground Face Concrete Masonry Architectural Units.
 - a. Oldcastle Ground Face Concrete Masonry Architectural Units
 - b. Oldcastle Florentine Ground Face Concrete Masonry Architectural Units
2. Oldcastle Architectural Concrete Masonry Units:
 - a. Oldcastle Split-Faced Finish Units
 - b. Oldcastle Split-Ribbed Finish Units
 - c. Oldcastle Fluted Finish Units
 - d. Oldcastle Scored Finish Units
 - e. Smooth Faced Finish Units
 - f. Other Specialty Shapes and Finishes
3. Concrete Masonry Insulated Wall System
 - a. The Integra Wall System
4. Concrete Masonry Fire-Rated Wall Systems
 - a. Oldcastle Q-LITE Concrete Masonry Units Rated Wall Systems
 - b. Oldcastle Redline Concrete Masonry Units Rated Wall Systems
 - c. Oldcastle Fire-Rated Wall Concrete Masonry Units

B. Related Sections: Refer to related Division 4 Masonry Sections

1.02 SUBMITTALS

- A. General: Prepare, review, approve and submit specified submittals in accordance with Division 1 Submittals Sections. Submit the following:

1. Product Data: Submit product data for each type of product specified.
2. Samples: Submit verification samples for colors, textures.
3. Test Report: Submit test report from an independent testing agency indicating compliance with industry standards.

1.03 QUALITY ASSURANCE

- A. Mock-Up (Field Constructed): Install at project site a job mock-up using acceptable products and manufacturer approved installation methods. Obtain Owner's and Architect's acceptance of finish color, texture and pattern, joint sizes, and installation workmanship standard.

1. Mock-up size.
2. Maintenance: Maintain mock-up during construction for workmanship comparison, remove and legally dispose of mock-up when no longer required.
3. Incorporation: Mock-up may be incorporated into final construction upon Owner's approval.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- B. Storage and Protection: Store materials protected from exposure to harmful weather conditions.

PART 2 PRODUCTS

2.01 MANUFACTURERS (ACCEPTABLE MANUFACTURERES/ PRODUCTS)

- A. Acceptable Manufacturers: Oldcastle Architectural Products Group

1. Address. 375 Northridge Road, Atlanta, Ga 30350

- a. Telephone: 404-804-3363 Fax: 404-804-3369

2. See Product Locator Guide on pg. 3

- B. Oldcastle Ground Face Concrete Masonry Units, with optional integral water repellent agent.

1. Oldcastle Ground Face Masonry Architectural Units, with optional integral water repellent agent.

- a. Size/Thickness/Color

- b. Minimum Net Area Average Compressive Strength

- c. Water Absorption: Maximum 10 pcf (ASTM C-140)

2. Oldcastle Florentine Architectural Units, with optional integral water repellent agent:

- a. Size/Thickness/Color
- b. Minimum Net Area Average Compressive Strength
- c. Water Absorption: Maximum 10 pcf (ASTM C-140)

3. Product(s)/System(s) Testing:

- a. Concrete Masonry Unit Product Standard: Comply with ASTM C-90 and ASTM C-140 for concrete masonry architectural units.

C. Oldcastle Architectural Concrete Masonry Units, with optional integral water repellent agent:

1. Oldcastle Concrete Masonry Units, with optional integral water repellent agent.

- a. Size/Thickness/Color
- b. Minimum Net Area Compressive Strength (ASTM C-90)
- c. Maximum Absorption (ASTM C-90)
- d. Weight Classification
- e. Exposed Face Finish

2. Product(s)/System(s) Testing:

- a. Architectural Unit Product Standard: Comply with ASTM C-90 for concrete masonry units.

D. The Integra Concrete Masonry Insulated Wall Systems:

1. Concrete Masonry Units.

- a. Size/Thickness/Color:
- b. Minimum Net Area Average Compressive Strength: 3000 psi
- c. Minimum Absorption (ASTM C-90).

2. Insulation: Polyurethane, specially formulated and recommended by The Integra Wall System manufacturer

3. Mortar and Grout: as recommended by The Integra Wall System manufacturer

4. Steel Re-Bar: As recommended by The Integra Wall System manufacturer

5. Product(s)/System(s) Testing. The Integra manufacturer's publication "Product Manual System: and in compliance with ASTM C-90 for concrete masonry units.

2.02 RELATED MATERIALS

- A. Mortar and Grout: Refer to Division 4 Masonry Section for mortar and grout materials.
- B. Expansion and Control Joints: Refer to Division 4 Masonry Section for expansion and control joints materials.

2.03 SOURCE QUALITY CONTROL

- A. General: Obtain architectural masonry construction units from a single source to ensure color, finish and texture continuity.

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS/RECOMMENDATIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, and product catalog installation instructions.

3.02 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.

3.03 PREPARATION

- A. Adjacent Surfaces Protection: Protect adjacent work areas and finish surfaces from damage during product installation.

3.04 INSTALLATION

- A. General: Refer to Division 4 Masonry Section for installation requirements.
- B. Pattern: Install concrete masonry construction units in pattern indicated on drawings. Maintain pattern lines. Match approved job mock-up.
- C. Elevation Tolerances: Elevations of installed concrete masonry architectural units shall not deviate more than 1/4 inch (20 mm) in plumb.
- D. Expansion and Control Joints: Provide for expansion and control joints in concrete masonry construction as recommended by manufacturer.

3.05 CLEANING AND PROTECTION

- 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.
- B. Protection: Protect installed product's finish surfaces from damage during construction.

SECTION 04 28 23 MASONRY NET

PART 1 General

1.1 Related Work

Sections: 03200 Wall Ties, 04100 Mortar & Grouts & Cement, 04150 Masonry Reinforcing & Accessories, 04210 Brick, 04220 Concrete Masonry Units, 06118 Sheathing Board, 07100 Waterproofing & Dampproofing, 07200 Perimeter Insulation, 07212 Rigid Insulation, 07620 Wall Flashing - Sheet Metal, 07645 Flashing - Preformed Metal & Plastic, 07650 Flashing - Flexible & Laminated Sheet, 09110 Steel Stud Systems, 10235 Brick & Block Vents

1.2 System Description

Use The Mortar Net™ as part of standard masonry cavity wall flashing/weep hole wall drainage systems. The Mortar Net™ keeps weep hole open and flashing free of mortar droppings and debris by catching and permanently suspending droppings above the level of the top of the weep hole. It prevents mortar from forming a continuous barrier against proper water flow to the weeps, and by providing routes through the body of the product itself for water to flow to the flashing and weeps. Mortar Net Weep Vents keep weep holes free of insects and debris, allowing moisture to flow from the cavity to the building exterior. They add to the beauty of the wall by duplicating the texture color of mortar, thus eliminating open holes and dark shadows.

1.3 Quality Assurance

Mortar Net and Mortar Net Weep Vents will not oxidize, rot, support mold or fungus, nor react with common building materials including mortar, cement, asphalt, modified bitumen, PVC, copper, steel, or galvanized metal. Neither material is edible by insects. The material retains its shape and rigidity in and is undamaged by extended exposure to normal field temperatures, and is highly resistant to UV degradation.

1.4 Delivery, Storage and Handling

0.4" materials are shipped 250 lineal feet per cardboard box, fifty 5' sections per box. 1.0" & 2.0" material is shipped 100 lineal feet per cardboard box, twenty 5' sections per box. Weep Vents are shipped 125 pieces per cardboard box. Product

requires no special handling, is very lightweight, and boxes and loose material are easily handled by one person. Secure loose and boxed material during strong winds. Do not expose material to direct sunlight for more than two weeks. If material is protected from exposure to direct sunlight it may be stored indefinitely.

1.5 Sequencing/Scheduling

Install Mortar Net after flashing has been installed, first one or two courses of brick have been laid, and weep holes have been created. Install product before third or higher courses of brick have been laid. Install Mortar Net Weep Vents in weep holes every 24 inches as bricks are being laid.

1.6 Unit Prices

Unit price is per lineal foot (304.8 mm).

1.7 Warranty

Mortar Net USA, Ltd. warrants our products to be of quality and composition stated and free of manufacturer's defects. We will replace or refund the purchase price of any product proved defective. This limited warranty is the only warranty extended by Mortar Net USA, Ltd. in regard to its product. Mortar Net USA, Ltd. is not liable for installation and for any incidental, consequential or other damages. Mortar Net USA, Ltd's liability shall not exceed the purchase price of the material in question.

PART 2 Products

2.1 Acceptable Manufacturers

Mortar Net USA, Ltd.
541 S. Lake Street
Gary, IN 46403
Tel: (219) 939-3870
Toll-Free: (800) 664-6638
Fax: (219) 939-3877
Web site: <http://www.mortarnet.com/sww>

2.2 Materials

All dimensions are nominal. Measurements are inclusive of the continuous bottom strip and the dovetail shape.

Five available sizes: 1.0" (25.4 mm), 0.4" (10.16 mm) thicknesses by 10" (254 mm) height by 5' (1524 mm) long. 2.0" (50.8 mm) thick by 10" (154 mm) height by 5' (1524 mm) long and 1.0" (25.4 mm) thick by 16" (406.4 mm) height by 5' (1524 mm) long.

Continuous bottom strip on all sizes of material is 3" (76.2 mm) high, regardless of material thickness or overall material height.

Mortar Net™ is manufactured of High Density Polyethylene (HDPE) in one inch (25.4mm) and from Nylon in 0.4" (10.16mm), (nominal). And 2" (50.8mm) thick (nominal) of 200 denier 100% recycled polyester. Product is 90% open weave green mesh in a dovetail configuration connected by a continuous bottom strip. Weep Vents 2.5" x 4.0" x 0.5" are also of 200 denier 100% recycled polyester in 6 colors.

Manufacturer's Product Codes:

10 " (254 mm) high by 1.0" (25.4 mm) thick material: MN 10-1

10 " (254 mm) high by 0.4" (10.16 mm) thick material: MN 10-04

10" (254 mm) high by 2.0" (50.8 mm) thick material: MN 10-2

16 " (406.4 mm) high by 1.0" (25.4 mm) thick material: MN 16-1

PART 3 Installation

3.1 Inspection

Match product size to cavity size. Cavity should be no more than 1/4" (6.35 mm) wider than 1.0" (25.4 mm) thick material and 0.4" (10.16 mm) thick material should touch both the other wythe and the inner wall, insulation or filler used to adjust the cavity size (see 3.3).

Inspect for and repair holes in flashing immediately prior to installing Mortar Net™.

3.2 Preparation

Clean flashing and weep holes so they are free of mortar droppings and debris immediately prior to installing Mortar Net™. If wicks are used (not recommended), prevent mortar from coating or covering wicks inside the cavity. Washing flashing with water or chemicals prior to installation is not necessary.

3.3 Installation

For most walls, install one continuous row of The Mortar Net™ at base of wall and over all wall openings directly on flashing.

To prevent mortar bridging between the outer wythe and inner wall, install flashing and any material used as filler to match cavity width to product size (see 3.1) extending from the bottom of The Mortar Net™ to at least 6.0" (152.4 mm) above the top of The Mortar Net™.

Multiple thicknesses of The Mortar Net™ may be installed to match cavity widths and if excessive droppings are expected. Inspection, preparation, and installation procedure for multiple thicknesses is the same as for single thickness. When installing multiple thicknesses, align the dovetail sections with each other.

To match cavity width to product thickness (see 3.1) without using multiple thicknesses of The Mortar Net™, place rigid insulation of appropriate thickness against the outside face of the inner wall extending from the bottom of The Mortar Net™ to at least 6.0" (152.4 mm) above the top of The Mortar Net™.

Lay the first one or two courses of brick at flashing level, then install The Mortar Net™ continuously by placing it against the inside of the outer wythe, dovetail shaped section of the material facing up, directly on the flashing at the base of the wall and over all wall openings. No fasteners or adhesives are required, and mortar need not have set. (See Caution - below.)

The Mortar Net™ will not come in contact with wall ties in most standard wall tie installations, but if it does, it may be cut or torn to accommodate wall ties, conduit, plumbing, or other materials that bridge or intrude into the cavity between the inner and outer walls.

The Mortar Net™ is compressible horizontally so it may be forced into cavities slightly smaller than its nominal thickness without affecting its or the wall's performance.

Caution: When forcing The Mortar Net™ into a cavity, be sure mortar has set sufficiently to resist outward pressure from product.

Mortar Net Weep Vents are installed in debris free weep holes every 24" as bricks are being laid.

SECTION 054100
LOAD-BEARING METAL STUDS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Stud framed walls
- B. Cold-formed steel framing accessories
- C. Structural engineering services provided by cold-formed metal framing fabricator

1.02 RELATED SECTIONS

- A. Section 03300 – Cast-In-Place Concrete
- B. Section 04200 – Unit Masonry
- C. Section 05120 – Structural Steel
- D. Section 05500 – Metal Fabrications
- E. Section 07210 – Building Insulation
- F. Section 08410 – Aluminum-Framed Entrances and Openings
- G. Section 08910 – Aluminum – Framed Curtain Walls
- H. Section 09250 – Gypsum Board
- I. Section 09255 - Exterior Gypsum Board

1.03 REFERENCES

- A. Publications listed herein are part of this specification to extent referenced.
- B. American Institute for Steel Construction (AISC):
 - 1. Specification for the Design of Cold-Formed Steel Structural Members
 - 2. Manual of Steel Construction
- C. American Society for Testing and Materials:
 - 1. ASTM A153 Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Hardware

2. ASTM A307 Specification for Carbon Steel Externally Threaded Standard Fasteners
3. ASTM A370 Test Methods and Definitions for Mechanical Testing of Steel Products.
4. ASTM A653 Specification for Steel Sheet, Zinc-coated (Galvanized) or Zinc-Iron Alloy Coated by the Hot-Dip Process.
5. ASTM B633 Specification for Electrodeposited Coatings of Zinc and Iron and Steel
6. ASTM C955 Specification for Load-Bearing (Transverse and Axial) Steel Studs, Runners, and Bracing or Bridging, for Screw Application of Gypsum Board and Metal Plaster Bases
7. ASTM C1007 Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.

D. American Welding Society (AWS)

1. AWS D1.1 Structural Welding Code – Steel
2. AWS D1.3 Structural Welding Code – Sheet Steel

E. Federal Specifications

1. FS FF-P-395B – Pin, Drive, Guided and Pin, Power Actuated (Fasteners for Power Actuated and Hand Actuated Fastening Tools)
2. FS FF-S-325 Shield, Expansion, Nail, Expansion, And Nail, Drive, Screw (Devices, Anchoring Masonry)
3. FS TT-P-645 – Primer Coating, Alkyd, Corrosion-Inhibiting, Lead and Chromate Free, VOC Complaint

1.04 SYSTEM DESCRIPTION

A. General Requirements:

1. Cold-Formed steel stud framing system for exterior wall with batt insulation, covered on interior with gypsum board; covered on exterior with rigid insulation board sheathing, an air space, and brick veneer attached through sheathing to steel stud framing with approved, load transferring masonry tie system.
2. Framing Assemblies consisting of metal studs lighter than 18 gauge shall be specified elsewhere in Project Manual.

B. Design Requirements:

1. Design System Components in compliance with AISI Specification for the design of cold-formed steel structural members; provide for movement of components due to thermal variations with damage, failure, or excessive stress on components.
2. Physical and structural properties listed by manufacturer shall be considered minimum permitted for framing members.
3. Disregard any contribution of sheathing in determining stiffness of backing.
4. Withstand loads in compliance with applicable codes and as follows:
 - a. Wind Load: Base wind speed of not less than 80 mph.
5. Design system to accommodate 1/2" (12mm) vertical deflection of structural building frame, live loading, seasonal and day/ night temperature ranges, and construction tolerances.

C. Performance Requirements:

1. Metal Stud partition size, gauge, and limiting heights shall be sized for a maximum allowable horizontal deflections as follows:
 - a. Brick Veneer: 1/600th of span
 - b. Exterior Insulation and Finish System (EIFS): 1/240th of span

1.04 SUBMITTALS

A. Product Data:

1. Submit manufacturer's literature describing products to be provided.

B. Shop Drawings:

1. Indicate locations of cold-formed framing assemblies in Project. Include sizes, gauges, and spacing of framing components.
2. Indicate connections and fastening methods between framing members and to adjacent materials, bracing, hangers, etc.
3. Show bearings, anchors, and other materials needed for construction activities of this section; indicate materials not supplied by manufacturer of products of this section.

C. Quality Assurance Submittals:

1. Design Data:

- a. Submit structural calculations prepared by manufacturer, bearing seal and signature of a registered professional engineer licensed in State of Maryland, including but not limited to:

- 1) Description of design criteria for loading stresses
- 2) Engineering analysis depicting stress and deflection (stiffness) requirements for each framing application.
- 3) Selection of framing components and accessories.
- 4) Verification of attachments to structure or adjacent framing

2. Certificates:

- a. Mill Certificate for each type of structural framing member, indicating following information:
 - 1) Bare metal thickness of steel, measured to 1/1000"
 - 2) Yield strength of steel
 - 3) Tensile strength of steel
 - 4) Total elongation of steel in 2" gauge length
 - 5) Chemical Analysis of steel
 - 6) Thickness of galvanized coating, measured to 1/1000"
- b. Upon completion of cold formed metal framing work, submit written certification from a registered professional engineer licensed in the state of Maryland that cold formed metal framing has been constructed in Compliance with project requirements applicable codes and accepted Shop drawings.
- c. Provide certification verifying liability insurance coverage carried by specialty engineer. Submit insurance certificate with, or before first submission of shop drawings.

3. Manufacturers Instructions:

- a. Submit printed installation instructions for products specified which shall shall be basis for accepting or rejecting actual installation procedures.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Packing, Shipping, Handling, and Unloading:

1. Deliver materials in original unopened containers or bundles with labels intact.
2. Include on label for each container or bundle:
 - a. Manufacturer's name
 - b. Type, brand, and grade

B. Storage and Protection

1. Store materials in a clean, dry area, above ground, away from construction activities in a well-ventilated area.
2. Stack materials to prevent water from accumulating on or within materials, using blocking or skids to provide drainage.
3. Materials shall be protected from rain and snow by an impervious covering and shelter.
4. Prevent Contact with material that may cause corrosion, discoloration, or staining.
5. Remove damaged materials from Site.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Cold Formed Metal Framing:

1. American Studio Inc.
2. Dale/Incor, Inc.
3. Dietrich Industries
4. Marino/Ware Division
5. Unimast, Inc.

B. Framing Accessories:

1. The Steel Network Inc. – TSN

2.02 COLD-FORMED METAL FRAMING

- A. Material: ASTM A653 steel; SS Grade 50, Class 1 G60 hot-dipped galvanized coating, except as otherwise noted
 - 1. Minimum yield strength: 50 ksi
 - 2. Minimum tensile strength: 60 ksi
- B. Connector devices:
 - 1. Vertical Deflection Clips:
 - a. Description: Rigid attachment to structure and screw attachment to stud web using step brushings to permit frictionless vertical movement
 - b. Thickness: 68 mils minimum
 - c. Size: As needed based on structural design calculations
 - d. Product: TSN – Driftclip, including step bushings
- C. Bridging:
 - 1. Solid bridging: Channel shaped bridging with lipped flanges and integral formed clips. Screw Attachment to stud.
 - a. Thickness 33 mils minimum
 - b. Size: As needed base on structural design calculations

2.04 FASTENERS

- A. General Requirements:
 - 1. Fastening components may be self tapping screws or welding of sufficient size to insure strength of connection.
 - 2. Provide Galvanized fasteners for assemblies having galvanized major steel components.
 - 3. Where protection against moisture or corrosive environment is needed, screws shall be coated.
- B. Screws:
 - 1. Provide screw type and size need based on structural design calculations.
- C. Anchor Bolts and Studs:
 - 1. Provide screw type and size as needed based on structural design calculations.

2.05 FABRICATION

A. General Requirements:

1. Framing components shall be cut squarely for attachment to perpendicular members, or as needed for an angular fit against abutting members.
2. Steel Framing members shall be color coded by gauge for ease of identification base on ASTM C955
 - a. 12 gauge: Red
 - b. 14 gauge: Orange
 - c. 16 gauge: Green
 - d. 18 gauge: Yellow
 - e. 20 gauge: White

PART 3 EXECUTION

3.01 ERECTION

A. General Requirements:

1. Install Components in compliance with manufacturer's instructions, shop drawings, and requirements of ASTM C1007
2. Install members in single piece lengths except that tracks may be spliced, butt welded or each length anchored to a common building frame element.
3. Cut members by shearing or sawing.
4. Temporary Shoring and Bracing:
 - a. Provide for erection stresses; provide temporary bracing as construction activity progresses.
 - b. Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads.
5. Provide angles, clips, and other miscellaneous pieces need to attach framing panels to building structure or attach other materials to framing panels.
6. Field Fastening:
 - a. Use minimum 2 self tapping metal screws per connection, unless

otherwise indicated

B. Steel Stud Framing

1. Erect framing members and panels plumb, level and square.
2. Align top and bottom tracks; locate as indicated, and secure track to substrates at spacing not greater than 24" on center
3. Studs shall be plumbed, aligned securely attached to flange or webs of both upper and lower tracks.
4. Install Double studs at jambs of openings for doors, cased openings, and windows.
5. Frame Corners with three studs.
6. Seat studs in track square with flange.
7. Splices in axially loaded studs shall not be permitted.
8. Attach cross studs for attachment of fixtures; install framing between studs for attachment or mechanical and electrical items, and to prevent rotation.
9. Provide stud walls as needed as "shear walls" for frame stability and lateral load resistance.

3.02 FIELD QUALITY CONTROL

A. Manufacturers' Field Services:

1. Steel Framing manufacturer shall provide a qualified representative for periodic on-site reviews of fabrication and installation in compliance with manufacturer's recommendations.

3.03 REPAIR/ RESTORATION

- A. Touch up damaged coating surfaces; use specified primer.

END OF SECTION

SECTION 06 05 13

OSB

ORIENTED STRAND BOARD

PART I. - GENERAL

A. RELATED DOCUMENTS

1. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1 Oriented Strand Board

a. Underlayment.

b. Sheathing.

c. Subflooring.

2. Related categories: The following categories contain requirements that relate to this section:

1. Heavy Timber Construction.

2. Prefabricated Metal-Plate-Connected Wood Trusses.

3. Finish Carpentry for nonstructural carpentry items exposed to view.

4. Exterior Architectural Woodwork

5. Interior Architectural Woodwork

B. DEFINITIONS

A. Rough carpentry includes carpentry work not specified as part of other Sections and generally not exposed, unless otherwise specified.

B. Certification agency is an organization accredited by an independent authority to certify performance to an appropriate standard. APA - The Engineered Wood Association, PFS, PSI, and TECO are accredited certification agencies.

C. DEFLECTION - The amount a panel deflects between two supports when carrying an impact, point or uniform load. Maximum deflection for roof panels is $L/240$ for live load or $L/180$ for live load plus dead load. Maximum deflection of floor panels is $L/360$ for live plus dead load. L is the unsupported distance between supports.

D. EXPOSURE 1 - Designation of product durability. Products with this designation are intended for protected construction uses where durability to resist moisture exposure due to construction delays, or other conditions of similar severity is required.

E. HUD - The Department of Housing and Urban Development. HUD sets standards for government financed construction and manufactured homes.

F. SBA - The Structural Board Association is an industry association representing OSB and waferboard panel manufacturers.

G. OSB - Oriented Structural Board, Oriented Strand Board.

H. PERFORMANCE BASED - Panels which have been tested to meet specific loading and deflection conditions from impact, point loads and uniform loads when panels span two or more supports.

I. STRAND - A specialized knife cut wood flake of controlled thickness and a length along the grain direction of at least twice and usually many times its width.

J. TOUCH SANDED - A process that removes material from the panel surface to provide a uniform thickness. T and G panels are usually touch sanded.

L. WAFER - A specialized knife cut wood flake having a controlled length of at least 1-1/4" (32 mm) along the grain direction, a controlled thickness and a variable width.

M. STRUCTURAL PANELS - OSB/waferboard, softwood plywood and composite panels. (Composite panels have a veneer face and a waferboard core.) These panels are made from whole logs. The phenolic or isocyanate resin binder is water proof. Use in construction or engineered industrial applications. Panels are weather resistant.

N. INDUSTRIAL OR DECORATIVE PANELS (hardwood plywood, mahogany plywood, etc.) - These panels are made from logs. The urea formaldehyde resin binder is partially water soluble and not boil proof. Not suitable for construction as not weather resistant. Used in cabinets, furniture, paneling.

O. PARTICLEBOARD (particleboard, medium density fibreboard (MDF) and hardboard) - These panels are made from saw mill residue or low grade logs. Particleboard is made by converting sawmill residue into small particles. Hardboard and MDF is made by converting sawmill waste into fibre like coarse pulp. The urea formaldehyde binder is partially water soluble and not boil proof. Not suitable for construction. Used in cabinets, furniture, paneling (hardboard), ceiling tile.

P. INSULATION BOARD (softboard or fibre board) - These panels are made from sawmill residues or low grade logs converted into coarse fibre. The binder is urea formaldehyde and is partially water soluble and not boil proof. Not used in construction other than as insulated sheathing. Used for ceiling tile, sound absorbent partitions, sound proofing.

Q. UNDERLAY (UL) - A generic term for thin (1/4" or 7.5 mm or less) panels of plywood, OSB, waferboard, particleboard or hardboard which have sanded surface suitable for applying vinyl tile or thin carpet. The binder can be phenolic, isocyanate or urea formaldehyde.

R. CHIPBOARD - A European product not made in Canada. OSB and waferboard are sometimes referred to as chipboard. Chipboard is made from logs, slabs or lumber residue. The binder is usually urea formaldehyde but can be melamine or phenolic. Used in construction in Europe primarily for walls and floors.

1.4 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data for the following products:

1. Underlayment.
2. Sheathing.
3. Subflooring.

C. Research reports or evaluation reports of the model code organization acceptable to authorities having jurisdiction evidencing compliance of the following wood products with specified requirements and building code in effect for Project.

1. Underlayment.
2. Sheathing.
3. Subflooring.

1.5 QUALITY ASSURANCE

A. Single-Source Responsibility for Engineered Wood Products: Obtain each type of engineered wood products from one source from a single manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Storage: Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack OSB; provide for air circulation within and around stacks and under temporary coverings including polyethylene and similar materials.

PART II. - PRODUCTS

2.1 CONSTRUCTION PANELS, GENERAL

A. Construction Panel Standards: Comply with PS2-92 and CSA-0325 for OSB construction panels.

B. Trademark: Furnish construction panels that are each factory-marked with a certification mark evidencing compliance with grade requirements.

2.2 CONCEALED PERFORMANCE-RATED CONSTRUCTION PANELS

A. General: Where construction panels are indicated for the following concealed types of applications, provide APA, PSI, PFS or TECO performance based panels complying with requirements designated under each application for grade designation, span rating, exposure durability classification, edge detail (where applicable), and thickness.

B. Subflooring: PS2-92 or CSA-0325 PERFORMANCE BASED SHEATHING.

1. Exposure Durability Classification: EXPOSURE 1.
2. Span Rating: As required to suit joist spacing indicated.
3. Span Rating: 24/16.
4. Span Rating: 32/16.
5. Span Rating: 40/20.
6. Span Rating: 48/24.

C. Wall Sheathing: PS2-92 or CSA-0325 PERFORMANCE BASED SHEATHING.

1. Exposure Durability Classification: EXPOSURE 1.
2. Span Rating: As required to suit stud spacing indicated.

3. Span Rating: 12/0, 16/0, 20/0 or Wall-16 oc for stud spacing of 16 inches or less.

4. Span Rating: 24/0, 24/16, 32/16 or Wall-24 oc for stud spacing of 24 inches or less.

D. Roof Sheathing: PS2-92 or CSA-0325 PERFORMANCE BASED SHEATHING.

1. Exposure Durability Classification: EXPOSURE 1.

2. Span Rating: As required to suit rafter spacing indicated.

3. Span Rating: 12/0.

4. Span Rating: 16/0.

5. Span Rating: 20/0.

6. Span Rating: 24/0.

7. Span Rating: 24/16.

8. Span Rating: 32/16.

9. Span Rating: 40/20.

10. Span Rating: 48/24.

2.3 CONSTRUCTION PANELS FOR BACKING

A. OSB Backing Panels: For mounting electrical or telephone equipment, provide OSB panels in thickness indicated, or, if not otherwise indicated, not less than 1/2 inch (12.5mm).

2.4 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with a hot-dip zinc coating per ASTM A 153 or of AISI Type 304 stainless steel.

B. Nails, Wire, Brads, and Staples: FS FF-N-105.

C. Power Driven Fasteners: National Evaluation Report NER-272.

D. Wood Screws: ANSI B18.6.1.

E. Lag Bolts: ANSI B18.2.1.

F. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and where indicated, flat washers.

2.5 MISCELLANEOUS MATERIALS

A. Adhesives for Field Gluing Panels to Framing: Formulation complying with APA AFG-01 that is approved for use with type of construction panel indicated by both adhesive and panel manufacturer.

PART III. - EXECUTION

3.1 INSTALLATION, GENERAL

A. Discard units of material with defects that impair quality of rough carpentry construction and that are too small to use in fabricating rough carpentry with minimum joints or optimum joint arrangement.

3.2 INSTALLATION OF CONSTRUCTION PANELS

A. General: Comply with applicable recommendations contained in this document and applicable SBA publications for types of construction panels and applications indicated.

B. Fastening Methods: Fasten panels as indicated below:

1. Combination Subflooring-Underlayment: Glue and nail to framing throughout.*

2. Combination Subflooring-Underlayment: Nail to framing.*

3. Subflooring: Glue and nail to framing throughout.*

4. Subflooring: Nail to framing*

5. Subflooring: Staple to framing.*

6. Subflooring: Staple or nail to framing.*

7. Sheathing: Nail to framing.

8. Sheathing: Staple to framing.

9. Sheathing: Nail or staple to framing.

10. Underlayment: Nail to subflooring.

11. Underlayment: Staple to subflooring.

12. Underlayment: Nail or staple to subflooring.

a. Fill and sand edge joints of underlayment receiving resilient flooring.

13. OSB Backing Panels: Nail to supports.

* SBA recommends screws for flooring

C. Fastening: For subfloors use 6d common or deformed shank nails (8d nails for panels over 19/32" (15.1mm) thickness) at 6" (152mm) on center along panel edges and 3/8" (9.5mm) minimum from panel edge. Space nails at 12" (305mm) o.c. into intermediate supports. For combination subfloor/underlayment, use 6d deformed shank nails at 6" (152mm) on center along panel edges and 10" (254mm) o.c. into intermediate supports. For glued nailed floors nail spacing may be 12" (305mm) o.c. along all supports. Joist sizes and spans for glued nailed floors are available from SBA. Other equivalent fastening schedules may be used. Also larger nail sizes and closer spacing may be necessary in high wind areas. Check with local building officials.

D. Fastening: For sheathing use 6d common nail fasteners at 6" (152mm) o.c. on panel edges, at 12" (305mm) o.c. along intermediate supports, and 3/8" (9.5mm) minimum from panel edge. Use 8d common nail fasteners for panels over 1/2" (12.5mm) thickness. Increased panel thicknesses, longer nails and closer spacing are necessary in high wind areas. Check with local building officials.

E. Laying finished floor over combination subfloor underlayment: After the building is closed in and heated and just before laying the finished floors, sweep and vacuum the panels. Carefully check the floor surface for protruding nail heads and make sure all panels are fully nailed. Little filling should be necessary. Adverse moisture conditions may have caused some panel edge swelling. Sand panel edges flush and ensure panels are dry before installing finished floor. Carpet, wood strip flooring and parquet flooring may be installed on top of the panels following good practice and the flooring manufacturer's directions.

F. For adhesive applied resilient flooring use panel underlayment applied per manufacturer's requirements. Other resilient finish floor coverings recommended for application over wood floor systems may be laid directly over combination subfloor underlayment panels. (In addition to the procedures previously outlined it may be necessary to level the entire surface with a light sanding, if the floor was subjected to severe moisture conditions during construction.)

G. Use an adhesive recommended by the flooring manufacturer that is not rigid setting sulfite liquor or alcohol resin-based.

Section 06 05 73

Pressure Lumber

PART 1 GENERAL SECTION 04 05 13

MASONRY MORTAR

SECTION 04 05 13

MASONRY MORTAR

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.

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.
 - C. 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
- 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 CCA Type C; Arch Wood Protection

2.02 MATERIALS

- 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.
- 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. 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 AWP A P5 and formulated using only the oxide form of the chemicals.

2.03 PRESERVATIVE TREATMENT

- A. Pressure Treatment: In accordance with the requirements of AWP A 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.
- 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.
- C. Moisture Content: Drying after treatment is not required.
- D. Moisture Content: Dry after treatment as follows:
3. Lumber: 19%, maximum.
 4. Plywood: 18%, maximum.
 5. Plywood: 15%, maximum (for Permanent Wood Foundation).
- E. 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.

2. 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

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

END OF SECTION

SECTION 06 11 16

MECHANICALLY GRADED LUMBER

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Lumber framing.
- B. Wall sheathing.

1.02 RELATED SECTIONS

- A. Section 05 40 00 – Cold-Formed Metal Framing: Prefabricated steel structural supports.
- B. Section 05 31 00 – Steel Deck: Metal roof decking to receive wood curbs and cants.

1.03 REFERENCES

- A. ALSC– Softwood Lumber Standards.
- B. APA– American Plywood Association.
- C. AWP A C20 – Structural Lumber Fire Retardant Treatment by Pressure Process.

1.04 SUBMITTALS

- A. Product Data: Provide technical data on gypsum sheathing and wood treatment.
- B. Manufacturer's Certificate: Certify that Products conform to specified requirements.

1.05 QUALITY REQUIREMENTS

- A. Perform Work in accordance with the following agencies:
 - 1. Lumber Grading Agency: Certified by ALSC.
 - 2. Plywood Grading Agency: Certified by APA.

PART 2 PRODUCTS

2.01 LUMBER MATERIALS

- A. Treated Lumber: Stress grade rated, Number 2 Southern Pine, surfaced four sides; 19 percent maximum moisture content after treatment.

2.02 ACCESSORIES

A. Fasteners:

1. Surrounding NMR Suites: 300 Series stainless steel.
2. Other Locations: Galvanized steel.

B. Structural Framing Connectors: Galvanized steel, sized to suit framing conditions.

2.03 WOOD TREATMENT

A. Manufacturers:

1. Hickson Corporation; Dricon fire retardant treated wood.
2. Hoover Treated Wood Products Inc.; Pyro-Guard fire retardant treated wood.

PART 3 EXECUTION

3.01 FRAMING

- A. Erect wood framing members in accordance with BOCA code. Place members level and plumb. Place horizontal members crown side up.

3.02 SHEATHING

- A. Secure sheathing with ends staggered, over firm bearing, minimum two span continuous.

3.03 MOISTURE BARRIER

- A. Install materials continuous over wall after sheathing joints are sealed and taped and before installation of doors, windows, and other opening components.

END OF SECTION

SECTION 06 46 23

WOOD CHAIR RAILS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Solid wood chair rails.

1.02 SUBMITTALS

- A. Comply with requirements of Section 01300 Submittals.
- B. Product Data: Submit manufacturer's product data including wood types and finishes, bumpers, and installation instructions.
- C. Shop Drawings: Submit shop drawings showing components, dimensions, and anchorage details.
- D. Samples: Submit 6" (152.4mm) long sample of each model, wood, finish and bumper specified, including return and end units for Architect's approval.
- E. Certification: Submit manufacturer's certification indicating compliance with ADA requirements.

1.03 QUALITY ASSURANCE

- A. Comply with ADA requirements.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly indicating manufacturer and material.
- B. Storage: Store materials indoors in a clean, dry area protected from damage and in accordance with manufacturer's instructions. Store wood products at proper relative humidity to avoid surface checking and end checking.
- C. Handling: Protect materials during handling and installation to prevent damage.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. American Floor Products Company, Inc.

2.02 SOLID WOOD CHAIR RAILS

- A. Chair Rail: Seminole (WG-2137) Chair Rail: Solid wood chair rail with curved top and vinyl bumper.
- B. Ends: Solid wood to match chair rails (factory-made).
 - Dimensions:
 - Height: 3-1/4" (82.5mm)
 - Width: 1" (25.4mm)
- C. Wood and Finish:
 - 1. Red oak, natural unfinished.
 - 2. Red oak, natural with clear top coat.
 - 3. Red oak, red oak stain with clear top coat.
 - 4. Red oak, cherry stain with clear top coat.
 - 5. Maple, natural unfinished.
 - 6. Maple, natural with clear top coat.
 - 7. Maple, red oak stain with clear top coat.
 - 8. Maple, cherry stain with clear top coat.
- D. Bumpers: Integrated vinyl bumper strips held in place with 6063-T6 aluminum retainer.
 - Height: 1-1/2" (38.1mm)
 - Color: Color to be selected by Architect from manufacturer's standard colors.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspect wall surfaces to receive Chair Rail. Notify the Architect in writing if wall surfaces are not acceptable. Do not begin installation until unacceptable conditions have been corrected.

3.02 INSTALLATION

- A. Install Chair Rails to walls securely in accordance with manufacturer's written instructions.
- B. Install Chair Rails accurately in location, alignment, and elevation.
- C. Provide horizontal steel stud back-up in drywall stud cavity to accept fasteners.

END OF SECTION

Section 07 21 00

Insulation Specifications

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.

SECTION 07 21 00

BUILDING INSULATION

(EXPANDED POLYSTYRENE INSULATION)

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Expanded Polystyrene (EPS) Insulation used as building insulation.

1.02 REFERENCES

A. General: Standards listed by reference, including revisions by issuing authority, form a part of this specification section to the 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. American Society for Testing and Materials (ASTM):

1. ASTM C578 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
2. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.

C. Factory Mutual Research Corporation (FMRC):

1. Factory Mutual Research Corporation Approval Guide (current edition).
- Contact manufacturer for approval standard and number.

1.03 DELIVERY, STORAGE & HANDLING

A. General: Comply with Division 1 Product Requirement Section.

B. Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.

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

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

1. Prolonged exposure to sunlight will cause slight discoloration and surface dusting of EPS insulation.

2. EPS insulation exposed to moisture should be replaced or thoroughly dried prior to application of finish or covering materials.

PART 2 PRODUCTS

2.01 EPS INSULATION BOARD

A. Manufacturer: EPS Molders Association.

1. Contact: 1298 Cronson Blvd., Crofton, MD 21114; Telephone: (800) 607-3772;

Fax: (410) 451-8343; website: www.epsmolders.org.

B. Proprietary Products/Systems: EPS insulation boards, including the following:

1. Flat Stock Board:

- a. Material Description: Rigid, closed cell, expanded polystyrene (EPS) board stock.

- b. Material Standard: Comply with ASTM C578.

- c. Thickness: [Specify thickness.].
- d. Nominal Density: [1.0 pcf (Type I)] [1.25 pcf (Type VIII)] [1.5 pcf (Type II)] [2.0 pcf (Type IX)].
- e. Flamespread Index (ASTM E84): Contact manufacturer for test results.
- f. Smoke Development Index (ASTM E84): Contact manufacturer for test results.
- g. Facing: [Unfaced] [Foil faced (aluminum kraft paper laminate)] [Poly faced (polyethylene skin kraft paper laminate)].

2.02 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted.

2.03 ACCESSORIES

- A. Provide installation accessories as follows:

1. Adhesive:

- a. Material, Type and Manufacturer: [Compatible with EPS insulation board and acceptable to EPS insulation board manufacturer] [Specify material, type and manufacturer.].

2. Wall Ties:

- a. Material, Type and Manufacturer: [Compatible with EPS insulation board and acceptable to EPS insulation board manufacturer] [Specify material, type and manufacturer.].

3. Mechanical Fasteners:

- a. Material Type and Manufacturer: [Compatible with EPS insulation board and acceptable to EPS insulation board manufacturer] [Specify material, type and manufacturer.].

4. Furring Channels:

- a. Material, Type and Manufacturer: [Compatible with EPS insulation board and acceptable to EPS insulation board manufacturer] [Specify material, type and manufacturer.].

PART 3 EXECUTION

3.01 INSTALLATION

- A. Comply with the instructions and recommendations of the EPS insulation board manufacturer.

3.02 EXAMINATION

- A. Site Verification of Conditions:

1. Verify that site conditions are acceptable for installation of EPS insulation board.
2. Do not proceed with installation of EPS insulation board until unacceptable conditions are corrected.

3.03 INSTALLATION

- A. General:

1. Install EPS board insulation in a [Single] [Double] layer to achieve required R-value(s) as indicated in drawings. Cut and fit tightly around projections and penetrations.
2. Secure insulation to substrate with [Mechanical fasteners] [Or] [Spot adhesive applied to back of board] using quantity and pattern recommended by manufacturer.

B. Insulation Board Joints: Stagger EPS insulation board joints in one direction for each course. Butt edges and ends tightly to adjacent EPS boards.

C. Sheathing and Underlayment Installation: On exterior side of stud framing, install EPS insulation board [Vertically] [Horizontally]. Fasten vertically 12" (300 mm) maximum on centers using fasteners recommended by manufacturer. On interior side of stud framing, install minimum 1/2" (12.7 mm) thick gypsum wallboard over EPS board.

D. Concrete and Masonry Walls: Install EPS insulation board over furring channels attached to concrete and unit masonry substrates. Fasten vertically 12" (300 mm) maximum on centers using fasteners recommended by manufacturer.

E. Cavity Walls: Install EPS insulation board on exterior surface of interior wythe of cavity wall, fitting board between wall ties and other projections and penetrations.

F. Perimeter Foundation: Install EPS insulation board on exterior surface of perimeter foundation walls. Secure board with spot adhesive applied to back of board using quantity and pattern recommended by manufacturer.

G. Slab-On-Grade: Install EPS insulation board under slab-on-grade and over properly prepared subgrade of compacted fill and vapor retarder. Place EPS board with sides and ends butted.

3.04 PROTECTION

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

END OF SECTION

SECTION 07410
METAL ROOF & WALL PANELS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Factory-formed metal roofing or soffits, including flashing and accessories.
Metal roofing includes:

Wall Panels

Specifier Note: Revise paragraph below to suit project requirements. Add section numbers per CSI Masterformat and specifier's practice.

- B. Related Sections: Section(s) related to this section include:
1. Metal Roof Deck: Division 5 Metal Deck Sections.
 2. Wood Framing and Decking: Division 6 Rough Carpentry Section.
 3. Flashing and Trim: Division 7 Flashing and Sheet Metal Section.
 4. Coping and Gravel Stops: Division 7 Roof Specialties and Accessories Section.
 5. Sealants: Division 7 Joint Sealers Sections.

Specifier Note: Paragraphs below list industry standards referenced in this section. Verify use of listed standards and add edition date of standards retained. Conditions of the Contract or Division 1 References Section may establish edition date of standards referenced. This article does not require compliance with standard, but is merely a listing of references used.

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM):
ASTM AZ50 - Specification for Steel Sheet, Aluminum-Zinc Alloy Coated (Galvanized) by the Hot Dip Process, General Requirements (Galvalume).
- B. Underwriters Laboratories (UL Classified Tests):
UL 790 - Test for Fire Resistance of Roof Covering Materials
- C. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
1. SMACNA Architectural Sheet Metal Manual

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide sheet metal roofing that has been manufactured, fabricated and installed to withstand structural and thermal movement, wind loading and weather exposure to maintain manufacturer's performance criteria without defects, damage, failure of infiltration of water.
1. Wind-Uplift: Roof panel assembly shall comply with UL Classification 580 for UL Classified 90 rated assemblies

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2. Static Air Infiltration: Completed roof system shall have a maximum of .06 cfm/sf with 6.24 kPa air pressure differential as per ASTM E283/1680.
3. Water Infiltration: No evidence of water penetration at an inward static air pressure differential of not less than 6.24 psf (43 kPa) and not more than 12.0 psf (83 kPa) as per ASTM E331/1646.

Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor either 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

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

1. Product Data: Submit product data, including manufacturer's SPEC-DATA product sheet, for specified products. (Make Spec-Data link to information located in the product section.

B. Shop Drawings:

1. Submit complete shop drawings and erection details, approved by the metal roofing manufacturer, to the architect (owner) for review. Do not proceed with manufacturer of roofing materials prior to review of shop drawings and field verification of all dimensions. Do not use drawings prepared by the architect (owner) for shop or erection drawings.
2. Shop drawings show roof plans, elevations, methods of erection, and flashing details.

C. Performance Tests:

1. Submit certified test results by a recognized testing laboratory in accordance with specified test methods for each panel system.

D. Samples: Submit selection and verification samples for finishes, colors and textures.

E. Quality Assurance Submittals: Submit the following:

1. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and physical requirements.
2. Manufacturer's Instructions: Manufacturer's installation instructions.

F. Closeout Submittals: Submit the following:

1. Operation and Maintenance Date: Operation and maintenance date 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. Project Warranty: Warranty documents specified herein.

A: Manufactures warranty: Submit, for owners acceptance, manufactures standard warranty document excuted by authorized company official. Manufacturer's warranty is in addition to and not limited of, other rights the owner may have under the contract documents.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Installer experienced in performing work of this section who has specialized in the installation of work similar to that required for this project.

B. Sheet Metal Industry Standard: Comply with Sheet Metal and Air Conditioning Contractors National Association(SMACNA) Architectural Sheet Metal Manual.

Specifier Note: Retain paragraph below for erected assemblies, either onsite or offsite, required for review of Construction, coordination of work of several sections, testing or observation of operation. Mock-ups establish Standards by which work will be judged. Coordinate below with Division 1 Quality Control, Mock-up Requirements Section.

C. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, Manufacturer's installation instructions and manufacturer's warranty requirements. Comply with Division 1 Managements and Coordination, Project Meetings Section.

PART 2 PRODUCTS

2.01 SHEET METAL ROOFING

A. Manufacturer: Petersen Aluminum Corporation

Specifier Note: Paragraph below is a supplement to CSI Masterformat and an addition to MANU-SPEC. Retain or delete paragraph below to suit project requirements and specifier's practice.

1. Contact: 1005 Tonne Road, Elk Grove Village, IL 60007;
Telephone (800) 323-1960,
(847) 228-7150; Fax (800) 722-7150

Specifier Note: Paragraphs below list proprietary roof panels offered by Petersen Aluminum Corporation. Select roof panels appropriate to project. Manufacturer's roll-forming equipment produces panels that have been Herr-Voss corrective leveled. Panels are factory formed in lengths up to 55' (16.2 m). Matching flashing and trim may be factory formed or field formed from PAC-CLAD material. Consult with manufacturer regarding product options. Selection product characteristics required; delete characteristics not required. Refer to manufacturer's SPEC-DATA product sheet.

Metal Roof & Wall Panels 07410

B. PAC-CLAD Wall Panels:

1. Type: Flush Panel
2. Material: .032in ga (.08 mm) alloy 3105-H14 Aluminum
3. Panel Dimension: 11in (279 mm) o.c.
4. Texture: Smooth

C. Panel Finish:

1. Panel Topside: PAC-CLAD finish' color selected from Petersen Aluminum Corp. standard colors: Award Blue
2. Panel Underside: Polyester washcoat with dry film thickness of 0.3 mils.

Specifier Note: Coordinate paragraph below with project requirements for selected sheet metal roofing system.

D. PAC-CLAD Flashing and Trim: Manufacturer's standard flashing and trim profiles, factory formed, gauge as recommended by manufacturer, color and finish to match metal roofing panels.

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

A. Compliance: Comply with manufacturer's product data, recommendations and installations instructions for substrate verification, preparation requirements and installation.

1. Strippable Film: Remove manufacturer's protective film, if any, from surfaces of roofing panels.

3.02 EXAMINATION

A. Site Verification of Conditions: Verify substrate conditions, which have been previously installed under other sections, are acceptable for project installation in accordance with manufacturer's instructions.

END OF SECTION

SECTION 08 17 23
PREHUNG WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Prehung wood doors.

1.02 RELATED SECTIONS

- A. Section 08 17 23 – Prehung Metal Doors.
- B. Section 08 20 0 – Wood Doors.
- C. Section 08 71 0 – Door Hardware.
- D. Section 08 80 0- Glazing: Glass for vision panels.

1.03 REFERENCES

- A. AWI Architectural Wood Work Quality Standards, Architectural Woodwork Institute.
- B. WDMA Window and Door Manufacturers Association Industry Standard I.S. I-A, Architectural Wood Flush Doors.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Comply with Section 01600.
 - 1. Protect during transit, storage, and handling to prevent damage, soiling and deterioration.
 - 2. Comply with manufacturer's instructions and AWI requirements for care and handling of doors.
 - 3. Deliver to site after wet construction operations are completed and dry and building has reached prevailing relative humidity.
 - 4. Deliver components in manufacturer's original unopened protective covering or container, clearly marked with manufacturer's name, brand name, and identifying door opening number on covering.
- B. Storage: Store in clean, dry, well ventilated area protected from sun light.
 - 1. Avoid extreme heat, cold, dryness or humidity.
 - 2. Store flat over level surface above floor on wood blocking.

3. Under bottom door and over top of stack; furnish plywood or corrugated cardboard for protection.

C. Handling: Do not drag doors across one another or across other surfaces.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Comply with manufacturers written requirements under which products can be installed.

1. Condition doors to average prevailing humidity of not less than 25% and not greater than 55%, typically, in installation area.

PART 2 PRODUCTS

2.01 PREHUNG WOOD DOOR MANUFACTURERS

A. Acceptable Five Ply Door Manufacturers

1. Woodharbor Doors and Cabinetry, Mason City, IA

2. Karona, Caledonia, MI

3. Buell Door Company, Dallas, TX

2.02 MATERIALS

A. Composite core, lumber core, or solid wood jambs: ANSI A208.1, Grade I-LD-2.

B. Wood Face Veneer: AWI Quality Standard, AWI Grade A.

C. Wood Species: As selected by architect.

D. Profiles: As selected by architect.

2.03 WOOD PREHUNG DOORS

A. General: AWI Section 1300

1. Door Thickness: 1 3/8"

2. Stills: 4 3/4" Wide

3. Top Rail: 4 3/4" Wide

4. Bottom Rail: 8" Wide

5. Raised Panel: 3/4" Solid Wood or MDF

6. Flat Panel: 3/8" Composite-Core Plywood or MDF

- B. Fire Rated doors: AWI FD-5 ME, Premium.

2.04 ACCESSORIES

- A. Vision Panel Molding.

- 1. Fire Rated Doors.

2.05 FINISHINGS

- A. Comply with AWI Section 1500 for types of factory applied finish systems indicated.
- B. Provide transparent factory applied finishes at locations scheduled.
- C. AWI Section TR-4 Conversion Varnish: AWI Premium Grade.
 - 1. Stain: to match sample.
 - 2. Degree of sheen: semi-gloss.
- D. Finish edge stiles to match door face finish.
- E. Find hardwood molding to match face veneers.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with Section 01600, AWI Section 01700, approved shop drawings and manufacturer's written instructions.

3.02 ADJUSTING

- A. After installation of hardware, adjust and check each door to ensure proper operation and function.

3.03 CLEANING AND PROTECTION

- A. Protect finish work in accordance with Section 01500.
- B. Cleaning: Comply with Section 01740. Clean as recommended by manufacturer. Do not use materials or methods which may damage finish.

END OF SECTION

SECTION 04 05 13

Accordion Folding Doors

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Accordion Folding Doors
- B. Accordion Folding Vision/Security Doors.
- C. Accordion Folding Utility Doors
- D. Accordion Folding Room Dividers.
- E. Accordion Folding Room Dividers.

1.02 RELATED SECTIONS

- A. Section 06100 - Rough Carpentry.
- B. Section 06200 - Finish Carpentry.

1.03 REFERENCES

- A. ADA - Americans with Disabilities Act
- B. ASTM E 336 - Standard Method of Measurement of Airborne Sound Insulation in Buildings

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Store products of this section in manufacturer's unopened packaging until installation
- B. Maintain dry, heated storage area for products of this section until installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. ACCEPTABLE MANUFACTURER: WOODFOLD-MARCO MFG., INC.; P.O. BOX 346, FOREST GROVE OR 97116; VOICE 503-357-7181, FAX 503-357-7185. DELETE ONE OF THE TWO FOLLOWING PARAGRAPHS; COORDINATE WITH DIVISION 01 REQUIREMENTS.

B. REQUESTS FOR SUBSTITUTIONS WILL BE CONSIDERED IN ACCORDANCE WITH PROVISIONS OF SECTION 01600.

C. SUBSTITUTIONS: NOT PERMITTED

2.2 ACCORDION FOLDING DOORS

A. Acceptable Product: Woodfold Series 240 door.

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

C. Components:

1. Track: 1-1/8 inch by 1 inch aluminum, pre-punched for screw fasteners for surface mounting.
2. Track: 1-1/8 inch by 1 inch aluminum, pre-punched for screw fasteners, with aluminum hat channel for recess mounting.
3. Track: 1/2 inch by 1-1/8 inch aluminum, I-beam profile, with ceiling clips; capable of being formed to 12-inch radius curve.
4. Roller assembly: Nylon wheels on ball-bearing steel axles, rivet-attached to hinge, dual trolley at lead post, single trolley at alternate panels, type for specified track.
5. Hinge assembly: 18 gage steel, continuous pin, rivet-attached to top and bottom of door panel, with automatic stop at full extension.

The following sentence specifies standard panel core material; delete if specifying decorative inserts.

6. Panel core material: 1/4 inch thick medium-density fiberboard (MDF), with rabbeted edge for panel connector.
7. Panel connector: Continuous non-rigid vinyl, inserted and glued into panel rabbet.
8. Lead post: Extruded aluminum, 3/4 inch by 2-3/4 inch cross-section.

Retain the following paragraph if specifying pairs of doors or intersecting configurations.

9. Intersecting jamb molding: Types for indicated configurations.
10. Handle: Rigid molded polyvinyl chloride (PVC).

Delete all but one of the following five paragraphs to specify latching option required; thumbturn both sides with deadlatch is standard.

11. Latching: Thumbturn both sides with deadlatch.
12. Latching: Magnetic catch.
13. Latching: Thumbturn one side with deadlatch.
14. Latching: Thumbturn one side, pull with keylock one side, with deadlatch.
15. Latching: Pull with keylock both sides, with deadlatch.

C.Finishes:

A wide variety of non-standard finishes can be applied to standard panels, including custom wood finishes, wallcoverings, plastic laminates, custom logos, and murals; in addition, decorative leaded glass and laser-crafted inserts can be incorporated into standard panels. Consult manufacturer for available options. One of the two paragraphs below can be used to specify manufacturer's standard finishes on standard panels; consult manufacturer's product literature

1. Panels: Vinyl laminate, _____ pattern.
2. Panels: Hardwood veneer, _____ species, with sealer and clear lacquer topcoats.
3. Aluminum surfaces: Manufacturer's standard finish, in color complementing panel finish.

D. Sizes: Indicated on drawings.

Retain the following Article to specify Woodfold Series 440 Visifold door.

2.3 ACCORDION FOLDING VISION DOORS

A. Acceptable Product: Woodfold Series 440 Visifold door.

B. Components:

Delete all but one of the following three paragraphs to specify track type required.

1. Track: 1-1/8 inch by 1 inch aluminum, pre-punched for screw fasteners for surface mounting.
2. Track: 1-1/8 inch by 1 inch aluminum, pre-punched for screw fasteners, with aluminum hat channel for recess mounting.
3. Track: 1/2 inch by 1-1/8 inch aluminum, I-beam profile, with ceiling clips; capable of being formed to 12-inch radius curve.
4. Roller assembly: Nylon wheels on ball-bearing steel axles; rivet-attached to hinge, dual trolley at lead post, single trolley at alternate panels, type for specified track.
5. Hinge assembly: 18 gage steel, continuous pin, rivet-attached to top and bottom of vertical panels, with automatic stop at full extension.
6. Panel frame: Aluminum vertical channels having inside dimension between webs to accept 1/8 inch thick material.

Delete one of the following two paragraphs; the first paragraph specifies standard panel. Optional panels of 1/8 inch thick material can be specified using the second paragraph. Consult with manufacturer for options.

7. Panel: 1/8 inch thick transparent acrylic sheet.
8. Panel: 1/8 inch thick _____.
9. Panel connector: Continuous non-rigid vinyl, inserted into panel frame channel.
10. Lead post: Extruded aluminum, 3/4 inch by 2-3/4 inch cross-section.

Retain the following paragraph if specifying pairs of doors or intersecting configurations.

11. Intersecting jamb molding: Types for indicated configurations.
12. Handle: Rigid molded polyvinyl chloride (PVC).

Delete all but one of the following five paragraphs to specify latching option required; thumbturn both sides with deadlatch is standard.

- 13. Latching: Thumbturn both sides with deadlatch.
- 14. Latching: Magnetic catch.
- 15. Latching: Thumbturn one side with deadlatch.
- 16. Latching: Thumbturn one side, pull with keylock one side, with deadlatch.
- 17. Latching: Pull with keylock both sides, with deadlatch.

C. Finishes:

Delete all but one of the following three paragraphs to specify panel finishes; first and second paragraphs are for manufacturer's standard finishes, third paragraph is for custom panel finish.

- 18. Panels: Clear.
- 19. Panels: Bronze.
- 20. Panels: _____.
- 21. Aluminum surfaces: Manufacturer's standard finish, in color complementing panel finish.

D. Sizes: Indicated on drawings.

Retain the following Article to specify Woodfold Series 540 Visifold Plus door.

2.4 ACCORDION FOLDING SECURITY DOORS

A. Acceptable Product: Woodfold Series 540 Visifold Plus door.

B. Components:

Delete all but one of the following three paragraphs to specify track type required.

- 22. Track: 1-1/8 inch by 1 inch aluminum, pre-punched for screw fasteners for surface mounting.
- 23. Track: 1-1/8 inch by 1 inch aluminum, pre-punched for screw fasteners, with aluminum hat channel for recess mounting.
- 24. Track: 1/2 inch by 1-1/8 inch aluminum, I-beam profile, with ceiling clips; capable of being formed to 12-inch radius curve.

25. Roller assembly: Nylon wheels on ball-bearing steel axles; rivet-attached to hinge, dual trolley at lead post, single trolley at alternate panels, type for specified track.
26. Hinge assembly: 18 gage steel, continuous pin, rivet-attached to top and bottom of door panel, with automatic stop at full extension.

Delete one of the following two paragraphs; first paragraph specifies standard panel.

Optional panels of 1/8 inch thick material can be specified using the second paragraph. Consult with manufacturer for options.

27. Panel: 1/8 inch thick transparent acrylic sheet.
28. Panel: 1/8 inch thick _____.
29. Panel connector: Continuous steel vertical rods with rigid polyvinyl chloride (PVC) hinge knuckles full length of each panel edge.
30. Lead post: Extruded aluminum, 3/4 inch by 2-3/4 inch cross-section.

Retain the following paragraph if specifying pairs of doors or intersecting configurations.

31. 10. Intersecting jamb molding: Types for indicated configurations.
32. Handle: Rigid molded polyvinyl chloride (PVC).

Delete all but one of the following five paragraphs to specify latching option required; pull with keylock both sides is standard.

33. Latching: Pull with keylock both sides, with deadlatch.
34. Latching: Magnetic catch.
35. Latching: Thumbturn one side with deadlatch.
36. Latching: Thumbturn both sides with springlatch.
37. Latching: Thumbturn one side, pull with keylock one side, with deadlatch.
38. Latching: Thumbturn both sides with deadlatch.

C. Finishes:

Delete all but one of the following three paragraphs to specify panel finishes; first and second paragraphs are for manufacturer's standard finishes, third paragraph is for custom panel finish.

39. Panels: Clear.

40. Panels: Bronze.

41. Panels: _____.

42. Aluminum surfaces: Manufacturer's standard finish, in color complementing panel finish.

D. Sizes: Indicated on drawings.

Retain the following Article to specify Woodfold Series 140 door.

2.5 ACCORDION FOLDING UTILITY DOORS

A. Acceptable Product: Woodfold Series 140 door.

B. Components:

43. Track: 1-1/8 inch by 1 inch aluminum, pre-punched for screw fasteners for surface mounting.

44. Roller assembly: Nylon wheels with Lexan axles; rivet-attached to hinge, single trolley at alternate panels.

45. Hinge assembly: 18 gage steel, continuous pin, rivet-attached to top and bottom of door panel, with automatic stop at full extension.

46. Panel: 1/4 inch thick medium-density fiberboard (MDF), with rabbeted edge for panel connector.

47. Panel connector: Continuous non-rigid vinyl, inserted and glued into panel rabbet.

48. Handle: Rigid molded polyvinyl chloride (PVC), full length of door, with molded finger pull front side.

49. Latching: Magnetic catch, with strike plate for attaching to wall or jamb.

C. Finishes:

Delete one of the following two paragraphs to specify manufacturer's standard finishes on standard panels; consult manufacturer's product literature.

- 50. Panels: Vinyl laminate, _____ pattern, sight-exposed face; unfinished or utility grade back face, manufacturer's option.
- 51. Panels: Hardwood veneer, _____ species, with sealer and clear lacquer topcoats, sight-exposed face; unfinished or utility grade back face, manufacturer's option..
- 52. Aluminum surfaces: Manufacturer's standard finish, in color complementing panel finish.

D. Sizes: Indicated on drawings.

Retain the following Article to specify Woodfold Series 220 door.

2.6 ACCORDION FOLDING ROOM DIVIDERS

A. Acceptable Product: Woodfold Series 220 door.

B. Components:

- 53. Track: 1-1/8 inch by 1 inch aluminum, pre-punched for screw fasteners, for surface mounting.
- 54. Roller assembly: Nylon wheels with Lexan axles; rivet-attached to hinge, single trolley at alternate panels.
- 55. Hinge assembly: 18 gage steel, continuous pin, rivet-attached to top and bottom of door panel, with automatic stop at full extension.
- 56. Panel: 1/4 inch thick medium-density fiberboard (MDF), with rabbeted edge for panel connector.
- 57. Panel connector: Continuous non-rigid vinyl, inserted and glued into panel rabbet.
- 58. Handle: Rigid molded polyvinyl chloride (PVC), full length of door, with molded finger pull both sides.
- 59. Latching: Magnetic catch, with strike plate for attaching to wall or jamb.

C. Finishes:

A wide variety of non-standard finishes can be applied to standard panels, including custom wood finishes, wallcoverings, plastic laminates, custom logos, and murals. Consult manufacturer for available options.

Delete one of the following two paragraphs below to specify manufacturer's standard finishes on standard panels; consult manufacturer's product literature.

- 60. Panels: Vinyl laminate, _____ pattern.
- 61. Panels: Hardwood veneer, _____ species, with sealer and clear lacquer topcoats.
- 62. Aluminum surfaces: Manufacturer's standard finish, in color complementing panel finish.

D. Sizes: Indicated on drawings.

Retain the following Article to specify Woodfold Series 2100 door.

2.7 ACOUSTICAL RATED ACCORDION FOLDING DOORS

A. Acceptable Product: Woodfold Series 2100 door.

B. Components:

- 63. Track: 2 inches by 1-1/8 inches aluminum, pre-punched for screw fasteners for surface mounting.
- 64. Head molding: Hardwood molding for sound seal to top sweep strips.
- 65. Roller assembly: Nylon wheels on ball-bearing steel axles; rivet-attached to hinge, dual trolley at lead post, single trolley at alternate panels.
- 66. Hinge assembly: 18 gage steel, continuous pin, rivet-attached to top and bottom of door panel, with automatic stop at full extension.
- 67. Sound seal: Extruded vinyl sweeps attached to top and bottom hinge assemblies; 1/2 inch wide sweep for top hinge, 1-3/8 inches wide sweep for bottom hinge.
- 68. Panel: 1/4 inch thick medium-density fiberboard (MDF), with rabbeted edge for panel connector.
- 69. Panel connector: Continuous non-rigid vinyl, inserted and glued into panel rabbet.
- 70. Lead post: Extruded aluminum, 3/4 inch by 2-3/4 inch cross-section.
- 71. Interlocking jamb moldings: Types for indicated configurations; aluminum with sound seal gaskets.
- 72. Handle: Rigid molded polyvinyl chloride (PVC).

Retain one of the following four paragraphs to specify latching option required; thumbturn both sides with deadlatch is standard.

- 73. Latching: Thumbturn both sides with deadlatch.
- 74. Latching: Thumbturn one side with deadlatch.
- 75. Latching: Thumbturn one side, pull with keylock one side, with deadlatch.
- 76. Latching: Pull with keylock both sides, with deadlatch.
- 77. Latching: Magnetic catch.

C. Finishes:

A wide variety of non-standard finishes can be applied to standard panels, including custom wood finishes, wallcoverings, plastic laminates, custom logos, and murals. Consult manufacturer for available options.

Delete one of the following two paragraphs below to specify manufacturer's standard finishes on standard panels; consult manufacturer's product literature.

- 78. Panels: Vinyl laminate, _____ pattern.
- 79. Panels: Hardwood veneer, _____ species, with sealer and clear lacquer topcoats.
- 80. Head moldings: Finish coordinated with hardware and track system.
- 81. Aluminum surfaces: Manufacturer's standard finish, in color complementing panel finish.

D. Sizes: Indicated on drawings.

E. Field sound transmission class (FSTC): 21, when tested in accordance with ASTM E 336.

Retain the following Article to specify Woodfold Series 3300 door.

2.8 ACOUSTICAL RATED ACCORDION FOLDING DOORS

A. Acceptable Product: Woodfold Series 3300 door.

B. Components:

82. Track: 2-1/2 inches by 1-3/4 inches aluminum, pre-punched for screw fasteners for surface mounting.

Delete one of the following two paragraphs to specify head molding or optional head track.

83. Head molding: Hardwood molding for sound seal to top sweep strips.

84. Head track: Aluminum, 2-piece, for sound seal to top sweep strips.

85. Roller assembly: Nylon wheels on ball-bearing steel axles; rivet-attached to connecting clips, dual trolley at lead post, single trolley at alternate panels, type for specified track.

86. Hinge assembly: 18 gage steel, continuous pin, rivet-attached to top and bottom of door panel, with automatic stop at full extension; pantograph action for dual-wall door assembly.

87. Panel: 1/4 inch thick medium-density fiberboard (MDF), with rabbeted edge for panel connector.

88. Acoustical liner: Applied to inside faces of both walls.

89. Panel connector: Continuous non-rigid vinyl, inserted and glued into panel rabbet.

90. Lead post: Extruded aluminum, 2-7/8 inches by 4-1/2 inches cross-section, with jamb molding.

Delete all but one of the following three paragraphs.

91. Jamb panel: Flush type.

92. Jamb panel: Post type.

93. Jamb panel: Sliding type.

94. Handle: Rigid molded polyvinyl chloride (PVC).

Delete all but one of the following four paragraphs to specify latching option required; thumbturn both sides with deadlatch is standard.

95. Latching: Thumbturn both sides with deadlatch.

96. Latching: Thumbturn one side with deadlatch.

97. Latching: Thumbturn one side, pull with keylock one side, with deadlatch.

98. Latching: Pull with keylock both sides, with deadlatch.

99. Latching: Magnetic catch.

C. Finishes:

A wide variety of non-standard finishes can be applied to standard panels, including custom wood finishes, wallcoverings, plastic laminates, custom logos, and murals. Consult manufacturer for available options.

Delete one of the following two paragraphs below to specify manufacturer's standard finishes on standard panels; consult manufacturer's product literature.

100. Panels: Vinyl laminate, _____ pattern.

101. Panels: Hardwood veneer, _____ species, with sealer and clear lacquer topcoats.

102. Head moldings: Finish coordinated with hardware and track system.

103. Aluminum surfaces: Manufacturer's standard finish, in color complementing panel finish.

D. Sizes: Indicated on drawings.

E. Field sound transmission class (FSTC): 33, when tested in accordance with ASTM E 336

PART 3 EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Verify openings are in accordance with approved shop drawings

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 door assembly components in accordance with accepted shop drawings and manufacturer's printed installation instructions.

3.3 ADJUSTING

- A. Ensure that door assembly components operate correctly in accordance with manufacturer's printed instructions

END OF SECTION

SECTION 08460

Bi-fold Closet Door

I. PART ONE GENERAL

1.01 SUMMARY:

A. Work included: Furnishing and installing factory fabricated and finished automatic folding door system.

B. Related Work: [Insert applicable sections including:].

1. Section 07900 - Caulking

2. Section 08710 - Finish Hardware

3. Section 08400 - Entrances and Storefronts

4. Section 08800 - Glass and Glazing

5. Section 16120 - Electrical Supply and Termination 120 Volts AC, 20 Amp Power circuit for each four-panel door assembly. 120 Volts AC, 20 Amp Power circuit for 2 quantity, two-panel door assemblies. Low voltage control wiring to remote switch devices, i.e., card reader, key pad, press switch, pull cord.

1.02 REFERENCES:

A. Underwriters Laboratories (UL), 333 Pfingsten Road, Northbrook, IL 60062, 847-272-8800, Fax: 847-272-8129.

B. American National Standards Institute (ANSI), 11 W. 42nd St., 13th Floor, New York, NY 10036, 212-642-4900, Fax: 212-398-0023.

C. National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02269, 800-344-3555, 617-770-3000, Fax: 617-984-7057.

D. Canadian Standards Association (CSA), 178 Rexdale Blvd., Rexdale, ON, Canada M9W 1R3, 416-747-4000, Fax: 416-747-4149.

E. ICBO Evaluation Services, 5360 Workman Mill Road, Whittier, CA 90601, 562-699-0543, Fax: 562-695-4694.

F. International Standards Organization (ISO).

1.03 SUBMITTALS:

A. Product Data: Provide manufacturer's product and complete installation data for all materials in this specification.

B. Shop drawings: Show profiles, joining method, location of components, anchorage details, adjacent construction interface, and dimensions as well as all necessary wiring and electrical requirements.

C. Samples: Sized to adequately represent material.

D. Contract Closeout: Submit the Manufacturer's warranty and performance certifications [if applicable].

E. Installation Guide: Provide a written installation guide and/or installation recommendations.

1.04 QUALITY ASSURANCE:

A. Automatic folding door system shall be CERTIFIED by the manufacturer to meet performance design criteria according to the following test standards: [select, if applicable]:

1. ANSI A156.10.

2. NFPA 101.

3. Underwriter's Laboratories 325 (UL) listed.

4. C-UL Certified (equivalent to CSA certified).

5. ICBO (UBC Standard 10-1).

B. Automatic Folding Door System: Shall be manufactured in an ISO 9001 registered manufacturing facility.

1.05 PRODUCT HANDLING:

A. All materials shall arrive in the manufacturer's original sealed, labeled containers.

B. Store materials in a dry, protected, well-vented area. Report damaged material immediately to the delivering carrier and note such damage on the carrier's freight bill of lading.

C. Remove all protective materials after installation.

1.06 SUBSTITUTIONS:

A. Proposals for substitution products will be accepted only from bidding contractors a minimum of 10 working days before the bid due date. The proposed substitution shall meet the performance and quality standards of this specification.

1.07 JOB CONDITIONS:

A. Verify that other trades are complete before installing the automatic folding door system.

B. Mounting surfaces shall be plumb, straight and secure; substrates shall be of proper dimension and material.

C. Refer to the construction documents, shop drawings and manufacturer's installation instructions.

D. Coordinate installation with the glass, glazing and electrical work.

E. Observe all appropriate OSHA safety guidelines for this work.

1.08 WARRANTY/GUARANTEE:

A. Manufacturer's Standard Warranty: Warranted materials shall be free of defects in material and workmanship for one year after installation.

II. PART TWO PRODUCTS

2.01 MANUFACTURER:

A. Stanley Access Technologies
65 Scott Swamp Road
Farmington, CT 06032
1-800-722-2377 (7-ACCESS)
Local: 860-677-2861
Fax: 1-860-679-6436
Internet address - <http://www.stanleyworks.com>
For local rep, contact: Sweet's BuyLine 1-800-892-1165 (#0202)

2.02. AUTOMATIC FOLDING DOOR SYSTEMS:

A. Automatic Folding Door System: Shall be Stanley Bifold SB600 Series. The system shall consist of Magic-Swing electromechanical swing door operator, electronic controller, aluminum header, connecting hardware, aluminum doors (unglazed) joined by a low profile hinges, plus actuating and safety sensors and a 3-position on/off/hold open switch.

B. Operator: Shall be a Magic-Swing electromechanical system installed in a header to resist dust, dirt and corrosion. Bearings are fully lubricated and sealed to minimize wear and friction. The entire operator shall be removable from the header as a unit.

The operator shall open the door with a fractional horsepower DC motor, through reduction gears, ball screw actuator, forged steel rack and pinion and door arm. The drive train shall have positive, constant engagement. The operator shall hold the door in the open position by electrically reducing the motor voltage and stalling against an adjustable 90° stop. All bearings shall be roller type. No bushings shall be used.

The operator shall close the door by spring energy. Closing speed shall be controlled by employing the motor as a dynamic brake. Door closing time shall be 2.5-4.0 seconds from fully open to latch check (90°-10°) and not less than 1.5 seconds from latch check to fully closed (10°-0°). The closing spring shall be a helical compression spring preloaded for positive closing action at a low material stress level for long spring life.

The operator shall have built-in emergency release. While the door is in the emergency release mode, a disconnect switch shall prevent powered operation. No header or jamb mounted stops or cams shall be required for emergency function. No more than 50 lbF at the lock stile shall be required for emergency use, per ANSI A156.10. all equipment must operate between -30° F and +130° F in various climate conditions.

Doors shall be capable of “breaking out” at any point in their travel to allow full opening for emergency egress. The operator shall be disabled during break out condition.

C. Controller (mounted inside the header):

- A solid state, electronic controller with quick connect plugs shall interface with the operator.
- One controller shall be sufficient for 1 or 2 operators.
- The controller can process signals from motion sensors, safety sensors, mats, wall plates or radio signals.
- Includes open and open check adjustability [option: close speed module].
- Incorporates reduction in opening speed to check speed on-obstruction.

D. Sensors for Actuation and Safety: The actuating devices shall be microwave motion sensors. The sensor shall be mounted to the header. The location of the detection zone and the sensitivity of the detection zone shall be adjustable. Adjustability shall be accessible only when the tamper resistant cover is removed by an authorized technician. The sensor will operate between -30-F and +130-F in all ambient environmental conditions.

The motion sensor shall have discriminating signal input circuitry that automatically compensates for line voltage variations and rejects fixed objects within the detection zone. The unit shall operate on 12 volts AC, 50/60 Hz, 5.1 VA. The unit shall comply with FCC Rules Part 15 subpart C and the operation of the device shall not cause harmful interference.

The threshold area presence sensing device shall be the Stanguard™, manufactured by Access Technologies, Farmington, CT. The Stanguard™ shall work in conjunction with the motion sensors. The Stanguard™ sensor shall emit a 30” deep by 72” (minimum) wide elliptical shaped active infrared zone centered on the doorway threshold line. A

safety presence sensor shall provide safety in the fold side path area. The door shall not close until the motion sensors and safety sensors detect a clear surveillance field.

E. Aluminum Frame and Extrusions: Shall be a minimum .125" wall thickness.

F. Aluminum Extrusion Finish: Standard anodized finish shall be [select one: AA-M12-C22-A31 clear of AA-M12-C22-A44 dark bronze. Special and painted finishes available upon request. Color of finish to be _____.

G. Header Case: Shall be 5-1/2" wide by 6" high, aluminum extrusion (minimum wall thickness of 0.125") with structurally integrated end caps or brackets. Access to the operator and electronic control box shall be provided by a full length removable cover. The header shall conceal and protect the operating system and shall provide a replaceable guide track, on its bottom surface, for the sliding panel and emergency breakout. The guide track shall direct a follower mounted on the top of the leading edge of the slide panel while at the same time allowing breakaway at any point in the slide panel's travel. The swing leaf shall pivot at the jamb, connected at the top to the operator shaft and set on a floor mounted bottom pivot. No floor track shall be required.

H. Door Panels:

1. Rigid construction for highest resistance of torque tendencies associated with swing door panels.
2. Low profile, non-maintenance 3/8" thick extruded hinges.
3. Low profile stiles at fold point.
4. Top and bottom rails, extrusion thickness over .150". Doors to be constructed with through bolt tie rod system.
5. Top rail extrusion of .233" at power operator door arm attachment.

I. Power Units:

1. Operation: Power open, spring close operation.
2. Operator: Magic-Swing Commercial Grade Operator. Magic-Swing operator to have heavy duty rack and pinion drive mechanism with a pre-load compression spring.
3. Electric Type: Fractional horsepower DC motor with microprocessor based controller with reverse-on-obstruction programming.
4. Control box is microprocessor based with an encoder to monitor door position.
5. Automatic pivot slide/swing fold door assembly. Folding panels hinge location to have silicone rubber fingerguard. Pivot side at door power panel to have a silicone rubber

fingerguard. The lead edge stiles of the FX panel to have Lead Edge Safety Seal(s), a silicone rubber cushion insert with double pile weather stripping.

6. Flush set neoprene insets to provide crush point protection at lead edge stiles of door panels.

7. Equipment to be configured with a two-point locking system.

8-1. Equipment to include surface adjustable pivots, surface applied with matching threshold.

8-2. Equipment to include recess adjustable pivots with a recess dust proof strike.

J. Electrical Characteristics And Components:

1. 120 Volts AC

2. Single phase 60 Hz

K. Optional Controls: Stanley shall furnish and install specified controls as indicated in Section C, [specify as applicable: push plates, mats, ratio controls, rail mounted push buttons, access control lock, alarm contact, power close module, timer module for lock delay, closing speed control].

III. PART THREE EXECUTION

3.01 EXAMINATION:

A. Section 01039 — Coordination and Meetings: Verification of existing conditions before starting work.

B. Verify that surfaces and openings are ready to receive work and dimensions are as indicated on shop drawings. It is critical that the flooring adjacent to the fold path of the doors is level and adjacent flooring will not interfere with door fold motion.

C. Verify that electric power is available and of the correct characteristics.

3.02 INSTALLATION:

A. Install equipment in accordance with manufacturer's instructions by factory authorized, trained and certified installers. Installation by any other means voids all expressed and implied warranties.

B. Provide for thermal expansion and contraction of door and frame units.

C. Provide for dimensional stressing during operation.

3.03 ADJUSTING:

Bi-fold doors

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A. Section 01700 — Contract Close-out.

B. Adjust Bifold Door Operating System for correct function and fit. Verify system operation for proper and safe cycle operation.

3.04 CLEANING:

A. Clean all exposed surfaces and remove any temporary protective coverings. Touch up where required.

3.05 DEMONSTRATION AND INSTRUCTIONS:

A. Demonstrate installed work.

B. Demonstrate operations and functions.

C. Explain the Daily Safety Check Procedure.

END OF SECTION

SECTION 08 51 13
ALUMINUM WINDOWS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This section includes the following window types:
 - 1. Projected windows; project-in-at top ventilators.
 - a. Hopper vents used for cleaning only.
 - 2. Fixed windows.
 - 3. Factory glazed with simulated divided lites, where indicated.
- B. Factory glazed with simulated divider lites.
- C. Metal sills and metal pinning.

1.03 RELATED SECTIONS

- A. Section 06 10 00 – Rough Carpentry; treated wood blocking.
- B. Section 04 20 00 – Unit Masonry; brick window sills.
- C. Section 06 44 00 – Architectural Woodwork; solid plastic stools.
- D. Section 07 92 00 – Joint Sealers.
- E. Section 08 80 00 - Glazing.

1.04 PERFORMANCE REQUIREMENTS

- A. General: Provide aluminum windows engineered, fabricated, and installed to withstand normal thermal movement, wind loading, and impact loading without failure, as demonstrated by testing manufacturer's standard window assemblies representing types, grades, classes, and sizes required for Project according to test methods indicated.
- B. Test criteria: Testing shall be performed by a qualified independent testing agency based on the following criteria:

1. Design wind velocity at Project site is 70 mi./h (113 km/h).
 2. Heights of window units above grade at window centerline are indicated on or can be determined from the Drawings. Consult with the Architect, if necessary, to confirm required loading and test pressures.
 3. Test Procedures: Test window units according to ASTM E 283 for air infiltration, ASTM E 547 for water penetration, and ASTM E 330 for structural performance.
 4. Test Procedures: Test window units according to ASTM E 283 for air infiltration, both ASTM E 331 and ASTM E 547 for water penetration, and ASTM E 330 for structural performance.
 5. Test Procedures: Test window units according to ASTM E 283 for air infiltration, ASTM E 331 for water penetration, and ASTM E 330 for uniform load deflection and structural performance.
- C. Performance Requirements: Testing shall demonstrate compliance with requirements indicated in AAMA 101 for air infiltration, water penetration, and structural performance for type, grade, and performance class of window units required. Where required design pressure exceeds the minimum for the specified window grade, comply with requirements of AAMA 101, Section 3, "Optimal Performance Classes," for higher than minimum performance class.
1. Air-Infiltration Rate for Operation Units: Not more than 0.37 cfm/ft. (2.06 cu.m/h per m) of operable sash joint for an inward test pressure of 6.24 lbf/sq. ft. (299 Pa).
 2. Air-Infiltration Rate for Fixed Windows: not more than 0.06 cfm/ft. (1.09 cu.m/h per m) of area for an inward test pressure of 6.24 lbf/sq. ft. (299 PA).
 3. Water Penetration: No water penetration as defined in the test method at an inward test pressure of 15 percent of the design pressure.
 4. Uniform Load Deflection: No deflection in excess of 1/175 of any member's span during the imposed load, for a positive (inward) and negative (outward) test pressure of 60 lbf/sq. ft (2873 Pa).
 5. Structural Performance: No failure or permanent deflection in excess of 0.4 percent of any member's span after removing the imposed load, for a positive (inward) or negative (outward) test pressure of 30 lbf/sq. ft (1437 Pa).
 6. Condensation Resistance: Where window units are indicated to be "thermally improved," provide units tested for thermal performance according to AAMA 1503.1 showing a condensation resistance factor (CRF) of 45.
 7. Thermal Transmittance: Provide window units with a U-value maximum of 0.69 Btu/sq. ft. x h x deg F (3.9 W/sq. m x K) at 15-mi./h (24 km/h) exterior wind velocity, when tested according to AAMA 1503.1.

8. Thermal Movements: Provide window units that allow thermal movement resulting from the following maximum change (range) in ambient temperature when engineering, fabricating, and installing aluminum windows to prevent buckling, opening of joints, and overstressing of components, connections, and other detrimental effects. Base engineering calculation on actual surface temperatures of materials due to solar heat gain and nighttime sky heat loss.
 - a. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (82 deg C), material surfaces.

1.05 SUBMITTALS

- A. Product Data for each type of window required, including the following:
 1. Construction details and fabrication methods.
 2. Profiles and dimensions of individual components.
 3. Data on hardware, accessories, and finishes.
 4. Recommendations for maintaining and cleaning exterior surfaces.
- B. Shop Drawings showing fabrication and installation of each type of window required including information not fully detailed in manufacturer's standard Product Data and the following:
 1. Layout and installation details, including anchors.
 2. Elevations at ¼ inch = 1 foot (1:50) scale and typical window elevations at ¾ inch = 1 foot (1:20) scale.
 3. Full-size section details of typical composite members, including reinforcement and stiffeners.
 4. Location of weep holes.
 5. Panning details.
 6. Hardware, including operators.
 7. Window cleaning provisions.
 8. Glazing details.
 9. Accessories.
- C. Samples for Verification: The Architect reserves the right to require additional samples that show fabrication techniques, workmanship, and design of hardware and accessories.

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed installation of aluminum windows similar in material, design, and extent to those required for this Project and with a record of successful in-service performance.
- B. Single-Source Responsibility: Obtain aluminum windows from one source and by a single manufacturer.

1.07 PROJECT CONDITIONS

- A. Field Measurements: Check window openings by field measurements before fabrication and show recorded measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the work.
 - 1. Where field measurements cannot be made without delaying the Work, guarantee opening dimensions and proceed with fabricating aluminum windows without field measurements. Coordinate wall construction to ensure that actual opening dimensions correspond to guaranteed dimensions.

1.08 WARRENTY

- A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of the rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Special Warranty: Submit a written warranty signed by aluminum window manufacturer agreeing to repair or replace window components that fail in materials or workmanship within the specified warranty period. Failures include but are not limited to, the following:
 - 1. Structural failures including excessive deflection, water leakage, air infiltration, or condensation.
 - 2. Faulty operation of sash and hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
- C. Warranty Period: 3 years after date of Substantial Completion.
- D. Warranty Period for Metal Finishes and Glass: 5 years after date of Substantial Completion.

PART 2 PRODUCTS

2.01 MAUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Capital Products Corp.
 - 2. Custom Window Company.
 - 3. EFCO Corporation.
 - 4. Graham Architectural Products Corporation.
 - 5. TRACO.
 - 6. Wausau Metals Corporation.

2.03 MATERIALS

- A. Aluminum Extrusions: Provide alloy and temper recommended by manufacturer for strength, corrosion resistance, and application of required finish, but not less than 22,000-psi (150 MPa) ultimate tensile strength and not less than 0.062 inch (1.6 mm) thick at any location for main frame and sash members.
- B. Fasteners: Provide aluminum, nonmagnetic stainless steel, epoxy adhesive, or other materials warranted by manufacturer to be non-corrosive and compatible with aluminum window members, trim, hardware, anchors, and other components of window units.
 - 1. Reinforcement: Where fasteners screw anchor into aluminum less than 0.125 inch (3.2 mm) thick, reinforce interior with aluminum or nonmagnetic stainless steel to receive screw threads or provide standard, non-corrosive, pressed-in, splined grommet nuts.
 - 2. Exposed Fasteners: Except where unavoidable for application of hardware, do not use exposed fasteners. For application of hardware, use fasteners that match finish of member or hardware being fastened, as appropriate.
- C. Anchors, Clips, and Windows Accessories: Fabricate anchors, clips, and window accessories of aluminum, nonmagnetic stainless steel, or hot-dip zinc-coated steel or iron complying with requirements of ASTM B 633; provide sufficient strength to withstand design pressure indicated.
- D. Compression-Type Glazing Strips and Weather-stripping: Unless otherwise indicated, and at manufacturer's option, provide compressible stripping for glazing and weather-stripping such as molded EPDM or neoprene gaskets complying with ASTM D 2000 Designation 2BC215 to 3BC620, or molded PVC gaskets complying with ASTM D 2287, or molded expanded EPDM or neoprene gaskets complying with ASTM C 509, Grade 4.
- E. Sealant: For sealants required within fabricated window units, provide type recommended by manufacturer for joint size and movement. Sealant shall remain permanently elastic, non-shrinking, and non-migrating. Comply with Division 7 Section "Joint Sealants" of these Specifications for selection and installation of sealants.

2.03 HARDWARE

- A. General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, or other corrosion-resistant material compatible with aluminum and of sufficient strength to perform the function for which it is intended.
- B. Four-Bar Friction Hinges: Comply with AAMA 904.1.
 - 1. Friction shoes: Provide friction shoes of nylon or other nonabrasive, non staining, non-corrosive, durable material.

2.04 PROJECTED WINDOWS, PROJECT-IN-AT TOP VENTILATORS

- A. Window Grade and Class: Comply with requirements of AAMA Grade and Performance Class Heavy Commercial. Window units shall successfully pass test requirements as specified in AAMA 101.
- B. Hardware: Provide the following equipment and operating hardware:
 - 1. Hinges: Concealed 4-bar friction hinges with adjustable slide shoe (2 per ventilator).
 - a. Provide ventilator operation that permits cleaning of outside glass face from the interior.

2.05 FIXED WINDOWS

- A. Window Grade and Class: Comply with requirements of AAMA Grade and Performance Class Heavy Commercial.

2.06 FABRICATION

- A. General: Fabricate aluminum window units to comply with indicated standards. Include a complete system for assembly of components and anchorage of window units.
 - 1. Provide units that are reglazable without dismantling sash or ventilator framing.
 - 2. Prepare window sash or ventilators for glazing, except where preglazing at the factory is indicated.
- B. Thermally improved construction: Fabricate window units with an integral, concealed, low-conductance, thermal barrier, located between exterior materials and window members exposed on interior, in a manner that eliminates direct metal-to-metal contact.
 - 1. Provide thermal-break construction that has been in use for not less than 3 years, has been tested to demonstrate resistance to thermal conductance and condensation, and has been tested to show adequate strength and security of glass retention.
 - 2. Provide hardware with low conductivity or nonmetallic material for hardware bridging thermal breaks at frame or vent sash.
 - 3. Weep Holes: Provide weep holes and internal passages to conduit infiltrating water to exterior.
 - 4. Provide water-shed members above side-hinged ventilators and similar lines of natural water penetration.

- C. Mullions: Provide mullions and cover plates as shown, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections, as indicated.
- D. Glazing Stops: Provide screw-applied or snap-on glazing stops, coordinated with glass selection and glazing system indicated. Finish to match window units.
 - 1. Inside glazed, unless otherwise indicated.
- E. Glazing: Frames shall be glazed with 1 inch insulating glass as specified in Section 08 80 00 – Glazing.
- F. Preglazed Fabrication: Preglaze window units at the factory where possible and practical for applications indicated. Comply with glass and glazing requirements of Division 8 Section “Glazing” of these specifications and AAMA 101.
 - 1. Factory glaze with simulated divided lites where indicated.
 - a. Exterior: Horizontal and vertical applied aluminum mutins and muntin bases. Custom sizes and profiles as indicated.
 - b. Interior: horizontal and vertical applied aluminum mutins. Flat bars to match width of exterior mutins x minimum 1/8 inch thick.
 - c. Mutins shall be permanently factory adhered to exterior side and interior side of insulating glass units. The exterior and interior mutins shall mirror each other to replicate the look of authentic divided lites. Aluminum finish for exterior and interior mutins shall match window units.

2.07 MISCELLANEOUS METAL TRIM

- A. Sills: 0.090 inches extended aluminum sills, finish matching window frames.
- B. Panning (where shown or required): Interior trim, closures, angles, etc., shall be as specified and of extruded shapes with a minimum thickness of 0.062 inch and of 6063-T5 or 6063-T6 alloy and temper. Snap-on trim shall be supplied in required lengths and attached with snap clips which are screwed into the jamb window and spaced at a maximum of 18 inches apart. On all trim, no exposed screws will be allowed.
 - 1. Finish matching window frame, breaking all panning before applying finish.

2.08 FINISHES

- A. Comply with NAAMM “Metal Finishes Manual” for recommendations relative to applying and designating finishes.

- B. High-Performance Organic Coating Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid chromate-fluoride-phosphate conversion coating, Organic Coating: as specified below). Prepare, pre-treat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturer's instructions.

1. Fluoropolymer 2-Coat Coating System: Manufacturer's standard 2-coat, thermocured system composed of specially formulated inhibitive primer and fluoride resin by weight; complying with AAMA 605.2

- a. Color and Gloss: Match Architect's sample.

- C. Hardware Finish: Hardware finish as selected by Architect.

PART 3 EXECUTION

3.01 INSPECTION

- A. Inspect openings before installation. Verify that rough or masonry opening is correct and sill plate is level.
1. Masonry surfaces shall be visibly dry and free of excess mortar, sand, and other construction debris.
2. Metal surfaces shall be dry, clean, and free of grease, oil, dirt, rust and corrosion, and welding slag; without sharp edges or offsets at joints.

3.02 INSTALLATION

- A. Comply with manufacturer's specifications and recommendations for installing window units, hardware, operators, and other components of the Work.
- B. Set window units plumb, level, and true to line, without warp or rack of frames or sash. Provide proper support and anchor securely in place.
1. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials by complying with requirements specified under "Dissimilar Materials" paragraph in appendix to AAMA 101.
- C. Set sill members and other members in a bed of sealant or with joint fillers or gaskets, to provide weather-tight construction. Refer to Division 7 Section "Joint Sealants" for compounds, fillers, and gaskets to be installed concurrently with window units. Coordinate installation with wall flashings and other components of the Work.
1. Sealants, joint fillers, and gaskets to be installed after installation of window units are specified in another Division 7 Section.

3.03 ADJUSTING

- A. Adjust operating sash and hardware to provide a tight fit at contact points and at weather-stripping for smooth operation and a weather-tight closure.

3.04 CLEANING

- A. Clean aluminum surfaces promptly after installing windows. Exercise care to avoid damage to protective coatings and finishes. Remove excess glazing and sealant compounds, dirt, and other substances. Lubricate hardware and other moving parts.
- B. Clean glass of preglazed units promptly after installing windows. Comply with requirements of Division 8 Section "Glazing" for cleaning and maintenance.

3.05 PROTECTION

- A. Provide final protection and maintain conditions, in a manner acceptable to aluminum window manufacturer, that ensure window units are without damage or deterioration at the time of Substantial Completion.

END OF SECTION

**BESAM POWERSWING SPECIFICATION
SURFACE MOUNTED SWING DOOR OPERATOR
FOR HANDICAP APPLICATIONS**

Division 8 - Doors and Windows

Section 08716 - Automatic Door Operators

PART I - GENERAL

1.01 SECTION INCLUDES

PowerSwing low energy automatic swing door operator suitable for use in handicap applications shall consist of aluminum operator housing, A.C. electro hydraulic motor, operator assembly, swing arm and electronic control. Installation shall be performed by the local certified Besam Distributor. For the name and number of your local Besam distributor, please call toll-free (866)237-2687.

1.02 RELATED WORK SPECIFIED IN OTHER SECTIONS OF THE SPECIFICATION:

Section 08410 - Aluminum entrances & storefronts

Section 08210 - Wood doors & frames

Section 08110 - Hollow metal doors & frames

Section 08710 - Door hardware

Division 1600 - Electrical

Section 08810 - Glass & glazing

Section 07920 - Caulking & sealants

1.03 REFERENCES - (Codes & Approvals)

Unit described complies with current ANSI 156.19 for Power Assist and Low Energy Power Operated Doors and comply with ANSI A117.1. Unit is UL Listed Standard 325, and CUL approved (for use in Canada).

1.04 PERFORMANCE REQUIREMENTS

- A. Operator to be used on interior or exterior doors and up to 215 pound (98 kg) weight of doors – maximum door width 48" (1219mm).
- B. PowerSwing is capable of operating within temperature ranges of -22°F (-30°C) and 122°F (50°C).

1.05 SUBMITTALS

- A. Product Data: Submit manufacturer's product data and standard details for automatic operators.
- B. Shop Drawings: Submit shop drawings for the fabrication and installation of automatic operators and associated components of the work. Include anchors, hardware and other components not included in manufacturer's standard data.

1.06 OPERATION AND MAINTENANCE DATA

Spare parts list and owners manual are available from the manufacturer.

1.07 QUALITY ASSURANCE

Local certified Besam distributor shall install operator in accordance with current ANSI 156.19, ANSI 117.1, NFPA 101 and local applicable codes. The system shall fulfill Americans with Disabilities Act (ADA) requirements for barrier free entrances. All door openings shall be at least 32" (813mm) wide to comply. **Note: local codes may require greater door opening than ADA requirements.**

1.08 QUALIFICATIONS

Company specializing in manufacturing the products specified in this section shall have minimum ten years experience and be a member of the American Association of Automatic Door Manufacturers (AAADM). Prior to placing door(s) in operation, an AAADM technician should inspect the doors for compliance with current ANSI/BHMA 156.10 American National Standard for Power Operated Pedestrian Doors.

Manufacturer shall provide FACTORY owned central dispatch system for warranty service throughout North America. System shall be available 24 hours a day, 365 days per year with a factory employee (not an answering service) to obtain malfunction information and dispatch appropriate service agency to the customer location. Toll free 1-877-BESAM-US to be prominently displayed on header of each operator. To insure quality service dispatching, outside contractors or answering services will not be accepted.

1.09 WARRANTY

Besam's automatic door components are warranted to be free of defects in materials or workmanship under normal use for a period of one year from the date of shipment from Besam's factory when the components have been installed by an authorized Besam distributor. Abuse, misuse, modification or improper repair or service by unauthorized technicians negates this warranty. During the period of this warranty Besam, at its sole option, will repair or replace any Besam automatic door component or parts thereof found to be defective in material or workmanship if any necessary return charges are prepaid.

Components repaired or replaced under this warranty are warranted only for the remainder of the period covered by this warranty. For expanded warranty terms see Besam's warranty certificate.

PART II PRODUCTS

2.01 MANUFACTURER

Provide PowerSwing as manufactured by Besam, Inc. Monroe, NC 28110. Installation shall be performed by the local certified Besam Distributor.

2.02 EQUIPMENT

PowerSwing for low energy applications, surface mounted, automatic swing door operator consists of aluminum operator housing, A.C. electro hydraulic motor, operator assembly, wiring harnesses, swing arm and electronic control.

2.03 AUTOMATIC SWING DOOR OPERATOR

OPERATOR: Electro-hydraulic type, self-contained operator, powered by a 1/6 hp. Power Transmission has only one moving part, ensuring superior reliability and low overall maintenance. Operator is non-handed to insure maximum versatility in adapting to varying field conditions. The operator housing provides a seal against dust, dirt and moisture.

ELECTRONIC CONTROL: A self-contained, solid state integrated circuit controls the operation and switching of the swing power operator. The electronic control provides low voltage power supply for all means of actuation. No external or auxiliary low voltage power source will be allowed. The controls include time delay (5 to 30 seconds) for normal cycle.

CONNECTING HARDWARE: Surface mounted operator is connected to the door by means of a steel door arm. The door arm is secured to the top rail of the swing door using one piece threaded tubular inserts for aluminum doors, 1/4-20 binding head and post screws (sex bolts) for wood and hollow metal doors. The knurled door arm adaptor is broached for positive engagement with the shaft and requires no additional linkage, slide blocks or tracks. The appearance of the top rail of the swing door shall be modified in order to attach the door arm.

POWER OPEN: Automatic door operator powers the door open by forces transmitted hydraulically to the drive shaft and maintains a constant engagement throughout the opening cycle. Operator is designed to counteract most normal exterior wind conditions and/or interior stack pressure without the need of additional power assist mechanisms. Both opening and closing speed are field adjusted per current ANSI 156.19. The automatic door system is a self-contained, in line design requiring no remote pumps, exterior piping or compressors. The operator is equipped with a hydraulic bypass (relief valve), which diverts fluid back to it's reservoir to prevent motor overload if the door is restricted by any means during it's opening cycle. The automatic door system functions as a manual door closer in the event of a power failure. Manual opening force is unaffected by opening speed adjustment. Manual force to open the door will not exceed 15 pounds, measured 1" (25.4mm) in from latch edge of door.

SPRING CLOSE: The automatic door operator is spring closed. The spring is non-handed and returns the door to full close.

2.04 PUSH PLATE CONTROL DEVICE

Actuation device is either:

- A. Besam part #75-02-102 - hard wired, 6" round stainless steel push plate switches engraved with "Push to Open" with a blue handicap logo.
- B. Besam part #75-15-251 - radio controlled, 6" round stainless steel push plate switches engraved with blue handicap logo. Control causes door to open instantly when press wall switch is pushed. Door can be used as a manual door with no damage to the operator.

Option: **Push to Activate** - is a programmable push to activate feature. Push or pull the door open from the closed position, and the door will gently power open, time out and slowly close.

2.05 ELECTRICAL CHARACTERISTICS AND COMPONENTS

ELECTRICAL CHARACTERISTICS: Nominal current draw 222 watts (1.85 amps at 120 VAC).

OVERLOAD PROTECTION: Motor stall 672 watts maximum. Electric motor is equipped standard with a built-in thermal overload protection and cannot exceed 10 amps current draw.

ELECTRICAL CONTRACTOR NOTE: provide two low voltage 18 gauge stranded wires from automatic operator to remote (50 feet max.) activation devices (if required).

2.06 GUIDE RAILS

Are not necessary for this application.

2.07 FINISHES

All aluminum sections are 6063-T5 alloy and have a minimum wall thickness of .079" (2mm). All exposed aluminum surfaces are dark bronze anodized (AAC23A44) or clear anodized (AAC22A31). Custom finishes such as stainless steel clad are available, if specified. Powder coat painted finish is available with match to Kynar colors.

PART III EXECUTION

3.01 EXAMINATION

Verify the openings are plumb and are dimensioned properly. Insure adequate support has been provided at the operator header. Proceed with the installation only after conditions are deemed satisfactory.

3.02 INSTALLATION & ADJUSTMENT

Install equipment in accordance with Besam installation instructions. Adjust equipment per instructions and current ANSI 156.19.

Besam reserves the right to make product improvements and change specifications without notice.

End of Section

October 2003

SECTION 09 22 26
CEILING SUSPENSION

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: Ceiling suspension, including fiberglass ceiling grid system and fiberglass ceiling panels.
- B. Related Sections: Section(s) related to this section include:
 - 1. [Work Title]: Division [#] [Title] 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 D2583 Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.
 - 2. ASTM D5420 Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact).
 - 3. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide fiberglass reinforced plastic (FRP) panels which 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.
- C. Shop Drawings: Submit shop drawings showing layout, profiles and product components, including anchorage, accessories, finish colors, patterns and textures.
 - 1. Indicate the location of main tees and cross tees.
 - 2. Indicate the location and dimension of joints and fastener attachments.
- D. Samples: Submit selection and verification samples for finishes, colors and textures.
 - 1. Submit samples of each grid member and attachment clip.
 - 2. Submit samples of each type of panel, trim and fastener.
- E. 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. Manufacturer's Instructions: Manufacturer's installation instructions. Submit manufacturer's *Installation Guide #6211*.
 4. Manufacturer's Field Reports: Manufacturer's field reports specified herein.
- F. 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, precautions against cleaning materials and methods detrimental to finishes and performance.
 2. Warranty: Warranty documents specified herein.

1.05 QUALITY ASSURANCE

- A. Qualifications:
1. Installer Qualifications: Installer should be experienced in performing work of this section and should have specialized in installation of work similar to that required for this project.
 - a. Certificate: When requested, submit certificate indicating qualifications.
 2. Manufacturer Qualifications: Manufacturer should be capable of providing field service representation during construction and should be capable of approving the application method.
- B. Regulatory Requirements: [Specify applicable requirements of regulatory agencies].
1. Specific Regulatory Requirement:
- C. Mock-Ups: Install at project site a job mock-up using acceptable products and manufacturer approved installation methods. Obtain Owner's and Architect's acceptance of finish color, texture, pattern and workmanship standards. Comply with Division 1 Quality Control (Mock-Up Requirements) Section.
1. Mock-Up Size: [Specify mock-up size].
 2. Maintenance: Maintain mock-up during construction for workmanship comparison; remove and legally dispose of mock-up when no longer required.
 3. Incorporation: Mock-up may be incorporated into final construction upon Owner's approval.
- D. Preinstallation Meetings: Conduct preinstallation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements. Comply with Division 1 Project Management and Coordination (Project Meetings) Section.

1.06 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Division 1 Product Requirements Sections.
- B. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact. Deliver grid and accessories in manufacturer's unopened cartons. Package sheets on skids or pallets for shipment to project site.
- D. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer. Store cartons and panels indoors in a dry place at the project site.
- E. Handling: Remove foreign matter from the face of the panel by using a soft bristle brush. Avoid abrasive action.

1.07 PROJECT CONDITIONS

- A. Environmental Requirements:

1. Installation shall not begin until building is enclosed, permanent heating and cooling equipment is in operation, and residual moisture from plaster, concrete or terrazzo work has dissipated.
- B. Field Measurements: Verify actual measurements and 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. 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.
 1. Warranty Period: [Specify term.] years commencing on Date of Substantial Completion.

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.
 1. Quantity: Furnish quantity of [Identify items.] units equal to [Specify %.] of amount installed.
 2. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra materials.

PART 2 PRODUCTS

2.01 FIBERGLASS CEILING GRID SYSTEM

- A. Manufacturer: Kemlite Company, Inc.
 1. Contact: Joliet Sales Office, PO Box 2429, Joilet, IL 60434; Telephone: (800) 435-0080, (815) 467-8600; Fax: (815) 467-8666; E-mail: kemlitesales@kemlite.com; website: www.sanigrid.com.
- B. Proprietary Product(s)/System(s): Kemlite Sanigrid II Pultruded FRP Grid System.
 1. Components:
 - a. Wall Angles: 12 foot (4 m) length fastened directly to the wall with Kemlite nylon drive rivets.
 - b. Hanger Wire: Provided by others, manufacturer's standard; secured with stainless steel anchors.
 - c. Main Runners: 12' 1 1/2" (3.7 m), notched on 24 1/4 inch (0.6 m) centers.
 - d. Cross Tee: 48 1/2 inch, 24 1/4 inch and 24 1/2 inch (1.2, 0.62 and 0.62 m) lengths, prenotched ends.
 - e. Connector Clip: Joins main runners.
 - f. Hold-Down Clips: Provide hold-down clips (Part #C-24) for use with ceiling panels up to 9/32 inch (7.1 mm) thick; and provide hold-down clips (Part #C-25) for use with ceiling panels 9/32 inch - 1/2 inch (7.1 - 12.7 mm) thick.
 - g. Wall Anchor (Part #C-20): Secures main and cross tees to wall angle.
 2. Color:
 - a. Grid Members: Manufacturer's standard white.
 - b. Clips: Manufacturer's standard white.

2.02 FIBERGLASS CEILING PANELS

A. Proprietary Product(s)/System(s): Kemlite FRP Panels.

1. Glasbord-CGI/FX Lay-In Ceiling Panels:

- a. Color: [Specify color.] Special colors can be custom matched and manufactured provided there is a minimum square footage order of 12,000 ft² (1116 m²). Allow 4 - 6 weeks lead time.
- b. Size: [Specify size, or as indicated on drawings. Standard ceiling panel sizes are 23 3/4 inches × 47 3/4 inches and 23 3/4 inches × 23 3/4 inches (0.6 × 1.21 and 0.6 × 0.6 m).] Sanigrid II ceiling panels are 23 3/4 inches × 48 inches and 23 3/4 inches × 23 3/4 inches (0.6 × 1.22 and 0.6 × 0.6 m).

2. Glasbord PCI Lay-In Ceiling Panels:

- a. Color: [Specify color. Special colors can be custom matched and manufactured provided there is a minimum square footage order of 12,000 ft² (1116 m²). Allow 4 - 6 weeks lead time.
- b. Size: [Specify size, or as indicated on drawings. Ceiling panels are 23 3/4 inches × 47 3/4 inches and 23 3/4 inches × 23 3/4 inches (0.6 × 0.6 m and 0.6 × 0.6 m) Sanigrid II ceiling panels are 23 3/4 inches × 48 inches and 23 3/4 inches × 23 3/4 inches (0.6 × 1.22 and 0.6 × 0.6 m).
- c. Embossed Glasbord-PCI: Identified by a trademarked single dark gray thread manufactured into the back of the panel and a trademarked single fluorescent embedded thread on the front of the panel (visible only under UV light).

3. Kemply Panels:

- a. Color: [Specify color.] Special colors can be custom matched and manufactured provided there is a minimum square footage order of 12,000 ft² (1116 m²). Allow 4 - 6 weeks lead time.
- b. Size: [Specify size, or as indicated on drawings.].
 - 1) Standard Ceiling Panel Sizes:
 - a) 23 3/4 inches × 47 3/4 inches (0.6 × 1.21 m).
 - b) 23 3/4 inches × 23 3/4 inches (0.6 × 0.6 m).
 - 2) Ceiling Panel Size (Grid Size 2 feet × 2 feet (0.6 × 0.6 m)): Panel thickness [1/4 inch (6.4 mm): 23 3/4 inches × 23 3/4 inches (603 × 603 mm)] [1/2 inch (12.7 mm): 23 3/4 inches × 23 3/4 inches (603 × 603 mm)] [5/8 inch (15.9 mm): 23 3/4 inches × 23 3/4 inches (603 × 603 mm)] [1 inch (25.4 mm) and over: 23.63 inches × 23.63 inches (600 × 600 mm)].
 - 3) Ceiling Panel Size (Grid Size 2 feet × 4 feet (0.6 × 1.2 m)): Panel thickness [1/4 inch (6.4 mm): 23 3/4 inches × 48 inches (603 × 1219 mm)] [1/2 inch (12.7 mm): 23 3/4 inches × 48 inches (603 × 1219 mm)] [5/8 inch (15.9 mm): 23 3/4 inches × 48 inches (603 × 1219 mm)] [1 inch (25.4 mm) and over: 23 3/4 inches × 47 1/2 inches (600 × 1207 mm)].

4. *Surfaseal* Surface Protection: Provide manufacturer's proprietary *Surfaseal* surface protection for FRP panels.

2.03 PRODUCT SUBSTITUTIONS

A. Substitutions: No substitutions permitted.

2.04 MANUFACTURED UNITS

A. Kemlite Fire-X Glasbord Fiberglass Panels with *Surfaseal* Surface Protection:

1. Rating: Class I (A) Interior Finish.
2. Lay-In Ceiling Panels: Finish, thickness and color to be:
 - a. Embossed 0.10 inch (2.5 mm) Fire-X Glasbord with *Surfaseal* Color: 85 white.
 - b. Embossed 0.12 inch (3.0 mm) Fire-X Glasbord with *Surfaseal* Color: 85 white.
3. Panel length and width as recommended by manufacturer.
4. Performance Properties: Provide products with the following properties:
 - a. Underwriters Laboratories, Inc. (UL), classified - embossed FX 0.10 inch (2.5 mm) only.
 - b. Class A flamespread of less than 25, smoke developed less than 450 per ASTM E84 latest version.
 - c. Barcol Hardness (scratch resistance) of 55 as per ASTM D2583.
 - d. Panels will exhibit no more than a 0.038% weight loss after a 25 cycle Taber Abrasion Test using CS-17 abrasive wheels with 1000 g weight.
 - e. Gardner Impact Strength of 22 in-lb (2.49 J) showing no visible damage on front side per ASTM D5420.
 - f. Meets USDA/FSIS requirements.
 - g. Complies with ICBO Report Number 4583.
 - h. A means of frontside identification and confirmation of meeting Class I (A) interior finish requirements after installation and while in service (without labels) - embossed FX only.

B. Kemlite Glasbord-CGI Fiberglass Panels with *Surfaseal* Surface Protection:

1. Rating: Class III (C) Interior Finish.
2. Lay-In Ceiling Panels: Finish, thickness and color shall be:
 - a. Embossed 0.10 inch (2.5 mm) Glasbord-CGI with *Surfaseal* Color: 85 white.
 - b. Embossed 0.12 inch (3.05 mm) Glasbord-PWI with *Surfaseal* Color: 85 white.
3. Panel length and width as recommended by manufacturer.
4. Performance Properties: Provide products with the following properties:
 - a. Class C flamespread of 200 or less, smoke developed of 450 or lower per ASTM E84 latest version.
 - b. Barcol Hardness (scratch resistance) per ASTM D2583 of:
 - 1) 60 for embossed 0.10 inch (2.5 mm) Glasbord-CGI.
 - 2) 55 for embossed 0.12 inch (3.05 mm) Glasbord-PWI.
 - 3) 55 for smooth 0.075 inch (1.9 mm) Glasbord-PSI.
 - c. Panels shall exhibit no more than a 0.038% weight loss after a 25 cycle Taber Abrasion Test using CS-17 abrasive wheels with 1000 g weight.
 - d. Meets USDA/FSIS requirements.
 - e. Complies with ICBO Report Number 4583.
 - f. A means of frontside identification and confirmation of meeting Class III (C) the interior finish requirement after installation and while in service (without labels) embossed panels only.

C. Kemlite Glasbord-PCI Fiberglass Panels with *Surfaseal* Surface Protection:

1. Lay-In Ceiling Panels: Finish, thickness and color shall be:
 - a. Embossed 0.09 inch (2.3 mm) Glasbord-PCI with *Surfaseal*, color to be 85 white.
2. Performance Properties: Provide products with the following properties:
 - a. Flamespread of 150 or less, smoke developed of 300 or lower per CAN/ULC-S102M latest version.
 - b. Barcol Hardness (scratch resistance) of 55 per ASTM D2583.
 - c. Panels will exhibit no more than a 0.038% weight loss after a 25 cycle Taber Abrasion Test, when C-17 abrasive wheels are used with 1000 g weight.
 - d. A means of frontside identification and confirmation of meeting the interior finish requirement after installation and while in service (without labels).
3. Panel length and width as recommended by manufacturer.

D. Kemlite Kemply Fiberglass Laminated Lay-In Ceiling Panels with *Surfaseal* Surface Protection:

1. Lay-In Ceiling Panels: Manufacturer's standard factory laminated panels with specified substrate and specified skin; size shall be as recommended by manufacturer. Panels shall meet USDA/FSIS Requirements.
2. Lay-In Ceiling Panel Substrate:
 - a. Gypsum Substrate: [Specify: 1/2 inch (12.7 mm) Regular or 5/8 inch (15.9 mm) Firecode-X].
 - b. Fluted Polypropylene Substrate: [Specify: 0.32 inch (8.1 mm) black, or 0.32 inch (8.1 mm) white, or 0.40 inch (10.2 mm) black, or 0.40 inch (10.2 mm) white.].
3. Lay-In Ceiling Panel Skin:
 - a. Class C Skin: [Specify: 0.05 inch (1.3 mm) embossed Glasbord-PWI, or 0.09 inch (2.3 mm) embossed Glasbord-PIF, or 0.075 inch (1.9 mm) smooth Glasbord-PSI.].
 - b. Class A Skin: [Specify: 0.09 inch (2.3 mm) embossed Fire-X Glasbord or 0.075 inch (1.9 mm) smooth Glasbord-FSI.].

2.05 RELATED MATERIALS

- A. Related Materials: Refer to other sections listed in Related Sections paragraph herein for related materials.

2.06 SOURCE QUALITY

- A. Source Quality: Obtain FRP panels from a single manufacturer.
1. Provide grid and clips only from the manufacturer specified to ensure warranty.
 2. Provide panels only from manufacturer specified to ensure warranty and color harmonization of accessories.

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

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

3.02 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. Examine backup surfaces to determine that corners are plumb and straight, surfaces are smooth, uniform, clean and free from foreign matter, nails are countersunk and joints and cracks are filled flush and smooth with the adjoining surface.
2. Do not begin installation until backup surfaces are in satisfactory condition.

3.03 PREPARATION

- A. Surface Preparation: [Specify applicable product preparation requirements.].

3.04 INSTALLATION

- A. Fiberglass Ceiling Grid System Installation:

1. Ensure HVAC, electrical, plumbing and similar work above the ceiling level have been completed.
2. Cut grid components with carbide tipped saw blade.
3. Comply with grid manufacturer's *Installation Guide #6214*.

- B. FRP Panel Installation:

1. Cut and drill panels with carbide tipped saw blades or drill bits, or cut with snips.
2. Using products acceptable to panel manufacturer, install FRP panel system in accordance with panel manufacturer's printed instructions. Comply with panel manufacturer's *Installation Guide #6244*.

- C. Site Tolerances: [Specify applicable site tolerances for specified product(s) installation.].

- D. Finish Color/Patterns: [Specify installation finishes coordinated with finishes specified in Part 2 Products.].

- E. Related Products Installation: Refer to other sections listed in Related Sections paragraph herein for related materials installation.

3.05 FIELD QUALITY REQUIREMENTS

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

1. Site Visits: [Specify number and duration of periodic site visits.].

3.06 CLEANING

- A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace products that have been installed and are damaged. 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.

3.07 PROTECTION

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

END OF SECTION

SECTION 09 29 00

GYPSUM BOARD

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Gypsum board assemblies attached to steel framing.
- B. Gypsum board bonded adhesively to interior substrates.

1.02 RELATED SECTIONS

- A. Section 06 10 00 – Rough Carpentry: for wood blocking and furring.
- B. Section 07 84 00 – Fire stopping: for fire stopping systems and fire-resistant-rated joint sealants.

1.03 REFERENCES

- A. ASTM C11 – Gypsum Board Assembly.
- B. ASTM E119 – Testing requirements and fire resistance ratings.
- B. GA 505 – Definition of terms for gypsum board assembly.
- C. GA 600 – Fire Resistance Directory

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.
- B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Neatly stack gypsum panels flat to prevent sagging.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Establish and maintain environmental conditions for applying and finishing gypsum board to comply with ASTM C840 requirements for gypsum board manufacturer's recommendations, whichever are more stringent.
- B. Room Temperatures: For non-adhesive attachment of gypsum board to framing, maintain not less than 40 deg F. For adhesive attachment of finishing of gypsum board, maintain not less than 50 deg F for 48 hours before application and continuously after dry. Do not exceed 95 deg F when using temporary heat sources.

- C. Ventilation: Ventilate building spaces as required to dry joint treatment materials. Avoid drafts during hot dry weather to prevent finishing materials from drying to rapidly.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Provide gypsum board of types indicated in 48 inch (1219 mm) widths and a maximum lengths available that will minimize end-to-end butt joints in each area indicated to receive gypsum board application.
- B. Gypsum Wallboard: ASTM C36 and as follows:
 - 1. Type: Regular for vertical surfaces, unless otherwise indicated.
 - 2. Type: Type X where required for fire-resistance-rated assemblies.
 - 3. Type: Proprietary type as required for specific fire-resistance-rated assemblies.
 - 4. Edges: Tapered.
 - 5. Thickness: 5/8 inch (15.9 mm), unless otherwise specified.
- C. Water-Resistant Gypsum Board: ASTM C630 and as follows:
 - 1. Type: Regular, unless otherwise indicated.
 - 2. Type: Type X where required for fire-resistance-rated assemblies and where indicated.
 - 3. Thickness: 5/8 inch (15.9 mm), unless otherwise specified.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Gypsum Board Application and Finishing Standards: Comply with ASTM C840 and GA 216.

3.02 FIELD QUALITY CONTROL

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

END OF SECTION

SECTION 09 29 00

GYPSUM BOARD

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.

B. Related Sections:

1. Section 06 10 00, Rough Carpentry.
2. Section 09 26 13, Veneer Plaster.
3. Section 09 21 16.23, Shaftwall Systems
4. Section 09 21 16.33, Area Separation Walls.
4. Section 09 28 00, Cement Board.
5. Section 09 72 00, Prefinished Gypsum Wall Panels.

1.02 REFERENCES

A. American National Standards Institute (ANSI):

1. A108.11, American National Standard for Interior Installation of 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 960, Specification for Predecorated Gypsum Board.

13. C 1002, Specification for Steel Drill Screws for the Application of Gypsum Board or Metal Plaster Bases.
14. C 1047, Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
15. C 1280, Specification for Application of Gypsum Sheathing Board.
16. C 1395, Specification for Gypsum Ceiling Board.
17. C 1396, Specification for Gypsum Board.
18. D 3273, Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
19. D 4977, Test Method for Granule Adhesion to Mineral Surfaced Roofing by Abrasion.
20. D 5420, Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact)
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.

1.03 SYSTEM DESCRIPTION

A. Performance Requirements:

1. Select steel studs in accordance with the manufacturer's standard load tables and following design pressures and deflections:
 - a. At stairs, elevator hoistways, and other vertical shafts: L/120 at 10 psf.
 - b. At ground floor lobbies: L/120 at 15 psf.
 - c. At partitions to receive stone cladding, lath and plaster, or veneer plaster: L/360 at 15 psf.
 - d. At all other partitions: L/240 at 5 psf.

B. Fire-Rated Impact-Resistant Board: Provide boards with indicated impact resistance when tested in accordance with industry proposed standard.

C. Fire-Rated Abuse-Resistant Board: Provide boards with indicated surface indentation resistance and impact resistance when tested in accordance with the test procedures referenced as modified by National Gypsum Co.

1.04 SUBMITTALS

- A. Product Data: Manufacturers' specifications and installation instructions for each product specified.
- B. Samples: Min. 12 in. by 12 in. coated gypsum board panel for of each type and texture of textured coating.

1.05 QUALITY ASSURANCE

- A. Single-Source Responsibility: Obtain gypsum board products, joint treatment products, and textured coatings from a single manufacturer.

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

- A. National Gypsum Company:
 - 1. Gypsum Board:
 - a. Regular Board: Gold Bond Brand Gypsum Wallboard.
 - b. Mold-Resistant Board: Gold Bond Brand XP Wallboard
 - c. Fire-Rated Board: Gold Bond Brand Fire-Shield Wallboard.
 - d. Fire-Rated Mold-Resistant Board: Gold Bond Brand XP Fire-Shield Wallboard
 - e. Fire-Rated Board: Gold Bond Brand Fire-Shield C Wallboard.
 - f. Fire-Rated Mold-Resistant Board: Gold Bond Brand XP Fire-Shield C Wallboard.
 - g. Fire-Rated Abuse-Resistant Mold-Resistant Board: Hi-Abuse Brand XP Wallboard.
 - h. Fire-Rated Impact/Penetration-Resistant Mold-Resistant Board: Hi-Impact Brand XP Wallboard.
 - i. Water-Resistant Backing Board: Gold Bond Brand MR Board.
 - j. Fire-Rated Water-Resistant Backing Board: Gold Bond Brand Fire-Shield MR Board.
 - k. Fire-Rated Water-Resistant Backing Board: Gold Bond Brand Fire-Shield C MR Board.
 - l. Ceiling Board: High Strength Brand Ceiling Board.
 - m. Sheathing Board: Gold Bond Brand Gypsum Sheathing.
 - n. Sheathing Board: Gold Bond Brand Jumbo Gypsum Sheathing.
 - o. Fire-Rated Sheathing Board: Gold Bond Brand Fire-Shield Jumbo Gypsum Sheathing.
 - p. Fire-Rated Shaftliner Board: Gold Bond Brand Fire-Shield Shaftliner.
 - q. Fire-Rated Mold-Resistant Shaftliner Board: Gold Bond Brand Fire-Shield Shaftliner XP.
 - r. Exterior Soffit Board: Gold Bond Brand Exterior Soffit Board.
 - s. Fire-Rated Exterior Soffit Board: Gold Bond Brand Fire-Shield Exterior Soffit Board.

- t. Flexible Board: High Flex Brand Gypsum Wallboard.
- u. Fire-Rated Vinyl Laminated Ceiling Board: Gridstone Brand Ceiling Panel.
- v. Fire-Rated Sealed Vinyl Laminated Ceiling Board: Gridstone Brand CleanRoom Ceiling Panel.
- w. Vinyl Laminated Ceiling Board: Gridstone Brand Hi-Strength Ceiling Panel.
- 2. Joint Treatment:
 - a. Tape: ProForm Brand Joint Tape.
 - b. Tape: ProForm Brand Multi-Flex Tape Bead.
 - c. Tape: ProForm Brand Fiberglass Mesh Tape.
 - d. Compound: ProForm Brand All Purpose Joint Compound.
 - e. Compound: ProForm Brand XP Joint Compound
 - f. Compound: ProForm Brand Multi-Use Joint Compound.
 - g. Compound: ProForm Brand Lite Joint Compound.
 - h. Compound: ProForm Brand Ultra Joint Compound.
 - i. Compound: ProForm Brand Topping Joint Compound.
 - j. Compound: Proform Brand Taping joint Compound
 - k. Compound: ProForm Brand Triple-T Compound
 - l. Compound: ProForm Brand Sta-Smooth Joint Compound.
 - m. Compound: ProForm Brand Sta-Smooth Lite Joint Compound.
 - n. Compound: ProForm Brand Sta-Smooth HS Joint Compound.
- 3. Primer: Proform Brand Surfacer/Primer.
- 4. Textured Coatings:
 - a. Ceiling Coating: ProForm Brand Perfect Spray, Fine.
 - a. Ceiling Coating: ProForm Brand Perfect Spray, Medium.
 - a. Ceiling Coating: ProForm Brand Perfect Spray, Coarse.
 - b. Ceiling Coating: ProForm Brand Perfect Spray II.
 - c. Ceiling Coating: ProForm Brand Spray Quick, Fine.
 - c. Ceiling Coating: ProForm Brand Spray Quick, Medium.
 - c. Ceiling Coating: ProForm Brand Spray Quick, Course.
 - d. Wall Coating: ProForm Brand Perfect Spray EM, Spatter + Knockdown.
 - d. Wall Coating: ProForm Brand Perfect Spray EM, Spatter Finish.
 - d. Wall Coating: ProForm Brand Perfect Spray EM, Orange Peel.
 - e. Wall Coating: ProForm Brand Perfect Spray HF, Spatter + Knockdown.
 - e. Wall Coating: ProForm Brand Perfect Spray HF, Spatter Finish.
 - e. Wall Coating: ProForm Brand Perfect Spray HF, Orange Peel

2.02 MATERIALS

A. Metal Framing:

- 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.
- 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.

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.
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.
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.
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.
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.
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.
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.

B. Wood Framing: See Section 06 10 00.

C. Regular Gypsum Board: A gypsum core wall panel surfaced with paper on front, back, and long edges and complying with ASTM C 36 and C 1396 (Gold Bond Brand 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 (Sta-Smooth Edge).

D. Mold-Resistant Gypsum Board: A gypsum core wall panel with additives to enhance the water resistance of the core; surfaced with moisture/mold/mildew resistant paper on front, back and long edges and complying with ASTM C 630 and C 1396 (Gold Bond Brand XP Wallboard)

1. Thickness: 1/2 in.
2. Width: 4 ft.

3. Length: 8 ft., 10 ft. or 12 ft.
 4. Edges: Square or tapered
 5. Mold and Mildew Resistance: Panel score of 10, when tested in accordance with ASTM D 3273.
- E. 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 and C 1396, Type X.
1. Thickness: ½ in. (Gold Bond Brand Fire-Shield C Wallboard), 5/8 in. (Gold Bond Brand Fire-Shield Wallboard), or 5/8 in. (Gold Bond Brand Fire-Shield C Wallboard).
 2. Width: 4 ft.
 3. Length: 6 ft. through 16 ft.
 ½ in. (Gold Bond Brand Fire-Shield C Wallboard)
 5/8 in. (Gold Bond Brand Fire-Shield Wallboard)
 Length: 8 ft. through 14 ft.
 5/8 in. (Gold Bond Brand Fire-Shield C Wallboard)
 4. Edges: Square, Tapered, or Beveled Taper (Sta-Smooth Edge).
- F. Fire-Rated Mold-Resistant Gypsum 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 a moisture/mold/mildew resistant paper on the front, back and long edges and complying with ASTM C 630 and C 1396, Type X.
1. Thickness: ½ in. (Gold Bond Brand XP Fire-Shield C Wallboard), 5/8 in. (Gold Bond Brand XP Fire-Shield Wallboard).
 2. Width: 4 ft.
 3. Length: 8 ft., 10 ft. or 12 ft
 4. Edges: Square or Tapered
 5. Mold and Mildew Resistance: Panel score of 10, when tested in accordance with ASTM D 3273.
- G. Fire-Rated Abuse-Resistant Mold-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, moisture/mold/mildew resistant paper on front, back and long edges; and complying with ASTM C 36 and C 1396, Type X (Hi-Abuse Brand XP Fire-Shield Wallboard).
1. Thickness: 5/8 in.
 2. Width: 4 ft.
 3. Length: 8 ft. through 12 ft.
 4. Edges: Tapered.
 5. Surface Abrasion Resistance: Not greater than 0.015" depth when tested at 50 cycles in accordance with ASTM D 4977, Modified.
 6. Indentation Resistance: Not greater than 0.132" depth when tested at an impact load of 72 in.-lbs. In accordance with ASTM D5420.
 7. Impact/Penetration Resistance: Not less than 210 ft.-lbs. when tested in accordance with ASTM E 695, Modified.
 8. Mold and Mildew Resistance: Panel score of 10, when tested in accordance with ASTM D 3273.

- H. **Fire-Rated Impact/Penetration-Resistant Mold-Resistant Gypsum Board:** A gypsum core wall panel with additives to enhance fire resistance, water resistance, surface indentation resistance and impact resistance of the core; surfaced with abrasion, moisture/mold/mildew resistant paper on the front, back, and long edges with a fiberglass mesh embedded in the board to enhance impact/penetration resistance; and complying with ASTM C 630 and C 1396, Type X. (Hi-Impact Brand XP Wallboard).
1. Thickness: 5/8 in.
 2. Width: 4 ft.
 3. Length: 8 ft. through 12 ft.
 4. Edges: Tapered.
 5. Surface Abrasion Resistance: Not greater than 0.015" depth when tested at 50 cycles in accordance with ASTM D 4977, Modified.
 6. Indentation Resistance: Not greater than 0.114" depth when tested at an impact load of 72 in.-lbs. in accordance with ASTM D5420.
 7. Impact/Penetration Resistance: Not less than 540 ft.-lbs. when tested in accordance with ASTM E 695, Modified.
 8. Mold and Mildew Resistance: Panel score of 10, when tested in accordance with ASTM D 3273.
- I. **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 Brand MR Board).
1. Thickness: ½ in.
 2. Width: 4 ft.
 3. Length: 6 ft. through 16 ft.
 4. Edges: Tapered.
- J. **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 and C 1396, Type X.
1. Thickness: ½ in. (Gold Bond Brand Fire-Shield C MR Board) or 5/8 in. (Gold Bond Brand Fire-Shield MR Board).
 2. Width: 4 ft.
 3. Length: 6 ft. through 16 ft.
 4. Edges: Square, Tapered, or Beveled Taper (Sta-Smooth Edge).
- K. **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; and complying with ASTM C 1395 and C 1396 (High Strength Brand Ceiling Board).
1. Thickness: ½ in.
 2. Width: 4 ft.
 3. Length: 6 ft. through 16 ft.
 4. Edges: Tapered.
- L. **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 and C 1396.

1. Regular Board, 2 ft. by 8 ft.: ½ in. thick with tongue and groove edge (Gold Bond Brand Gypsum Sheathing).
 2. Regular Board, 4 ft. by 8 ft. or 9 ft. or 10 ft.: ½ in. thick with square edge (Gold Bond Brand 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 Brand Fire-Shield Jumbo Gypsum Sheathing).
- M. Fire-Rated Gypsum Shaftliner Board: 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 and C 1396, Type X (Gold Bond Brand Fire-Shield Shaftliner).
1. Thickness: 1 in.
 2. Width: 2 ft.
 3. Length: 7 ft. through 14 ft.
 4. Edges: Beveled.
- N. Fire-Rated Mold-Resistant Gypsum Shaftliner Board: A gypsum core shaftwall panel with additives to enhance fire resistance of the core and mold/mildew resistance of the core; surfaced with moisture/mold/mildew resistant paper on the front, back, and long edges and complying with ASTM C 442 and C 1396, Type X (Gold Bond Brand Fire-Shield Shaftliner XP).
1. Thickness: 1 in.
 2. Width: 2 ft.
 3. Length: 7 ft. through 14 ft.
 4. Edges: Beveled.
 5. Mold and Mildew Resistance: Panel score of 10, indicating no mold growth, when tested in accordance with ASTM D 3273.
- O. 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 and C 1396 (Gold Bond Brand Exterior Soffit Board).
1. Thickness: ½ in.
 2. Width: 4 ft.
 3. Length: 8 ft. through 12 ft.
 4. Edges: Beveled Taper (Sta-Smooth Edge).
- P. 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 Brand Fire-Shield Exterior Soffit Board).
1. Thickness: 5/8 in.
 2. Width: 4 ft.
 3. Length: 8 ft. through 12 ft.
 4. Edges: Beveled Taper (Sta-Smooth Edge).

- Q. Flexible Gypsum Board: A gypsum core wall panel with additives to enhance flexibility, surfaced with paper on front, back, and long edges; and complying with ASTM C 36 and C 1396 (High Flex Brand Gypsum Wallboard).
1. Thickness: 1/4 in.
 2. Width: 4 ft.
 3. Length: 8 ft. through 12 ft.
 4. Edges: Tapered.
- R. Fire-Rated Vinyl Laminated Gypsum Ceiling Board: A gypsum core lay-in ceiling panel with additives to enhance sag and fire resistance, surfaced with paper on front and back and finished on the front with a 2-mil-thick white stipple textured vinyl laminate; and complying with ASTM C 960; C 1396, Type X, Class 1; and E 1264, Type XX, patterns E and G (Gridstone Brand Ceiling Panel).
1. Thickness: 1/2 in.
 2. Width: 2 ft.
 3. Length: 2 ft. and 4 ft.
 4. Edges: Square.
- S. Fire-Rated Sealed Vinyl Laminated Gypsum Ceiling Board: A gypsum core lay-in ceiling panel with additives to enhance sag and fire resistance, sealed on the front, back, and long edges with a 2-mil-thick rigid vinyl film, short edges sealed with a durable coating; and complying with ASTM C 960; C 1396, Type X, Class 1; and E 1264, Type XX, patterns E and G (Gridstone Brand CleanRoom Ceiling Panel).
1. Thickness: 1/2 in.
 2. Width: 2 ft.
 3. Length: 2 ft. and 4 ft.
 4. Edges: Square.
- T. Vinyl Laminated Gypsum Ceiling Board: A gypsum core lay-in ceiling panel with additives to enhance sag resistance, surfaced with paper on front and back and finished on the front with a 2-mil-thick white stipple textured vinyl laminate; and complying with ASTM C 960; C 1396, Class 1; and E 1264, Type XX, patterns E and G (Gridstone Brand Hi-Strength Ceiling Panel).
1. Thickness: 5/16 in.
 2. Width: 2 ft.
 3. Length: 2 ft. and 4 ft.
 4. Edges: Square.
- U. Joint Treatment:
1. Tape: 2-1/16 in. wide paper reinforcing tape (ProForm Brand Joint Tape).
 2. Tape: 2 in. wide paper reinforcing tape with metal strips laminated along the center crease to form inside and outside corners (ProForm Brand Multi-Flex Tape Bead).
 3. Tape: 2 in. wide self adhering fiberglass tape (ProForm Brand Fiberglass Mesh Tape).
 4. Compound: Drying type pre-mixed vinyl base compound (ProForm Brand All Purpose Joint Compound, regular grade and machine grade, ProForm Brand XP Joint Compound, ProForm Brand Multi-Use Joint Compound, ProForm Brand Lite Joint Compound, and ProForm Brand Ultra Joint Compound).

5. Compound: Drying type job mixed vinyl base compound (ProForm Brand Triple-T Compound).
 6. Compound: Drying type vinyl base topping compound, pre-mixed (ProForm Brand Topping Compound).
 7. Compound: Drying type vinyl based taping compound, pre-mixed (ProForm Brand Taping Joint Compound).
 8. Compound: Setting type job mixed chemical-hardening compound (ProForm Brand Sta-Smooth Joint Compound, ProForm Brand Sta-Smooth Lite Joint Compound, and ProForm Brand Sta-Smooth HS Joint Compound).
- W. Primer: Acrylic latex, high-build, spray applied coating to provide a Level 5 finish (ProForm Brand Surfacer/Primer).
- X. Textured Coatings:
1. Ceiling Coating: Compound of minerals and clays for mixing with a mineral or polystyrene aggregate and water (ProForm Brand Perfect Spray, Perfect Spray II, and Spray Quick).
 2. Wall Coating: Compound of minerals and clays for mixing with water (ProForm Brand Perfect Spray EM and Perfect Spray HF).

2.03 ACCESSORIES

- A. Corner Bead: Formed galvanized steel angle, min. base steel 0.014 in. thick, and complying with ASTM C 1047.
- B. Casing Bead: Formed galvanized steel trim, min. base steel 0.014 in. thick, and complying with ASTM C 1047, Type as follows:
 1. LC-Bead.
 2. L-Bead.
 3. U-Bead.
- C. Control Joint: Extruded vinyl formed with V shaped slot covered with removable flexible vinyl strip and complying with ASTM C 1047.
- D. Control Joint: Bent zinc sheet formed with V shaped slot, covered with plastic tape, with perforated flanges and Complying with ASTM C 1047.
- E. Floor and Ceiling Runners: L shaped runner, weighing 545 lbs. per 1000 lin. ft. with min. base steel of 0.0329 in., galvanized.
- F. Floor and Ceiling Runners: Perforated L shaped runner, weighing 281 lbs. per 1000 lin. ft. with min. base steel of 0.0179 in., galvanized.
- G. Floor and Ceiling Runners: L shaped runner, weighing 281 lbs. per 1000 lin. ft. with min. base steel of 0.0179 in., galvanized.

- H. Screws: ASTM C 954 or ASTM C 1002 or both with heads, threads, points, and finish as recommended by the manufacturer.
- I. Nails: ASTM C 514 with heads, lengths, configurations, and finish as recommended by the manufacturer.
- J. Acoustical Sealant: Nondrying, nonhardening, nonskinning, nonstaining, nonbleeding, gunnable type as recommended by the 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. 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

- 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 30 13

CERAMIC TILE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Ceramic Tile.
- B. Tile substrates.
- C. Cementitious backer units installed as part of tile installations.
- D. Waterproof membrane for thin-set tile installations.

1.02 RELATED SECTIONS

- A. Division 09 Section “Gypsum Board Assemblies” for cementitious backer units.

1.03 REFERENCES

- A. ANSI A118.4 – Latex-Portland Cement Mortar.
- B. ANSI A118.6 – Ceramic Tile Grouts.
- C. ANSI A137.1 – Recommended Standard Specifications for Ceramic Tile.
- D. ASTM C144 – Standard Specifications for Aggregate for Masonry Mortar.
- E. ASTM C150 – Portland Cement.
- F. ASTM C206 – Finishing Hydrated Lime.
- G. ASTM C207 – Hydrated Lime for Masonry purposes.
- H. ASTM C648 – Standard Test Method for Breaking Strength of Ceramic Tile.
- I. TCA (Tile Council of America) – Handbook for Ceramic Tile Installation.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 01 – Product Requirements: Product storage and handling requirements.
- B. Deliver Mortar and Grouting Materials in sealed moisture-proof containers.
- B. Deliver Materials to project site in manufacturer’s original unopened containers with seals unbroken and labels and hallmarks intact.

- C. Protect adhesives and grouts from freezing or overheating.
- D. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. According to Section 01 60 01 – Product Requirements.
- B. Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer’s written instructions.
- C. Do not install adhesives and grouts in unventilated environment.

PART 2 PRODUCTS

2.01 TILE MATERIALS

- A. Ceramic Tile: Marazzi Tecnica; 12” X 12” square tiles; 3/8” thickness; #MD4U; color – Ittrio (rose color).

2.02 TILE ACCESSORIES

- A. Grout: Hydroment Ceramic Tile Grout (sanded); #H171 – Heron Blue color.
- B. Mortar: Hydroment Reflex (718 white/ 918 gray).
- C. Cementitious Backer Units: C-Cure WonderBoard; 1/4” thickness.
- D. Waterproofing Membrane: Hydroment Ultra-Set; exceeds ANSI A118.10 requirements and carries the seal of the Uniform Plumbing Code.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Comply with ANSI A108 Tile Installation Standards – “Specifications for Installation of Ceramic Tile”.
- B. Lay tile to pattern as indicated; do not interrupt pattern through openings; terminate tile neatly at obstructions, edges, and corners without interruption of pattern or joint alignment.

- C. Do not start floor tile installation in spaces requiring wall tile until wall tile has been installed.
- D. Place edge strips at exposed tile edges.
- E. Joints shall be 1/16", watertight, without voids, cracks, excess mortar or excess grout.
- F. Form internal angles coved and external angles bullnosed.
- G. Press and beat the tile into place to obtain 100 percent coverage by mortar on the back of each tile; back-butter the tile if necessary to achieve 100 percent coverage.
- H. Allow tile to set for 48 hours prior to grouting.

3.02 CURING

- A. Damp cure all tile installations, including grouts, for 72 hours minimum; cover with 40 pounds of kraft paper.

3.03 CLEANING AND PROTECTION

- A. Remove all grout film from tile within 20-30 minutes after grouting.
- B. According to Section 01 74 01 – Cleaning; Final Cleaning.
- C. Do not allow traffic over finished floor for 4 days after installation.

END OF SECTION

SECTION 09 30 16

QUARRY TILE

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: Quarry tile and trim units, including unglazed quarry tile and trim units.
- B. Related Sections: Section(s) related to this section include:
 - 1. Exterior Tile Units: Division 2 Unit Pavers Section.
 - 2. Concrete Substrate: Division 3 Concrete Sections.
 - 3. Plywood Subfloor: Division 6 Carpentry Sections.
 - 4. Waterproofing: Division 7 Waterproofing Sections.
 - 5. Sealants: Division 7 Joint Sealers Sections
 - 6. Tile Backer Board: Division 9 Gypsum Board Section.
 - 7. Tile Installation: Division 9 Tile Section.

1.02 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. ANSI A108 Series - Specifications for Installation of Ceramic Tile and Dimensional Tile.
 - 2. ANSI A 108. 1 A - Specifications for Installation of Ceramic Tile in the Wet Set Method.
 - 3. ANSI A 108. 10 - Load Bearing, Bonded, Waterproof Membranes for ThinSet Ceramic Tile and Dimensional Tile
 - 4. ANSI A 118 Series - Specifications for Ceramic Tile Mortars and Grouts.
 - 5. ANSI A 136.1 Organic Adhesives for Installation of Ceramic Tile,
 - 6. ANSI A 137.1 Specifications for Ceramic Tile.
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM C499 Facial Dimensions and Thickness of Flat, Rectangular Ceramic Wall And Floor Tile.
 - 2. ASTM C501 Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser
 - 3. ASTM C 1028 Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Tile Like Surfaces by the Horizontal Dynamometer Pull Meter Method.

1.03 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 product sheet, for specified products,
- 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 physical requirements.
 - 3. Master Grade Certificate: Submit material master grade certification for quarry tile products.
 - 4. Manufacturer's Instructions: Manufacturer's installation instructions.
- E. Closeout Submittals: Submit the following:
 - 1. Maintenance Data: 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.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Installer experienced, as determined by contractor, in performing work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.
- B. Material Certificates: Provide Master Grade Certificates for each shipment of quarry tile signed by tile manufacturer and Installer.
- C. Pre Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements, Comply with Division 1 Project Management and Coordination, Project Meetings Section.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. General: Comply with Division 1 Product Requirements Sections.
- B. Ordering; Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact. Comply with ANSI A137.1 for labeling sealed tile containers.
- D. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

1.06 PROJECT CONDITIONS

- A. Temperature Requirements: Maintain ambient temperature and humidity conditions in spaces where products will be installed for time period before, during and after installation as recommended by manufacturer.
 - 1. Minimum Temperature: Maintain temperature at 50oF (10oC) minimum during installation and for seven days after completion.

1.07 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.
- B. 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 the Contract Documents.
 - 1. Warranty Period: (Specify term) years commencing on Date of Substantial Completion.

1.08 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 I Closeout Submittals, Maintenance Materials Section.
 - 1. Quantity: Furnish quantity of full size units equal to 2% of amount installed for tile and trim units.
 - 2. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra materials.

PART 2 PRODUCTS

2.01 QUARRY TILE

- A. Manufacturer: Metropolitan Ceramics, by Ironrock Capital, Inc.
1. Contact: P.O. Box 9240, Canton, OH 44711; Telephone: (800) 325-3945, (330) 484-4887; Fax: (330) 484-4880.
 2. Proprietary Products: (Somerset™, Quarrybasics®, Eco Quarry™, Metro® E.S.Q, Metro Tread® Metro®Pavers) vitreous quarry tile and trim units.
 - a. Somerset™ Quarry Tile:
 - i. Tile Description: Unglazed, relieved edge flat tile.
 - ii. Wearing Surface: (ASTM C501 Abrasion resistance index 35 or better.) Metropolitan tests at > 80 or better (specify wearing surface).
 - iii. Coefficient of Friction (ASTM C1028): No industry standard. At time of manufacture, all Metropolitan colors meet or exceed measure of 0.70 dry and 0.60 wet. (Specify coefficient of friction).
 - iv. Face size tolerance (ASTM C499) Average facial dimension of each tile in the sample shall not vary more than 4% of nominal dimensions
 - v. Thickness: 1/2" (13 mm).
 - vi. Reduction Fired Colors: (#250 Galaxy) (#255 Aztec) (#350 Harvard Square) (#458 Cordoba)
 3. Trim Product Description: Manufacturer's standard trim units.
 4. Protective Coating: No protective coating required. See manufacturer's recommendations for sealing.
 5. Quarry Tile Products Testing: Comply with ANSI A137.1.
- B. Substitutions: No substitutions permitted.

2.02 RELATED MATERIALS

- A. Reference: Refer to Tile Setting And Accessories Section.
1. Setting Materials: Refer to ANSI A108.1A, ANSI A118 series and ANSI 136.1
 2. Grouting Materials: Refer to ANSI 108.10, ANSI A118 series.
 3. Accessory Materials: Refer to Tile Setting And Accessories Section
 4. Sealant Materials: Refer to Joint Sealant Section.
 5. Backer Board: Refer to Gypsum Board, Cementitious Section.

2.03 SOURCE QUALITY

- A. Source Quality: Obtain quarry tile from a single manufacturer.

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

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

3.02 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.

3.03 PREPARATION

- A. Surface Preparation: Prepare substrates to receive quarry tile in accordance with industry installation reference standards and manufacturer's installation instructions.

3.04 INSTALLATION

- A. References:
 - 1. ANSI Tile Installation Standard: Comply with ANSI A108 series.
 - 2. TCA Installation Reference: Comply with TCA Handbook for Ceramic Tile Installation.
- B. Field Blending: Mix and blend tile from several cartons to ensure random distribution of shade variations.
- C. Floor Tile Installation:
 - 1. General: Install quarry floor tile and trim in accordance with industry reference standards.
 - 2. Joint Widths: Allow for joints widths in quarry floor tile as indicated on drawings.
- D. Wall Tile Installation
 - 1. General: Install quarry wall tile and trim in accordance with industry reference standards.
 - 2. Joint Widths: Allow for joints width in quarry wall tile as indicated on drawings.
- E. Patterns: Install quarry tile in pattern indicated on drawings.
- F. Related Materials Installation:
 - 1. Concrete: Refer to Division 3 Concrete Sections.
 - 2. Wood (Plywood): Refer to Division 6 Carpentry Sections.
 - 3. Waterproofing: Refer to Division 7 Waterproofing Sections.
 - 4. Sealants: Refer to Division 7 Joint Sealers Sections.
 - 5. Tile Backer Board: Refer to Division 9 Gypsum Board Section.
 - 6. Tile Accessories: Refer to Tile Setting And Accessories Section.

3.05 CLEANING AND PROTECTION

- 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.

B. Protection: Protect installed product's finish surfaces from damage during construction.

END OF SECTION

SECTION 09 51 23

CEILING ACT

PART 1 GENERAL

- A. Metal acoustical (CEILING) (WALL) (BAFFLE) panels shall be custom type as manufactured by Noise Control Systems.
- B. The metal acoustical (CEILING) (WALL) (BAFFLE) panels shall meet the requirements of Federal Specification SS-S118B; shall have a flame spread classification of 1 to 25 feet for a Class "A" rating, as tested in accordance with ASTM #84; shall have an NRC rating of .90, as tested in accordance with ASTM C=423 for noise reduction.

PART 2 PRODUCT

2.01 MATERIALS

- A. The metal acoustical (CEILING) (WALL) (BAFFLE) panels shall be corrugated using (SPECIFY N.C.S. PATTERN TYPE) and perforated with a 13% open area.
- B. The panels shall be fabricated of stucco-embossed aluminum .032 inches thick.

2.02 FINISH

- A. The panels shall have factory applied, on a continuous process paint line, a two-coat paint system consisting of a 0.2 mil (approx.) prime coat and a 0.8 mil (approx.) finish coat of a fluoropolymer coating containing 70 percent KYNAR 500 resins.
- B. Finish shall be cured and bake-dried to insure proper paint adhesion and uniform surface hardness. Paint color to be (WHITE) (TAN).

2.03 ACOUSTICAL INSULATION

- A. Provide (FIBERGLASS) (MINERAL FIBER) insulation (INCHES) thick and (POUNDS/CUBIC FOOT) pound density.
- B. The metal acoustical (CEILING) (WALL) (BAFFLE) panel with insulation shall have a noise reduction coefficient of 1.10 as tested in accordance with ASTM C-423 and encapsulated in (POLYVINYLCHLORIDE [PVC]) (POLYETHYLENE).

2.04 MOUNTING DEVICES

- A. As recommended by manufacturer or as required by designer.

PART 3 EXECUTION

3.01 INSTALLATION

- A. The acoustical contractor shall furnish and install the NOISE CONTROL SYSTEMS products in strict accordance with the manufacturer's recommendations in order to provide a satisfactory installation.
- B. All materials and workmanship furnished under this section shall be guaranteed by the contractor for a period of one year from completion date and, on written demand by the architect, and defective materials or workmanship shall be replaced or corrected.

3.02 WARRANTY

- A. NOISE CONTROL SYSTEMS warrants the metal acoustical panels for defects from the manufacturing process for one year from the date of shipment. Written notice of the defect is required.

3.03 MAINTENANCE

- A. Maintenance consists of cleaning the metal acoustical panels with a soft damp rag, warm water, and mild soap.

END OF SECTION

SECTION 09 65 19

VCT TRANSITION STRIP

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Vinyl moldings for flooring products

1.02 RELATED SECTIONS

- A. Section 09 65 00 – Resilient Flooring
- B. Section 09 64 00 – Wood Flooring

1.03 REFERENCES

- A. Product Data: Manufacturer's published literature for each resilient accessory

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. Store at job site in a dry place at least 48 hours before installation.
- B. Install only when room temperature is within range specified by manufacturer. Maintain temperature until 24 hours after completion.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Provide products produced by BurkeMercer Flooring Products Company, Inc. (BurkeMercer).

2.02 MOULDING FOR RESILIENT FLOORING

- A. Material: Solid vinyl.
- B. Cove Caps: ("No. 040 Round Cap")
("No. 390 Square Cap").
- C. Cove Supports: ("No. 070 Cove Stick")
("No. 075 Cove Stick")
("No. 725 Merstick").
- D. Reducers: ("No. 633 Tile Reducer")
("No. 733 Vinyl Reducer")

- (“No. 735 Vinyl Reducer”).
- E. Feature Strips: “No. 643 Feature Strip”.
- F. Joining Mouldings:
 - (“No. 365 Cerco Edge T”)
 - (“No. 930 Snap-Down T”)
 - (“No. 935 Super 2" T”)
 - (“No. 940 Standard Edge T”) Use with “No. 970/980/990 Track”.

2.03 MOULDING FOR WOOD MATERIALS

- A. Material: Solid vinyl.
- B. Wall Caps: (“No. 430 Mercap”) (“No. 450 Square Cap.
- C. Joining Mouldings: (“No. 365 Cerco T”)
 - (“No. 365 Cerco Edge T”) Use with “No. 970/980/990 Track”.

2.04 MOULDING FOR MATERIAL TRANSITIONS

- A. Resilient/Wood Transitions:
 - Joining Moldings: (No. 365 Cerco Edge T”) Use with “No. 970/980/990 Track”.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Pursuant to manufacturer’s published instructions and RFCI “Recommended Work Procedures for Resilient Floor Coverings”.
- B. Lay materials true to line, level, and with tight joints. Cut materials to and around permanent fixtures, equipment and bases. Roll installation pursuant to manufacturer’s published instructions.
- C. Firmly adhere resilient base materials to walls and permanent fixtures. Scribe and fit bases accurately to abutting surfaces.
- D. After installation, remove excessive adhesive pursuant to resilient material manufacturer’s published instructions.

3.02 CLEANING

- A. Clean resilient materials pursuant to manufacturer’s published instructions.

END OF SECTION

SECTION 09652

RESILIENT TILE FLOORING

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Plywood Underlayment: Section 06100.

1.02 SUBMITTALS

- A. Product Data: Manufacturer's specifications, and surface preparation and installation instructions, for each material specified except primer.
- B. Samples:
 - 1. Resilient Tile: Full size, each type, size, and color required.
 - 2. Base: 12 inch long sections, each type, size, and color required.
 - 3. Edge Strips: 12 inch long sections, each type and color required.
 - 4. Color Samples: Manufacturer's standard colors, patterns, and textures.
- C. Quality Control Submittals:
 - 1. Certificates: Certificates required under Quality Assurance Article.
- D. Contract Closeout Submittals:
 - 1. Maintenance Data: Deliver 2 copies covering the installed products, to the Director's Representative.

1.03 QUALITY ASSURANCE

- A. Compatibility of Materials: For each type of tile specified, furnish associated materials made by or recommended by the tile manufacturer.
- B. Certifications: Furnish certification from flooring installer that the substrate surfaces have been examined and are acceptable for installation of the Work of this Section.

1.04 PROJECT CONDITIONS

- A. Environmental Requirements: Continuously heat spaces to receive flooring to a temperature of 68 degrees F for at least 48 hours prior to flooring installation, during the installation, and for 48 hours after installation.
- B. Environmental Requirements: Make arrangements thru the Director's Representative for having the temperature in the spaces to receive flooring maintained at 68 degrees F for 48 hours prior to flooring installation, during the installation, and for 48 hours after installation.
- C. Condition flooring materials by placing them in the spaces where they will be installed for at least 48 hours prior to installation.

1.05 MAINTENANCE

- A. Extra Materials:
 - 1. Furnish extra tile, equal to 2 percent of the tile installed, of each type and color of tile required. The extra tile shall be from the same run and lot number as the installed tile.
 - 2. Place extra materials in storage at the site where directed.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Vinyl Composition Tile: FS SS-T-312, Type IV, Composition 1; 12 x 12 inch size, 1/8 inch gage.
- B. Vinyl Tile: FS SS-T-312, Type III; 12 x 12 inch size, 1/8 inch gage.
- C. Rubber Tile: FS SS-T-312, Type II; 12 x 12 inch size, 1/8 inch gage; smooth surface.
- D. Rubber Tile: Virgin rubber and finely ground stabilizing fillers, with fade-resistant color pigments, fire retardant compounds, migrating waxes and soil releasing agents; nominal 18 x 18 inch or 24 x 24 inch size, minimum 0.100 inch gage.
 - 1. Surface Design: Raised circle, low profile (0.025 inch).
- E. Asphalt Tile: FS SS-T-312, Type I; 9 x 9 inch size, 1/8 inch gage.
- F. Rubber Base: FS SS-W-40, Type I; 4 inches high, 1/8 inch gage; with matching preformed external corner units.
- G. Vinyl Base: FS SS-W-40, Type II; 4 inches high, 0.080 inch gage, with matching preformed external corner units.
 - 1. Style: Cove wall base with standard toe.
 - 2. Style: Straight wall base without cove.
 - 3. Adhesive and Filler/Wall Patch: As recommended by the base manufacturer for the type of substrate indicated.
- H. Metal Edge Strips: Extruded aluminum, mill finish; butt type for concealed anchorage; countersunk stainless steel fasteners, with anchors suitable for type of subfloor indicated.
- I. Resilient Edge Strips: Homogeneous vinyl; not less than one inch wide, 1/8 inch gage; tapered bullnose edge.
 - 1. Color/Pattern: Matching floor tile.
- J. Resilient Feature Strips: Same material composition and gage as adjoining floor tile. Size and color/pattern shall be as shown on the Drawings.
- K. Stair Covering Materials:

1. Stair Treads: Molded rubber, 1/4 inch thick at nose tapering to 1/8 inch thick at back edge; FS RR-T-650, Composition A, Type 2 - Designed; full width and depth of stair subtread in one piece; raised pattern design; square nose returning down edge of tread 1-1/2 inches.
 2. Stair Risers: Molded rubber cove riser, 1/8 inch thick; full height and length of riser in one piece.
 3. Stair Skirting: Sheet vinyl, minimum 0.080 inch thick; width sufficient to provide skirting (without longitudinal joints) extending 2 inches above stair nose, measured perpendicular to stair slope, unless otherwise shown.
 4. Stair Nosings: Rubber, 1/4 inch thick; butt type, round nose; 3-1/2 inch serrated horizontal return and 1-1/2 inch return down edge of tread; full width of stair tread in one piece.
 5. Adhesive: As recommended by the stair covering material manufacturer for the type of substrate indicated.
 6. Void Filler: As recommended by the stair tread manufacturer to fill voids and open spaces at the nosing between the stair tread and stair substrate.
- L. Underlayment:
1. Mastic Type: Latex underlayment or other mastic underlayment recommended by flooring material manufacturer for the type of substrate indicated.
 2. Felt: No. 15 asphalt saturated felt.
- M. Primer for Porous or Dusty Concrete: Tile adhesive manufacturer's recommended primer for preparation of porous or dusty concrete.
- N. Tile Adhesive: Water resistant, formulated for application on type of subfloor indicated, and recommended by the tile manufacturer.
- O. Floor Finish: FS P-W-155; heavy traffic water emulsion floor wax, minimum 16 percent total solids.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions:
1. Examine substrate surfaces to receive the Work of this Section for defects that will adversely affect the execution and quality of the Work. Do not proceed until unsatisfactory conditions are corrected, and installer's substrate surface acceptability certification has been acknowledged by the Director's Representative.
 - a. Concrete Subfloor Bond Tests: Check for surface moisture and coatings on concrete subfloor by bond tests as recommended by the tile manufacturer.
 2. Do not install the Work of this Section until after all other finishing operations, including painting, have been completed unless otherwise indicated or directed by the Director's Representative.
 - a. Where movable partitions are indicated, install flooring before partitions are erected without interrupting floor pattern.

3.02 SURFACE PREPARATION

- A. Unless otherwise specified, follow the materials manufacturers' written instructions.
- B. Remove dirt, grease, oil, paint, varnish, wax, sealers, and other contaminants which may impair the full bonding of the materials.
- C. Concrete Subfloor:
 - 1. Remove trowel marks or other projections by grinding or sanding.
 - 2. Level uneven surfaces with smooth troweling of mastic underlayment. Follow underlayment manufacturer's application and curing instructions.
 - 3. Provide a substrate surface with not more than 1/8 inch in 10'-0" variation from level or required slope.
 - 4. If recommended by flooring material manufacturer, treat porous and dusty concrete with primer after vacuum cleaning the surface. Apply primer at the rate recommended by the primer manufacturer.
- D. Wood Strip Subfloor:
 - 1. Renail loose boards. Remove broken and rotted boards and provide replacement boards.
 - 2. Remove surface irregularities such as cups and warps by sanding.
 - 3. Vacuum clean the entire subfloor.
 - 4. If recommended by flooring material manufacturer, apply felt underlayment to the entire subfloor, at right angles to the direction of the boards, with tight butt joints. Fit felt to the floor area. Fully cement the felt with linoleum paste or other approved adhesive. Press felt with a heavy roller to attain full adhesion and eliminate trapped air and voids.
- E. Immediately before application of the flooring adhesive, vacuum clean the prepared subfloor surface.

3.03 INSTALLATION

- A. Install the flooring from center marks established with principal walls; lay out the tile field and adjust to avoid use of cut units less than one-half tile wide at perimeters. Match tile units for color and pattern by using the tile in manufactured and packaged sequence.
 - 1. Lay all tile units with grain running in the same direction.
 - 2. Lay tile units in "checkerboard" pattern with grain direction reversed in alternate tiles.
- B. Install tile units in adhesive bed in compliance with manufacturer's printed instructions. Butt tile units tightly to vertical surfaces, thresholds, nosings, and edgings. Scribe tile around obstructions and openings as necessary to produce neat joints. Install tile evenly in straight, parallel lines. Extend tile into toe spaces, door reveals, closets and other similar openings.

- C. Install tile on pan type access cover plates for electrical and telephone ducts and other such items which occur within finished resilient tile floor areas. Maintain color and pattern continuity with tile installed on such areas.
- D. Install resilient edge strips at unprotected edges of flooring, unless otherwise indicated.
- E. Install metal edge strips where indicated. Securely fasten in place.
- F. Install resilient base in compliance with manufacturer's printed instructions. Install base on walls, partitions, columns, and permanent fixtures unless otherwise indicated. Install base in as long lengths as practicable, with preformed external corner units. Miter internal corners. Scribe and fit base to door frames and other interruptions.
 - 1. On masonry and other irregular surfaces, fill voids behind base with filler/wall patch.
- G. Install stair covering materials in compliance with manufacturer's printed instructions. Treads, risers, and nosings shall be installed in one piece per step. Closely fit each piece, and adhere over entire substrate surface. Closely fit skirting to stair and stringer profile.
 - 1. Fill voids and open spaces at the nosing between the stair tread and stair substrate with void filler.

3.04 CLEANING

- A. Remove any excess adhesive and other surface soiling from face of installed materials with cleaning agents recommended by the manufacturer of the material being cleaned.

3.05 PROTECTION

- A. Protect installed flooring from traffic and damage. Apply non-staining kraft paper covering where necessary. Maintain covering until directed to remove it by the Director's Representative.

3.06 FINISHING

- A. Prior to the final inspection, when directed by the Director's Representative, thoroughly clean tile floors and accessories. Apply 2 coats of floor finish and buff to finish. Comply with the tile manufacturer's recommended cleaning, finishing, and buffing procedures.

END OF SECTION

SECTION 09 68 00

CARPET

PART 1 GENERAL

1.01 SUBMITTALS

- A. Shop Drawings: Show dimensions of carpeted areas, pattern direction, and seam diagram showing locations of all cuts, seams, edge strips, and other installation details. Where possible, locate seams in areas of least amount of traffic.
- B. Product Data: Catalog sheets, specifications, and installation instructions for the following:
 - 1. Carpet:
 - a. Trade name and number.
 - b. Manufacturer.
 - c. Address of mill constructing carpet.
 - d. Construction type.
 - e. Gage.
 - f. Stitches per inch.
 - g. Pile height.
 - h. Face yarn.
 - i. Face yarn weight.
 - j. Weight density factor.
 - k. Primary backing.
 - l. Secondary backing.
 - m. Total weight.
 - n. Dye method.
 - o. Tuft bind.
 - p. Static resistance.
 - q. Flammability.
 - 2. Edge strips.
 - 3. Adhesive and seam sealer.
- C. Samples:
 - 1. Carpet: One piece 18 inches x 27 inches of each type, color and pattern specified.
 - 2. Edge Strip: 12 inches long, each type specified.
 - 3. Adhesive: One pint.
 - 4. Color Samples: Manufacturer's standard color samples for carpet type specified.
- D. Quality Control Submittals:
 - 1. Certificates: Affidavits required under Quality Assurance Article.
- E. Contract Closeout Submittals:
 - 1. Maintenance and Cleaning Instructions: Furnish 2 copies to the Director's Representative.
 - 2. Warranty: Copy of specified warranty.

1.02 QUALITY ASSURANCE

- A. Flammability Certification: Radiant Panel Flooring Flammability Test in accordance with NFPA 253.
Class I: Minimum 0.45 watts per sq centimeter.

- B. Installer Qualifications: The persons installing the carpet and their Supervisor shall be experienced in carpet installation and regularly employed by a company engaged in installation of carpet for a minimum of 5 years.
 - 1. Furnish to the Director the names and addresses of 5 similar projects which the foregoing people have worked on during the past 3 years.
- C. Static Resistance: 3.5 kv or less, at 70 degrees F and 20 percent RH, when tested by I.F. Walker Method (AATCC-134).
- D. Tuft Bind: Average pounds of force not less than 12 pounds when tested by ASTM D 1335 test method.

1.03 DELIVERY, STORAGE AND HANDLING

- A. Deliver carpet in original carpet mill wrappings with each roll having labels legible and intact.
- B. Store carpet and related materials in an enclosed and dry area protected from damage and soiling.

1.04 PROJECT CONDITIONS

- A. Environmental Requirements: Maintain room temperature at minimum 65 degrees F for at least 24 hours prior to installation and 72 hours after the installation is completed.
- B. Do not install carpet over concrete substrate until concrete has cured 30 days minimum.
- C. Do not install the carpet until painting, finishing Work, and Work of other trades has been completed.

1.05 WARRANTY

- A. Manufacturer's Warranty: 10 year wear warranty.

PART 2 PRODUCTS

2.01 CARPET

- A. Type A Carpet: Mohawk's "Artistry" or Bigelow's "NeoRhythms".
- B. Type A Carpet: Tufted, Textured 100 percent Nylon Loop Pile (Random Pattern):
 - 1. Yarn: Soil Hiding.
 - 2. Minimum Face Yarn Weight: 26 oz.
 - 3. Minimum Pile Height (inches): .156.
 - 4. Minimum Stitches per Inch: 9.5.
 - 5. Gage: 1/10.
 - 6. Ply: 2.
 - 7. Dye Method: Yarn Dyed.
 - 8. Backing:
 - a) Primary - Polypropylene.
 - b) Secondary - Synthetic.
 - 9. Width: 12 feet.
 - 10. Flammability: Class I.
- C. Type B Carpet: Mohawk's "Nova 26", Lees "Faculty SD".

- D. Type B Carpet: Tufted, Textured 100 percent Nylon Loop Pile (Tweed):
1. Yarn: Soil Hiding.
 2. Minimum Face Yarn Weight: 26 oz.
 3. Minimum Pile Height (inches): .190 average.
 4. Minimum Stitches per Inch: 8.4.
 5. Gage: 1/8.
 6. Ply: 3 or 4.
 7. Dye Method: Yarn dyed, textured, or solution dyed.
 8. Backing:
 - Primary - Polypropylene
 - Secondary - Synthetic.
 9. Width: 12 feet.
 10. Flammability: Class I.
- E. Type C Carpet: J & J's "Megatrend CG", Patrick's "Assurance".
- F. Type C Carpet: Tufted, Textured 100 percent Nylon Loop Pile (Heather):
1. Yarn: Soil Hiding.
 2. Minimum Face Yarn Weight: 24 oz.
 3. Minimum Pile Height (inches): .125.
 4. Minimum Stitches per Inch: 10.
 5. Gage: 5/64.
 6. Special Treatment: Anti-microbial.
 7. Dye Method: Solution Dyed.
 8. Backing:
 - Primary - Polypropylene.
 - Secondary - Synthetic.
 9. Width: 12 feet.
 10. Flammability: Class I.
- G. Type D Carpet: J & J's "Colours", Lees Commercial "Transition II", Patrick's "Stanford", or Stratton's "Design Choice II".
- H. Type D Carpet: Tufted 100 percent Nylon, Cut Pile (Solid):
1. Yarn: Soil Hiding.
 2. Minimum Face Yarn Weight: 36 oz.
 3. Minimum Pile Height (inches): .250.
 4. Minimum Stitches per Inch: 10.3.
 5. Gage: 1/8 or 1/10.
 6. Ply: 2.
 7. Dye Method: Piece Dyed.
 8. Backing:
 - Primary - Polypropylene.
 - Secondary - Synthetic.
 9. Width: 12 feet.
 10. Flammability: Class I.
- I. Type E Carpet: Bigelow's "Designscape", Patrick's "Grand Impression", or Bentley's "Sussex".
- J. Type E Carpet: Tufted 100 percent Nylon, Cut Pile (Patterned Graphics):
1. Yarn: Soil Hiding.
 2. Minimum Face Yarn Weight: 40 oz.
 3. Minimum Pile Height (inches): .281.

4. Minimum Stitches per Inch: 10.3.
 5. Gage: 1/10.
 6. Ply: 2.
 7. Dye Method: Stock Dyed.
 8. Backing:
 - a) Primary - Polypropylene.
 - b) Secondary - Polypropylene.
 9. Width: 12 feet.
 10. Flammability: Class I.
- K. Type F Carpet: Mohawk's "Highland Plush", Harbinger's "Fifth Avenue" or Bentley's "Buckingham".
- L. Type F Carpet; Tufted 100 percent Nylon Cut Pile (Solid):
1. Yarn: Soil Hiding.
 2. Minimum Face Yarn Weight: 47 oz.
 3. Minimum Pile Height (inches): .375.
 4. Minimum Stitches per Inch: 10.6.
 5. Gage: 1/8 or 1/10.
 6. Ply: 2.
 7. Dye Method: Piece.
 8. Backing:
 - a) Primary - Polypropylene or Synthetic.
 - b) Secondary - Polypropylene.
 9. Width: 12 feet.
 10. Flammability: Class I.

2.02 MISCELLANEOUS MATERIALS

- A. Adhesive: Floor adhesive compatible with carpet backing and floor surface. Type as recommended by carpet manufacturer.
- B. Seam Sealer: Type as recommended by carpet manufacturer.
- C. Edge Strips:
 1. Aluminum.
 2. Polished brass.
 3. Resilient vinyl.
- D. Patching Compound: Type as recommended by carpet manufacturer.
- E. Floor Filler: Type as recommended by carpet manufacturer.
- F. Cleaning Solvents: Low toxicity, and a flash point in excess of 100 degrees F.
- G. Wood Floor Primer: Type as recommended by carpet manufacturer.
- H. Liquid Floor Stripper: Type as recommended by carpet manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine surfaces scheduled to receive carpeting for defects that will adversely affect the proper installation. Do not proceed until unsatisfactory conditions are corrected.

3.02 PREPARATION

- A. Clean floors of dust, dirt, solvents, oil, grease, loose paint, and other substances. Allow floors to dry thoroughly.
- B. Concrete Floors: Level uneven surfaces and patch cracks and small holes with patching compound.
- C. Wood Floors:
 - 1. Renail loose and cracked boards.
 - 2. Patch cracks and depressions with floor filler.
 - 3. Remove wax using liquid stripper or sander.
 - 4. Wood floors to receive carpeting by direct glue-down method shall be sealed with wood floor primer.
- D. Resilient Sheet Floors:
 - 1. Remove existing resilient sheet flooring.
- E. Resilient Tile Floors:
 - 1. Remove wax using liquid stripper or sander.
 - 2. Remove loose tiles, if any, and replace or patch as necessary.

3.03 INSTALLATION

- A. Install carpet in accordance with approved seam diagram.
 - 1. Match carpet pattern at seams.
- B. Seaming: Treat edges cut for seaming with seam sealer. Apply the sealer along the edge of the carpet at the point where the face yarn goes into the back. Immediately remove excess sealer from face of pile with cleaning solvent recommended by seam sealer manufacturer.
- C. Cut and fit carpet neatly around projections through floor and to walls and other vertical surfaces.
- D. Direct Glue-Down Method: Apply adhesive in accordance with manufacturer's instructions. Broom or roll carpet to remove air bubbles and insure bond.
- E. Stairs and Steps: Secure carpeting by anchorage methods recommended by carpet manufacturer.
- F. Install edge strips where carpet terminates at other floor coverings or finishes. Use one full length piece where possible. Where splicing cannot be avoided, butt ends tight and flush.

3.04 CLEANING AND PROTECTION

- A. Upon completion of the carpet installation, immediately remove spots and smears of excessive adhesive from carpet with cleaning solvent. Remove loose pieces of face yard with sharp scissors.
- B. Place all usable remnants of carpet in an area designated by the Director's Representative.
- C. Remove all waste materials and tools.
- D. Upon completion, thoroughly vacuum clean carpeted areas.

- E. After each area of carpet has been installed, protect from soiling and damage.
- F. Allow glue-down installation a minimum of 48 hours to cure before subjecting it to any traffic, moving of furniture, or other heavy equipment.

END OF SECTION

SECTION 09 68 00

UNDERLAYMENT

PART 1 – GENERAL

1.1 SUMMARY

- A. A floating performance sport floor system consisting of vapor barrier, 1 x 6 subfloor and Aacer maple flooring
 - 1. The concrete slab depression for 25/32" thick maple flooring with Aacer Airflex system shall be 2-1/2".

PART 2 – PRODUCTS

2.1 - Materials

- A. Vapor Barrier shall be 6 mil polyethylene.
 - 1. 1/4" multicellular linear linked, closed cell polyethylene foam, density PCF 2.0 normal.
- B. Subfloor shall be 1 x 6 Gym Grade, SPF, S2S to 1/2" x 6 x RL.
 - 1. Treat the subfloor with WOODLIFE F.
- C. Flooring shall be maple 25/32" x 2-1/4" 2nd & Better Grade Northern Hard Maple flooring tongued, grooved and end-matched as manufactured by Aacer Flooring, LLC, "graded, marked and stamped in accordance with the Maple Flooring Manufacturers Association (MFMA).
 - 1. Options:
 - a. Sizes – 25/32" x 1-1/2"; 33/32" x 1-1/2"; and 33/32" x 2-1/4"
 - b. Grades – First Grade and Third Grade
 - c. Treating – floor shall be treated with WOODLIFE F for a minimum 3-minute immersion
- D. Flooring Fasteners shall be 2" barbed cleats or coated staples.
- E. Wall base shall be 3" x 4" molded vent cove base.

PART 3 – EXECUTION

3.1 – Pre-Installation Inspection

- A. Floor installer shall verify slab tolerance of concrete and report any corrections to the General Contractor and Architects in writing. Room shall be broom cleaned and free of any foreign material.
- B. Floor installer shall document site and working conditions prior to and during installation. This documentation shall become a part of any warranty and may or may not affect fulfillment of any warranty.

3.2 – Installation

- A. Cover entire slab with 6-mil polyethylene, lapping joints at a minimum of 6”.
- B. Install ¼” closed cell foam underlayment over entire area, butting joint seams and tape with minimum 2” tape.

- 1. ½” closed cell underlayment

- C. Install first layer of 1 x 6 subfloor diagonally to the long dimension of the room at a 22-1/2 degree angle. The ends of the 1 x 6 shall be butted and side spaced 2” between adjoining 1 x 6. Provide 2” expansion voids at the perimeter and all vertical obstructions. All rows of 1 x 6 shall be staggered a minimum of 2 feet.

- 1. Options:

- a. The first layer of subfloor may be spaced up to 6” to provide more resilience.
 - b. Spacing of 1 x 6’s can be customized for greater performance. Contact Acer for more information.

- D. The second layer of 1 x 6 shall be laid in the opposite direction of the first layer but also at a 22-1/2 degree angle to the long dimension of the room so that no end joints will fall over any end joint of the first layer. The ends of the second layer shall be butted and side spaced 2” between adjoining 1 x 6’s and secure to the first layer with nails or staples at each intersection.

- 1. Options:

- a. 1 x 6’s can be spread 6” on the bottom layer and 3” on the top layer for greater resiliency.
 - b. A single 1 x 6 border strip shall be installed as part of the second layer of subflooring. It shall be at right angles to the finished at the perimeter of the floor

- E. Install finished flooring parallel with the main playing court by power nailing or stapling approximately 12” on center. Approximately 5.3 staples or nails per square foot.

1. Expansion joints may be required between flooring strips intermittently throughout the floor. Requirements will be determined by site and geographical conditions.
2. Provide 2' expansion voids at the perimeter and all vertical obstructions.

3.3 – Flooring Sanding

- A. Machine sand entire floor with coarse, medium and fine paper to a smooth and uniform surface, free from edger marks and drum drops.
- B. Remove all sanding dust and lint from entire surface by vacuum and/or jack.

3.4 – Finishing and Gamelines

- A. Inspect entire floor to be sure surface is able to accept seal and finish. Floor should be free from dust and debris.
- B. Apply two coats of Aacer seal and two coats of Aacer finish per manufacturer's label instructions.
- C. Floor shall be buffed, cleaned and tacked between coats
- D. Gamelines – apply game lines and logos as indicated by drawings. Paint shall be compatible with Aacer finish.

3.5 – Base Installation

Install vent cover base to walls with cove base adhesive and/or mechanical attachment. Use pre-molded corners and mitered inside corners

3.6 – Documentation

Provide job condition documentation to owner with any warranties.

SECTION 09 91 00

Paints

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Paints and coatings, including paints for exterior and interior applications.

1. Material, labor, equipment and services necessary for and incidental to finishing and application of field painting and staining systems.
2. Paint includes paints, enamels, sealers, fillers and other types of coatings whether used as primers or intermediate and finish coats.
3. Paint to completion items and surfaces left unfinished by requirements of other sections and normally requiring painting for protection, identification or decoration.
4. Exposed uncovered pipe, exposed covered pipe, pipe hangers, connectors, grilles and other mechanical work, also exposed electric conduit, panel board, pull boxes and other electrical work requiring paint.
5. Ferrous metal rooftop mechanical units, ductwork, goosenecks, supports, hangers, and any brackets.
6. Items generally not to receive paint coatings are specifically detailed below; however, items may not be limited to the following:
7. Stainless steel, anodized aluminum, bronze and other nonferrous metals, exclusive of shop primed stainless steel.
 - a. Ceramic tile.
 - b. Resilient flooring.
 - c. Surfaces that cannot be put into proper condition to receive paint or finish coatings.
 - d. Concealed ductwork, piping and conduit.
 - e. Shop finished items.
 - f. Acoustical materials.
 - g. Mechanical and electrical equipment, unless specifically designated.

1.02 RELATED SECTIONS:

- A. Division 7 Sections: Sealants, Joint Sealers.
- B. Division 9 Sections: Special Coatings.

1.03 REFERENCES

- A. ANSI/ASTM D16 Definition of terms relating to paint, varnish, lacquer and related products.
- B. ANSI/CODE Z53.1 Color and pipeline identification.

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 and application instructions, including manufacturer's product data sheets, for specified products.
- C. Samples: Submit selection and verification samples for finishes, colors and textures.
- D. Quality Assurance/Control 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 physical requirements.
- E. Closeout Submittals: Submit the following:
 - 1. Warranty: Warranty documents specified herein.

1.05 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Division 1 Product Requirements Sections.
- B. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- D. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 - 1. Store paint materials at a minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C) in a well-ventilated area, unless required otherwise by manufacturer's instructions.
 - 2. Place paint or solvent soaked rags, waste or other materials that might constitute a fire hazard in a sealed, water-filled metal container and remove from premises at close of each day's work. Take every precaution to avoid damage by fire.

1.06 PROJECT/SITE CONDITIONS

- A. Environmental Requirements and Conditions:
 - 1. Provide continuous ventilation and heated facilities to maintain surface and ambient temperatures above 45 degrees F (7 degrees C) for 24 hours before, during and after application of finishes, unless required otherwise by manufacturer's instructions.
 - 2. Minimum Application Temperature for Paints: 50 degrees F (10 degrees C), unless otherwise required by manufacturer's instructions.
 - 3. Do not apply paint in rain, snow, fog or mist or when relative humidity exceeds 85%. Apply paints, other than water-thinned coatings, only to surfaces that are completely free of surface moisture as determined by sight, touch and moisture meter, as specified. In no case apply paint to a surface upon which there is visible ice or frost.
 - 4. Adequate lighting must be available prior to application of any paint coating to approximate 80 foot-candles measured mid-height at substrate surface.

1.07 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.
- B. 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 the Contract Documents.
- C. Warranty Period: 5 years commencing on Date of Substantial Completion.

1.08 MAINTENANCE

- A. Extra Materials: Deliver to Owner extra materials from same production run as products installed for use by owner in building maintenance and repair. Package products with protective covering and identify with descriptive labels. Comply with Division 1 Closeout Submittals, Maintenance Materials Section.
- B. Quantity: [Furnish quantity of full size units equal to 5% of amount applied.] [Provide 1 gal (3.8 L) of each color and texture to owner at completion of each phase.].
- C. Labels: Label each container with color, texture, room locations and product description in addition to manufacturer's label.
- D. Formulation: Provide Owner with paint color formula and availability information on any custom products.
- E. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra materials.

PART 2 PRODUCTS

2.01 PAINTS

- A. Manufacturer: Benjamin Moore & Co.
 - 1. Contact: 51 Chestnut Ridge Road, Montvale, NJ 07645; Telephone: (800) 344-0400, (201) 573-9600; Fax: (201) 573-9046; E-mail: info@benjaminmoore.com; website: www.benjaminmoore.com.
- B. Proprietary Product: Coatings, including:
 - 1. Moorcraft Super Spec Latex Semi-Gloss Enamel 276:
 - a) Vehicle Type: Acrylic Blended Latex.
 - b) Finish: Semi-gloss.
 - c) Solids Volume: 32%.
 - d) Theoretical Coverage at Recommended Film Thickness: 400 - 450 ft²/gal (10 - 11.3 m²/L).

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Comply with the instructions and recommendations of the paint manufacturer.

3.02 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.

3.03 PREPARATION

- A. Protection of Adjacent Surfaces: Protect adjacent work areas and finish surfaces from damage during product application.

B. Surface Preparation:

1. Remove or protect hardware, plates, trim for mechanical work, lighting fixtures and similar items placed prior to painting. Disconnect equipment adjacent to work, where necessary, and move to permit painting of wall surfaces. Following completion of painting, replace and reconnect.
2. Clean surfaces to be painted as required to remove dust, dirt or other surface contamination, then properly prepare surfaces to receive paint or natural finish.
3. Do not apply final coats until after other work with operations that would be detrimental to finish painting have been finished in area to be painted and areas have been released for painting.
4. Remove mildew by scrubbing surface with a solution of 4 oz (118 mL) of trisodium phosphate, 3 qt (2.8 L) of water and 1 qt (0.95 L) of chlorine bleach. Allow this solution to remain on surface for 10 - 15 minutes, then rinse with clean water and allow surface to dry.

- C. Insulated Coverings: Remove dirt, grease and oil from canvas and cotton using high pressure air and solvent cleaner as required to obtain a sealing coat.

- D. Galvanized Surfaces: Remove surface contamination and then wash with clean, lint-free cloths saturated with mineral spirits or lacquer thinner. Wipe dry with clean, lint-free cloths. Apply coating of applicable primer.

- E. Interior Wood Items Scheduled to Receive Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks and sappy sections with sealer. Fill nail holes and cracks after primer has dried. Sand between coats.

- F. Uncoated Steel and Iron Surfaces: Remove grease, scale, dirt and rust where heavy coatings of scale are evident, and remove by wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts and nuts are similarly cleaned. Spot prime weld repairs with a rust-inhibiting metal primer.

- G. Concrete and Concrete Masonry Units: Thoroughly clean concrete surfaces of loose particles sand, efflorescence, laitance, form oil, curing compounds or other contaminants by appropriate methods, and be sure surface is dry before any paint is applied. Methods of surface preparation and cleaning shall be determined by Contractor as required in each case to ensure satisfactory paint application and performance.

H. Gypsum Plaster:

1. Cut out cracks, holes, indentations and other imperfections in plaster surfaces to extent necessary to provide a good bonding surface. Fill with patching plaster or setting type joint compound and sand smooth and flush with adjacent surfaces.
2. Before applying paint, clean plaster surfaces of dirt, dust, grit and other contaminants. New plaster or new plaster repairs must be allowed to age 30 days. Verify that

surfaces are dry and that moisture content does not exceed 15% when measured with a moisture meter.

3.04 APPLICATION

A. Paint and Coatings Application:

1. Do not apply coating until moisture content of surface is within limitations recommended by paint manufacturer. For best accuracy, test with an electronic moisture meter.
2. Apply paint, enamel, stains and varnishes with suitable brushes, rollers or spray equipment which has been kept clean, free from contamination and suitable for finish required.
3. Do not exceed rate of application of coating recommended by paint manufacturer for purpose and surface involved.
4. Comply with required drying time between coats as directed by manufacturer.
5. Sand between each coat to remove defects visible from 5 feet (1.5 m). Finish coats shall be smooth, free from brush marks, streaks, laps, sags and skips.
6. Do not apply additional coats until completed coat has been observed and approved by Architect. Only approved coats of paint will be considered in determining number of coats applied.
7. Make edges of paint adjoining other material or colors clean and sharp with no overlapping.
8. Apply primer on Work before glazing or caulking. Paint must overlap glass 1/16 inch (1.6 mm) on coats.
9. Refinish entire wall where a portion of finish has been damaged or is not acceptable.
10. Adjust stained and natural finishes to obtain identical appearance.

B. Finishing Mechanical and Electrical Equipment:

1. Refer to ANSI Code Z53.1 and A13.1 for color coding and identification banding of equipment, ductwork, piping and conduit.
2. Paint access panels, electrical panels, air diffusing outlets, supply and exhaust grilles, louvers, exposed conduit, primed outlet covers, primed wall and ceiling plates and other items in painted areas to match areas in which they occur unless specified otherwise in schedules.
3. Paint back sides of access panels, removable or hinged covers. Do not paint nameplates on equipment.
4. Replace identification markings on mechanical or electrical equipment when accidentally painted.
5. Replace electrical plates, hardware, light fixture trim and fittings removed prior to finishing.

3.05 FIELD QUALITY CONTROL

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

3.06 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.
- B. As work proceeds, promptly remove paint where spilled, splashed or spattered.
- C. During progress of work, maintain premises free of unnecessary accumulation of tools, equipment, surplus materials and debris.
- D. Collect cotton waste, cloths and material, which can constitute a fire hazard, and place in closed water-filled metal containers and remove daily from site.

3.07 PROTECTION

- A. Protect installed product's finish surfaces from damage during construction.
 - 1. Protect Work of other trades against damage or injury by use of suitable covering during progress of painting and finishing work.
 - 2. Repair damage to other surfaces caused by work of this section.
 - 3. Remove empty paint containers from project site.
 - 4. Post "No Smoking" and "Wet Paint" signs as required or directed.
 - 5. Provide sand, extinguishers and other protective equipment in event of a fire created by any paint related rags or materials.

3.08 SCHEDULES

- A. Schedules: Refer to schedules attached herewith.

3.09 SCHEDULE - INTERIOR SURFACES PAINT SCHEDULE

END OF SECTION

Section 10 80 00

Toilet, Bath, and Laundry Accessories

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Toilet Room, Lavatory, and Shower Accessories.

1.2 RELATED SECTIONS.

A. Section 04 20 00 - Unit Masonry Assemblies.

B. Section 09 20 00- Gypsum Board Assemblies.

C. Section 09 30 00 - Tile.

1.3 REFERENCES

A. Americans with Disabilities Act Accessibility Guidelines (ADAAG).

B. ASTM A 240/A 240M - Standard Specification for Heat- Resisting Chromium and Chromium-Nickel Steel Plate, Sheet, and Strip for Pressure Vessels.

C. ASTM A 554 - Standard Specification for Welded Stainless Steel Mechanical Tubing.

D. ASTM C 1036 - Standard Specification for Flat Glass.

E. ASTM F 446 - Standard Consumer Safety Specification for Grab bars and Accessories Installed in the Bathing Area.

1.4 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's product data for products specified, indicating selected options and accessories.

C. Shop Drawings:

1. Plans: Locate each specified unit in project.
2. Elevations: Indicate mounting height of each specified unit in project.
3. Details: Indicate anchoring and fastening details, required locations and types of anchors and reinforcement, and materials required for

correct installation of specified products not supplied by manufacturer of products of this Section.

D. Verification Samples: Two sample chips of each specified color and finish.

E. Quality Assurance Submittals:

4. Manufacturer's printed installation instructions for each specified product.
5. Documentation of Manufacturer's Qualifications, specified in QUALITY ASSURANCE Article of this Section.

F. Closeout Submittals: Warranty documents, issued and executed by manufacturer of products of this Section, and countersigned by Contractor.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum five (5) years documented experience producing products specified in this Section.

B. Regulatory Requirements: Conform to A.D.A. requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Factory-apply strippable protective vinyl coating to sight-exposed surfaces after finishing of products; ship products in manufacturer's standard protective packaging.

B. Storage and Protection: Store products in manufacturer's protective packaging until installation.

1.7 SEQUENCING

A. Supply locating and sizing templates, and other requirements, to fabricators and installers of products referenced in RELATED SECTIONS Article for building-in products of this section.

B. Supply reinforcing and anchoring devices required for installation of products of this section to fabricators and installers of products referenced in RELATED SECTIONS Article.

1.8 WARRANTY

A. Manufacturer's standard warranty against defects in product workmanship and materials.

B. Manufacturer's 15-year warranty against silver spoilage of mirrors.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: ASI-American Specialties, Inc.; 441 Saw Mill River Road, Yonkers NY 10701-9986; Telephone (914) 476-9000, FAX (914) 476-0688.

2.2 MATERIALS

A. Stainless Steel Sheet: ASTM A 240/A 240M, Type 304, 18-8 alloy.

B. Cabinet Collars: Fabricated from 22 gage stainless steel sheet, finish matching cabinet finish; welded corners, finished to match sheet finish.

2.3 PROFILE SERIES 9000 CABINET-TYPE ACCESSORIES

A. Basic Construction Requirements:

1. Doors: Fabricated from single sheet 16 gage stainless steel, formed 15/16 inch return to wall, with vertical edges eased at 3/4 inch radius; welded corners, finished to match sheet finish.
2. Cabinets: Fabricated from 18 gage stainless steel sheet, formed 1 inch wide flat perimeter trim four sides; all joints welded, sight-exposed welds finished to match sheet finish.
3. Hinges: Stainless steel piano hinge, 3/16 inch diameter barrel, full length of cabinet; hinge leaves spot-welded to door and cabinet body.
4. Locks: Flat rimless tumbler locks, keyed alike other toilet accessory locks, with two keys for each lock.
5. Cabinet and Door Finish: No.4 satin stainless steel.

2.4 SIMPLICITY LINE SERIES CABINET-TYPE ACCESSORIES

A. Basic Construction Requirements:

1. Doors: Fabricated from single sheet 18 gage stainless steel, formed 1/2 inch return to wall; welded corners, finished to match sheet finish.
2. Cabinets: Fabricated from 22 gage stainless steel sheet, formed 1 inch wide flat perimeter trim four sides; all joints welded, sight-exposed welds finished to match sheet finish.
3. Hinges: Stainless steel piano hinge, 3/16 inch diameter barrel, full length of cabinet; hinge leaves spot-welded to door and cabinet body.

4. Locks: Tumbler locks, keyed alike other toilet accessory locks, with two keys for each lock.
5. Cabinet and Door Finish: No.4 satin finish stainless steel.

2.5 STANDARD LINE SERIES CABINET-TYPE ACCESSORIES

A. Basic Construction Requirements:

1. Doors: Fabricated from two sheets of 22 gage stainless steel, double pan construction, with 1/4 inch thick structural fiberboard core; welded corners, finished to match sheet finish.
2. Cabinets: Fabricated from 22 gage stainless steel sheet, formed perimeter trim with 1/4 inch return to wall four sides; all joints welded, sight-exposed welds finished to match sheet finish.
3. Hinges: Stainless steel piano hinge, 3/16 inch diameter barrel, full length of cabinet; hinge leaves spot-welded to door and cabinet body.
4. Locks: Tumbler locks, keyed alike other toilet accessory locks, with two keys for each lock.
5. Cabinet and Door Finish: No.4 satin finish stainless steel.

2.6 DESIGN LINE SERIES CABINET-TYPE ACCESSORIES

A. Basic Construction Requirements:

1. Doors: Fabricated from phenolic resin saturated Kraft core papers and face papers, bonded under heat and pressure phenolic resin saturated decorative face papers into solid sheet material, 1/2 inch thickness.
2. Cabinets: Fabricated from 18 gage stainless steel sheet, formed 1 inch wide flat perimeter trim four sides; all joints welded, sight-exposed welds finished to match sheet finish.
3. Hinges: Stainless steel piano hinge, 3/16 inch diameter barrel, full length of cabinet; hinge leaves spot-welded cabinet body, fastened to doors with stainless steel screws, 1/4 inch length.
4. Locks: Tumbler locks, keyed alike other toilet accessory locks, with two keys for each lock.
5. Cabinet Finish: No.4 satin finish stainless steel.
6. Door Color(s): As selected by Architect from manufacturer's standard colors.
7. Door Color(s): Indicated in Schedule Article of this section.
8. Door Color: _____.

2.7 TOILET ACCESSORIES

A. Basic Construction Requirements:

1. Doors: Fabricated from minimum 22 gage stainless steel sheet, formed hems at sight-exposed edges; welded corners, finished to match sheet finish.
2. Cabinets: Fabricated from minimum 22 gage stainless steel sheet, formed hems at sight-exposed edges; all joints welded, sight-exposed welds finished to match sheet finish.
3. Hinges: Stainless steel piano hinge, 3/16 inch diameter barrel, full length of cabinet; hinge leaves spot-welded to door and cabinet body.
4. Locks: Tumbler locks, keyed alike other toilet accessory locks, with two keys for each lock.
5. Stainless Steel Finish: No.4 satin.

B. Soap Dispensers:

6. Sight-exposed components: Stainless steel, minimum 22 gage.
7. Internal components: Non-corroding chrome-plated brass, stainless steel, and ABS plastic.
8. Locks: Tumbler locks, keyed alike other toilet accessory locks, with two keys for each lock.

A. Mirror

B. Angle Mirror Frames: Fabricated from 18 gage stainless steel, formed to 3/4 inch by 5/8 inch angle; heliarc- welded corners, finished to match sheet finish; concealed "H" type mounting bracket with tamper-proof fasteners.

C. Channel Mirror Frames: Fabricated from 20 gage stainless steel, formed to 1/2 inch by 1/2 inch by 1/2 inch channel; finished to match sheet finish; concealed mounting brackets with tamper-proof fasteners.

D. Profile Mirror Frames: Fabricated from 18 gage stainless steel, formed to 1 inch by 15/16 inch angle; vertical edges eased at 3/4 inch radius; heliarc-welded corners, finished to match sheet finish; concealed mounting bracket with tamper-proof fasteners.

E. Plate Glass Mirror: 1/4 inch thick polished plate glass, ASTM C 1036, Type I, Class 1, quality q1 mirror select; silver-coated, hermetically sealed with uniform electrolytically-deposited copper plating.

F. Tempered Glass Mirror: 1/4 inch thick polished tempered glass, two coats silver, hermetically sealed with uniform electrolytically-deposited copper plating, backpainted with waterproof coating.

G. Metal Mirror: Stainless steel, Type 304, No. 8 mirror finish.

H. Polycarbonate Mirror: 1/4 inch thick polycarbonate sheet ("Lexan"), silver-coated, sealed against silver spoilage.

I. Acrylic Mirror: 1/4 inch thick acrylic sheet ("Plexiglas"), silver-coated, sealed against silver spoilage.

J. Laminated Glass Mirror: Two sheets heat-treated 3/32 inch thick float glass laminated with 1/16 inch thick clear polyvinyl interlayer, two coats silver, hermetically sealed with uniform electrolytically- deposited copper plating, backpainted with waterproof coating.

K. Mirror Shelves: Fabricated from 18 gage stainless steel sheet, finish matching mirror frame, formed to 5 inches deep ledge with return and hemmed edges; spot-welded to mirror frame and gussets at corners, finished to match sheet finish.

2.9 GRAB BARS

A. Grab Bars - Basic Requirements: Fabricated to comply with ASTM F 446 and to withstand a 900 pound force, from ASTM A 554 stainless steel tubing, 18 gage, Type 304, 18- 8 alloy; formed 1-1/2 inch radius return to wall at each end; each end heliarc-welded to minimum 11 gage stainless steel circular flange; welds finished to match tube finish.

B. Grab Bars Peened finish.

1. Sizes and configurations: As indicated on drawings.
2. Sizes and configurations: As indicated in Schedule at end of section.

C. Grab Bar Concealed Mounting Flanges: Stainless steel, 3 inch diameter by 1/2 inch deep, with 13 gage steel tenon plate for concealed attachment, using three set screws.

D. Grab Bar Snap-on Mounting Flanges: Snap-on stainless steel cover, 22 gage, 3 inch diameter by 1/2 inch deep, for concealing grab bar mounting flange.

E. Grab Bar Exposed Mounting Flange: Stainless steel, 1/8 inch thick, 3 inch diameter, with 3 countersunk screw holes.

2.10 ELECTRICAL ACCESSORIESNOTE

A. Electric Hand Dryer

1. Cast iron housing, single-piece construction, 1/4 inch thick, with acid-resistant porcelain enamel finish.
2. Die-cast chrome-plated air nozzle with 360-degree rotation.

3. Brushless electric motor rated 1/8 horsepower, 3200 revolutions per minute.
4. Heating element rated 1700 watts.
5. Heating element rated 2300 watts.
6. Fan capacity 153 cubic feet per minute.

B. Electric Hand Dryer

1. Cast alloy housing, single-piece construction, with baked polyester coating.
2. Die-cast chrome-plated air nozzle with 360-degree rotation.
3. Brushless electric motor rated 1/8 horsepower, 3000 revolutions per minute.
4. Heating element rated 2300 watts.
5. Fan capacity 180 cubic feet per minute.

C. Electric Hand Dryer TA-____: Model _____.

1. Formed polycarbonate housing, white color, single- piece construction; integral recessed air nozzle.
2. Integral intake grille recirculates heated air.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verification of Conditions:

1. Prepared openings are sized and located in accordance with shop drawings.
2. Reinforcement and anchoring devices are correct type and are located in accordance with shop drawings.

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 hr 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 toilet accessories plumb and level in accordance with shop drawings and manufacturer's printed installation instructions.

B. Locate toilet accessories at heights specified by Americans with Disabilities Act.

3.3 CLEANING

A. Remove manufacturer's protective vinyl coating from sight- exposed surfaces 24 hours before final inspection.

B. Clean surfaces in accordance with manufacturer's recommendations.

3.4 PROTECTION OF INSTALLED PRODUCTS

A. Protect products from damage caused by subsequent construction activities.

B. Field repair of damaged product finishes is prohibited; replace products having damaged finishes caused by subsequent construction activities.

END OF SECTION

SECTION 11 40 00
SOLID SURFACE COUNTER TOP

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Solid surface countertops including sinks and bowls.

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. Section 01 23 00 – Alternates

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 66 00-Product Storage and Handling Requirements.
- B. Follow manufacturer's instructions.
- C. Special Instructions:
 - 1. Do not deliver components to project site until spaces are ready for installation.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Installation spaces must be maintained at normal occupancy temperature and humidity levels for minimum 72 hours prior to and continuously following installation.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Staron Sheet: 1/2 in (13 mm) thick homogenous sheet composed of a blend of natural minerals and 100 percent acrylic resin (methyl methacrylate) complying with ANSI Z124.3 and Z124.6, Type 6.

- B. Staron Sinks and Bowls: Homogenous casting composed of a blend of natural minerals and 100 percent acrylic resin (methyl methacrylate) complying with ANSI Z124.3 and Z124.6, Type 6
- C. Countertop Perimeter Frame: 1/2 in (13 mm) moisture resistant plywood, or 1/2 in (13 mm) moisture resistant MDF.

2.03 ACCESSORIES

- A. Joint and Laminating Adhesive for bonding Staron Sheet to Staron Sheet: Two component Staron Joint Adhesive.
- B. Adhesive for Bonding Staron Sheet to Other Materials: 100 percent silicone sealant complying with ASTM C 920.

2.04 FABRICATION

- A. Follow instructions in manufacturer's Fabrication and Installation Manual.
- B. Shop Assembly: Fabricate components in shop to the greatest extent practical.
 - 1. Avoid seams within 1 in (25mm) of inside or outside corners.
- C. Edge Treatment: Shape and dimension as show on Drawings.
 - 1. Corner Construction: Thermoformed type.
- D. Backsplash: Shape and dimension as shown on Drawings.
- E. Provide holes and cutouts for penetrations and sinks and bowls as shown on Drawings and scheduled in other sections.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine cabinets upon which countertops will be installed.
 - 1. Verify that cabinets are level to 1/8 in (3mm) in 10 ft (3m).
 - 2. Review manufacturer's Fabrication and Installation Check List.
- B. Coordinate with responsible entity to correct unsatisfactory conditions.
- C. Commencement of work by installer is acceptance of cabinet conditions.

3.02 INSTALLATION

- A. Install countertops and secure to cabinets in accordance with manufacturer's Fabrication and Installation Manual.

B. Install Sinks and Bowls:

1. Mounting Type: [Seam mount] [Under mount] [As Shown on Drawings].
2. Secure seam mount sinks and bowls to countertops with joint adhesive.
3. Secure under mount sinks and bowls to countertops with clip system as recommended by manufacturer.

3.03REPAIR

- A. Repair minor imperfections and cracked seams and replace sections of severely damaged surfaces in accordance with manufacturer's Fabrication and Installation Manual.

3.04CLEANING

- A. Reference Section 01 74 00-Cleaning and Waste Management.
- B. Clean surfaces in accordance with manufacturer's Care and Maintenance Instructions.

3.05PROTECTION

- A. Cover surfaces with heavy paper or cardboard to protect from damage until [date of Substantial Completion] [acceptance by Owner].

END OF SECTION1

SECTION 12 30 00

CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Casework and furniture components including base cabinets, wall cabinets, storage cabinets, and other units as indicated.

1.02 RELATED SECTIONS

- A. Section 09 66 00: Resilient Tile Flooring- Finish bases.
- B. Divisions 15 and 16: Mechanical and Electrical equipment installed in casework.

1.03 REFERENCES

- A. ASTM C150 Standard Specifications and Test Methods referenced in Part 2 - Products
- B. ANSI/BHMA A156 Series.
- C. The Architectural Woodwork Institute

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver casework only after wet operations in building are completed.
- B. Store completed casework in a ventilated place, protected from the weather, with relative humidity therein of 50 percent or less at 70 degrees F.
- C. Protect finished surfaces from soiling and damage during handling and installation. Keep covered with polyethylene film or equivalent protective covering.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Particle Board: ANSI A208.1 or A208.2, min density 45 lbs./cu.ft.
- B. Lumber: Clear, straight-grained, S4S; Species at manufacturer's option where concealed, red oak where exposed.

2.02 CASEWORK HARDWARE AND ACCESSORIES

- A. Hinges: Heavy duty, five knuckle 2-3/4 inch institutional type hinge. Mill ground, hospital tip, tight pin feature with all edges eased. Hinge to be full wrap around type of tempered steel .095 inch thick. Each hinge to have a minimum of seven screws #7,

5/8 inch F.H.S.M. to assure positive door action and alignment. No edge fastening allowed. Finish to be LH-301 Chrome, coat Powder Finish.

- B. Pulls: Drawer and door pulls to be chrome coat powder finish wire pull 4 inch – LH-321.
- C. Drawer Glides: LSI Lab series, LH-375, self-closing design, epoxy powder coated with positive in-stop, out-stop and out-keeper to maintain at 80% open position. Nylon bearing rollers, both front and rear. Minimum 100 lb. dynamic load rating at 50,000 cycles.
- D. Catches: LH-340 ADA magnetic catch for base and wall cabinets: Provide on for each base and wall cabinet door.

2.03 SINKS AND EQUIPMENT

- A. Sinks in casework furnished and installed by plumbing Contractor except as indicated. Coordinate with plumbing trade and provide cutouts.
- B. Casework contractor to verify sink dimensions specified in Division 15 for proper fit in cabinets. Coordinate requirements with Division 15 – Trade Contractor

PART 3 EXECUTION

3.01 INSTALLATION OF CASEWORK

- A. Base Cabinets: Adjust sub-tops within 1/16 inch of a single plane. Fasten each individual cabinet to floor at toe space, with fasteners spaced not more than 24 inches o.c. Secure cabinets which do not adjoin other cabinets with not less than 2 fasteners into floor. Bolt continuous cabinets together into one integral unit with joints flush, tight, and uniform.
- B. Wall Cabinets: Securely fasten to solid supporting material, not plaster, lath, or wallboard. Anchor, adjust, and align as specified for base cabinets.
- C. Adjust casework and hardware so that doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.02 INSTALLATION OF SINKS

- A. Cut-outs for sinks to be by casework installer with templates provided by Plumbing Contractor. Plumbing Contractor to install sinks, connections, and all related plumbing work.

3.03 FIELD QUALITY CONTROL

- A. Single Source Responsibility: Provide casework manufactured or procured by same casework company, for single responsibility.

END OF SECTION

SECTION 12 35 00

SPECIALTY CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Casework and furniture components including base, cabinets, wall cabinets, storage cabinets and other units as indicated.

1.02 RELATED SECTIONS

- A. Section 06 41 00: Architectural Wood Casework
- B. Divisions 15 and 16 for final connections to insert sinks and water.

1.03 REFERENCES

- A. The Architectural Woodwork Institute
- B. AWT's "Architecture Woodwork Quality Standards"

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver casework only after wet operations in building are completed.
- B. Protect finished surfaces from soiling and damage during handling and installation. Keep covered with polyethylene film or equivalent protective covering.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Hardwood Plywood: HPVA HP-1, either veneer core or particle core, unless otherwise indicated.
- B. Particle Board: ANSI A208.1, Grade M-2 Exterior Glue.

2.02 CASEWORK HARDWARE AND ACCESSORIES

- A. Hardware, General: Provide manufacture's standard satin-finish, commercial-quality, and heavy-duty hardware complying with requirements indicated.

1. Use threaded metal or plastic inserts with machine screws for fastening to particle board except from back side.
- B. Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, 170 degrees of opening.
- C. Pulls: Semi-recessed plastic pulls for sliding doors, provide recessed plastic flush-pulls. Provide two pulls for drawers more than 24 inches wide.
- D. Drawer Slides: Powder-coated, metal-channel, Self-closing drawer slides, designed to prevent rebound when drawers are closed, with nylon-tired, ball-bearing rollers, and complying with BHMA A156.9 Types B05091, and rated for the following loads.
 1. Box drawer slides: 100lbf
- E. Sliding-Door Hardware sets: Manufacture's standard, to suit type and size of sliding-door units.
- F. Adjustable shelf supports: Mortise-type, Powder-coated steel standards and shelf rests complying with BHMA A156.9, Types B04091.

2.03 COUNTERTOPS

- A. Countertops, General: Provide smooth, clean exposed tops and edges in uniform plane free of defects. Provide front and end over hang of 1 inch over base cabinet.
- B. Plastic-Laminate Type Tops: Plastic-Laminate sheet, shop bonded with water proof glue to both sides of 1 1/8 inch plywood or particle board. Sand surfaces to which plastic laminate is to be bonded.

PART 3 EXECUTION

3.01 INSTALLATION OF CASEWORK

- A. Base Cabinets: Adjust sub-tops within 1/16 inch of a single plane. Fasten each individual cabinet to floor at toe space, with fasteners spaced not more than 24 inches o.c. Bolt continuous cabinets' together joints flush, tight, and uniform.
- B. Wall Cabinet: hang cabinet straight level, and plumb, adjust front and bottoms within 1/16 inch of a single plane. Fasten to hanging strips, masonry, partition framing, blocking, or reinforcements in partitions.
- C. Adjust casework and hardware so that doors and drawers operate smoothly without warp or bind. Lubricate hardware as recommended by manufacturer.

3.02 INSTALLATION OF SINKS

- A. Field jointing: where possible make in the same manner as shop jointing. Prepare edges to be joined in shop so project-site processing of top and edge surface is not required.
 - 1. Secure field joints in plastic-laminate countertops with concealed clamping devices located within 6 inches of front and back edges and at intervals not exceeding 24 inches.
- B. Secure tops to cabinets with Z-type fasteners using two or more fasteners at each front.
- C. Secure backsplash to walls with adhesive.
- D. Seal junctures to top, splash, and walls with mildew resistant silicone sealant or another permanently elastic sealing compound recommended by countertop material manufacturer.

3.03 FIELD QUALITY CONTROL

- A. Single Source Responsibility: Provide casework manufacturer of product by same casework company, for single responsibility.
- B. Protection: Provide 6mil plastic sheeting or other suitable water-resistant covering over countertop surfaces. Tape to underside of counter top at minimum of 48 inches.

END OF SECTION

SECTION 13 48 00
Sound Isolation

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Resilient sound isolation clips installed with drywall furring channels for support of gypsum board for noise control (de-coupling) in walls and ceilings.

1.2 RELATED SECTIONS

- A. Section 05400 - Cold-Formed Metal Framing.
- B. Section 06110 - Wood Framing.
- C. Section 07210 - Building Insulation.
- D. Section 07920 - Joint Sealants.
- E. Section 09110 - Non-Load-Bearing Wall Framing.
- F. Section 09250 - Gypsum Board.
- G. Section 09260 - Gypsum Board Assemblies.
- H. Section 09820 - Acoustical Insulation and Sealants.

1.3 REFERENCES

- A. AISI Specifications for Design of Cold-Formed Steel Structural Members.
- B. ASTM B 633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel.
- C. ASTM C 645 - Standard Specification for Nonstructural Steel Framing Members.
- D. ASTM C 754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
- E. ASTM C 840 - Standard Specification for Application and Finishing of Gypsum Board.
- F. ASTM C 1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
- G. ASTM D 412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension.

- H. ASTM D 573 - Standard Test Method for Rubber-Deterioration in an Air Oven.
- I. ASTM D 2000 - Standard Classification System for Rubber Products in Automotive Applications.
- J. ASTM D 2240 - Standard Test Method for Rubber Property - Durometer Hardness.
- K. UL Fire Resistance Directory.

1.4 DESIGN REQUIREMENTS

- A. Dead or Shear Load: Maximum design load of 36 pounds per each resilient sound isolation clip.
- B. Conform to UL Fire Resistance Directory design assemblies, where required.

1.5 SUBMITTALS

- A. Comply with Section 01330 - Submittal Procedures.
- B. Product Data: Submit manufacturer's product data and installation instructions.
 - 1. Resilient sound isolation clips.
 - 2. Drywall furring channels.
- C. Samples: Submit manufacturer's samples.
 - 1. Resilient sound isolation clips.
 - 2. Drywall furring channels.
- D. Warranty: Submit manufacturer's standard warranty for resilient sound isolation clips.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage: Store materials in clean, dry area indoors in accordance with manufacturer's instructions.
- C. Handling: Protect materials during handling and installation to prevent damage.

PART 2 PRODUCTS

2.1 SOUND ISOLATION

- A. Sound Isolation Clips: Resilient Sound Isolation Clip (RSIC-1).
 - 1. Manufacturer: PAC International, Inc., PO Box 5369, Aloha, Oregon 97006. Toll Free (866) RSIC-100 (866) 774-2100. Phone (503) 649-7700. Fax (503) 649-2710. Web Site

www.pac-intl.com. E-Mail info@pac-intl.com.

2. Rubber Isolator:
 - a. Natural organic rubber compound, blended with fire-inhibiting compounds.
 - b. Molded to isolate ferrule from clip.
 - c. Minimum of 12 micro-vibration controlling pedestals at point of contact with framing member.
 - d. Manufactured to ASTM D 2000, M2 AA 510 A13, which includes:
 - 1) Hardness, ASTM D 2240, Shore A: 47.
 - 2) Modulus 300 Percent, ASTM D 412, Die C: 5.3 MPa.
 - 3) Tensile Strength, ASTM D 412, Die C: 11.2 MPa.
 - 4) Elongation at Break, ASTM D 573: 454 percent.
3. Clip: Galvanized or aluminum-zinc coated steel, 16 gauge.
4. Ferrule: Zinc-electroplated steel.
5. Projection: 1-5/8 inches from supporting structure, when 7/8-inch drywall furring channels are used.

B. Drywall Furring Channels (Hat Track):

1. Material: Cold-formed galvanized steel.
2. Conformance:
 - a. AISI Specifications for Design of Cold-Formed Steel Structural Members.
 - b. ASTM C 645.
 - c. ASTM C 754.
3. Designation: Steel Stud Manufacturers Association (SSMA) Code 087F125-18 (25 gauge).
 - a. Size: 0.0179 inch (0.53 mm) thick, 7/8 inch (22.2 mm) height, 2-11/16 inches (68 mm) width.
 - b. Hemmed edge detail.

C. Mechanical Fasteners:

1. Type: Self-drilling, self-tapping screws. Steel, ASTM C 1002. Galvanized coating, plated, or oil-phosphate coated, ASTM B 633, as needed for required corrosion resistance.
2. Resilient Sound Isolation Clip Connections:
 - a. To Wood Framing Members: Screws 2-1/2 inches (63 mm) minimum length, #8 minimum shank, Type W (course thread), bugle- or hex-head screws of equal or greater size.
 - 1) Minimum Pullout and Shear: 108 pounds.
 - b. To Steel Framing Members (Less than 20 Gauge): Screws 1-1/2 inches (38 mm) minimum length; #8 minimum shank; Type S (fine thread); bugle-, wafer-, or hex-head screws of equal or greater size.
 - 1) Minimum Pullout and Shear: 108 pounds.
 - c. To Steel Framing Members (20 Gauge through 12 Gauge): Screws 1-1/2 inches (38 mm) minimum length; #8 minimum shank; Type S (fine thread); self-drilling tip; bugle-, wafer-, or hex-head screws of equal or greater size.
 - 1) Minimum Pullout and Shear: 108 pounds.
 - d. To Concrete: Anchors 1-3/4 inches (44 mm) minimum length, 3/16-inch to 1/4-inch diameter. Mushroom head or screw-in type anchor in accordance with fastener manufacturer's instructions. Powers Fasteners or approved equal.
 - 1) Minimum Pullout and Shear: 108 pounds.
 - e. To Concrete Masonry Units: Anchors 2-1/4 inches (57 mm) minimum length, 1/4-

inch diameter. Designed for use in concrete masonry units in accordance with fastener manufacturer's instructions. Powers Fasteners or approved equal.

1) Minimum Pullout and Shear: 108 pounds.

3. Drywall Furring Channel Lap Joint Connection, Steel to Steel: Framing screws, button head, 7/16 inch (11 mm) minimum length, #6 minimum shank, needle point, Phillips drive or greater, or double-wire tie with 18 gauge tie wire.

- D. Tie Wire: 18 gauge, annealed, galvanized steel.
- E. Acoustical Sealant: Flexible, non-hardening. As specified in Section 07920.
- F. Fire/Smoke Sealant: Flexible, non-hardening. Classified as an acoustical sealant. As specified in Section 07920.
- G. Putty Pad Sealant: Control noise transmission and fire resistance at electrical boxes and other penetrations. As specified in Section 07920.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive materials. Notify Architect if areas are not acceptable. Do not begin installation until unacceptable conditions have been corrected.

3.2 INSTALLATION - GENERAL

- A. Install resilient sound isolation clips and drywall furring channels in accordance with manufacturer's instructions.
- B. Mechanically fasten resilient sound isolation clips to structure with screws, bolts, or expansion anchors, dependent upon structure.
- C. Fire-Resistive Design Assemblies:
1. Install as specified in UL Fire Resistance Directory, where required.
 2. Do not arbitrarily add resilient sound isolation clips to fire-rated assemblies.
- D. Space resilient sound isolation clips at maximum of 24 inches (600 mm) by 48 inches (1,200 mm) on center for walls and ceilings.
- E. Do not exceed design load (pull and shear) of 36 pounds per isolation clip.
- F. Stagger isolation clip installation, so dead load is supported by all support members.
- G. Splicing Drywall Furring Channels:
1. Splice drywall furring channels with minimum of 6-inch (150-mm) laps.
 2. Secure laps with 2 framing screws or 18 gauge tie wire double wrapped.
 3. Locate splices between resilient sound isolation clips.

- 4. Do not locate splices on resilient sound isolation clips.
- H. Install resilient sound isolation clips on 1 side of wall assembly, unless otherwise indicated on the drawings.
- I. Flanking Noise:
 - 1. Review installation details to prevent structure-borne flanking noise.
 - 2. Do not allow drywall furring channels or gypsum board to contact foreign materials, including floors, ceilings, or wall framing members.
- J. Ensure metal ferrule of resilient sound isolation clips is in firm contact with structural member.
- K. Gypsum Board:
 - 1. Install gypsum board in vertical or horizontal position with 1/8-inch (3-mm) to 1/4-inch (6-mm) gap around perimeter for acoustical sealant application.
 - 2. Install gypsum board in accordance with ASTM C 840 as specified in Section 09250.
- L. Acoustical Sealant:
 - 1. Seal potential air leaks with acoustical sealant to achieve best Field Sound Transmission Class (FSTC).
 - 2. Seal electrical outlets and penetrations with acoustical sealant.
 - 3. Apply fire-rated acoustical sealant at locations where fire-rated assembly is required.
- M. Putty Pad Sealant: Acoustically seal with putty pads, electrical boxes in walls and ceilings in which resilient sound isolation clips are used.

3.3 INSTALLATION - WALLS

- A. Install drywall furring channels perpendicular to framing members.
- B. Space drywall furring channels maximum of 24 inches (600 mm) on center.
- C. Locate first drywall furring channel parallel to floor and maximum of 3 inches (75 mm) above floor and 1 drywall furring channel maximum of 6 inches (150 mm) from ceiling.

END OF SECTION

SECTION 23 34 00

EXHAUST FAN VENTILATOR

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].
- 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

- 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.
 - 2. Mechanically exhaust air from [_____] [inches] [mm] diameter ventilator using electric fan with [_____] HP motor: [_____] [CFM] [CMM].
 - 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

- #### 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.

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.

1. Equip inside of ventilator lid with cone shaped [diverter] [thermostatically controlled backdraft damper] to direct air flow outward. Position above propeller fan.

E. Operation:

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.

F. Size:

1. Inside diameter: [_____] [inches] [mm].
2. Outside diameter: [_____] [inches] [mm].
3. Height: [_____] [inches] [mm].

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].

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.]

I. Collar extensions: Equip ventilator with extension collars to provide [_____] [inches]
[mm] high stack.

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.

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.

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.

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.

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.

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.

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.

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.

L. Test dampers and adjust for proper operation.

END OF SECTION

SECTION 26 27 26

GROUND FAULT INTERRUPTER RECEPTACLES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Ground Fault Interrupter Receptacles
- B. Device Plates

1.02 RELATED SECTIONS

- A. Section 26 01 00 – Operation and Maintenance of Electrical Systems

1.03 REFERENCES

- A. NECA – Standard of Installation.
- B. NEMA WD 1 – General Requirements for Wiring Devices.
- C. NEMA WD 6 – Wiring Device – Dimensional Requirements.
- D. NFPA 70 – National Electric Code.

PART 2 PRODUCTS

2.01 GROUND FAULT INTERRUPTER RECEPTACLES

- A. GFCI Receptacle: 125V, 20A.
 - 1. Hubbell Incorp. Model GF5362I.
 - 2. Cooper Industries Inc. Model XGF20V
 - 3. Pass & Seymour Model 2095-I.
- B. Substitutions: Refer to section 26 01 00.
- C. Color: Ivory unless directed otherwise by Architect.

2.02 WALL PLATES

- A. GFCI Receptacle Cover Plate:
 - 1. Hubbell Incorp. Model HPS1I.
 - 2. Cooper Industries Inc. Model XGF15V-M

3. Pass & Seymour Model TP26-I.
4. Substitutions: Refer to section 26 01 00
5. Provide horizontal cover if receptacle is mounted horizontally.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Section 26 01 00: Coordination and Meetings: Verification of existing conditions prior to beginning work.
- B. Verify that outlet boxes are installed at proper height.
- C. Verify that wall openings are neatly cut and will be completely covered by wall plates.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean debris from outlet boxes.

3.03 INSTALLATION

- A. Install in accordance with NECA "Standard of Installation" except for mounting heights. Refer to Section 26 01 00 for mounting heights.
- B. Install devices plumb and level.
- C. Install receptacles with grounding pole on top.
- D. Connect wiring device grounding terminal to metallic outlet box with bonding jumper or branch circuit equipment grounding conductor for non-metallic boxes and isolated ground outlets.
- E. Connect wiring devices by wrapping solid conductor around screw terminal. Connect solid and stranded wires by inserting in screw tension pressure plate connectors. Provide solid tails or solderless connectors for stranded conductors where screw tension pressure plates are not available. Use of spring tension back wired terminals is unacceptable.

3.05 FIELD QUALITY CONTROL

- A. Section 26 01 00: Field inspection, testing, adjusting, and balancing.
- B. Inspect each wiring device for defects.
- C. Verify that each receptacle device is energized.

- D. Test each receptacle device for proper polarity.
- E. Test each GFCI receptacle device for proper operation.

3.06 ADJUSTING

- A. Section 26 01 00: Adjusting installed work.
- B. Adjust devices and wall plates to be flush and level.

3.07 CLEANING

- A. Section 26 01 00: Cleaning installed work.
- B. Clean exposed surfaces to remove splatters and restore finish.

END OF SECTION