SECTION 07242

PRESSURE-EQUALIZED RAINSCREEN EIFS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Exterior Insulation and Finish System (EIFS) configured in a cavity wall design capable of providing pressure equalization and moisture drainage technology.

1.2 RELATED SECTIONS

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

B. Section 04810 - Unit Masonry Assemblies.

C. Section 05400 - Cold-Formed Metal Framing.

D. Section 06100 - Rough Carpentry.

E. Section 06115 - Sheathing.

F. Section 07210 - Building Insulation.

G. Section 07600 - Flashing and Sheet Metal.

H. Section 07900 - Joint Sealers.

1.3 REFERENCES

A. ASCE 7 - Minimum Design Loads for Buildings and Other Structures; American Society of Civil Engineers.

B. ASTM C 67 - Standard Test Methods of Sampling and Testing Brick and Structural Clay Tile.

C. ASTM C 150 - Standard Specification for Portland Cement.

D. ASTM C 297 - Standard Test Method for Tensile Bond Strength of Flat Sandwich Constructions in Flatwise Plane.

E. ASTM C 794 - Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants

F. ASTM C 1063 - Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster.

G. ASTM C 1135 - Test Method for Determining Tensile Adhesion Properties of Structural Sealants.

H. ASTM C 1177 - Standard Specification for Glass Mat Gypsum Board Substrate for Use as Sheathing.

I. ASTM D 1784 - Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.

J. ASTM D 2247 - Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.

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

L. ASTM E 108 - Standard Test Methods for Fire Tests of Roof Coverings.

M. ASTM E 119 - Test Methods for Fire Tests of Building Construction and Materials.

N. ASTM E 283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

O. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors By Uniform Static Air Pressure Difference.

P. ASTM E 331 - Standard Test Method for Water Penetration of Exterior Windows, Curtain Wall, and Doors by Uniform Static Air Pressure Difference.

Q. ASTM G 23 - Standard Practice for Operating Light-Exposure Apparatus (Carbon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials.

R. EIMA 101.86 - Standard Test Method for Resistance of Exterior Insulation Finish Systems to the Effects of Rapid Deformation (Impact); EIFS Industry Members Association.

1.4 DESIGN REQUIREMENTS

A. Substrate: Comply with the following:
   1. Maximum deflection: 1/240 of span, under full flexural design loads.
   2. Flatness: Flat within 1/4 inch, measured from any point within a 4 foot radius.
   3. Material: Dens-Glass Gold, meeting requirements of ASTM C 1177 at time of EIFS application.

B. Details:
   1. Edges: Encapsulate insulation board edges in reinforced base coat at all system terminations.
   2. Slopes: 6 inches in 12 inches minimum slope; 12 inches maximum length of sloped area.
   3. Roofs: System shall not be used for areas defined as roofs by applicable building code.

C. Compartmentalization:
   1. Divide building into compartments, or location zones, which approximate areas of differing wind pressures. Compartment boundaries shall coincide with the location zones as defined by ASCE 7-95 or wind tunnel studies.
   2. Vertical Elevations: Divide with horizontal separation at intervals not in excess of 30 feet.

D. Venting: Provide minimum 2.25 square inches of vent area for every 300 square feet of wall area, employing Dryvit Vent Assembly exclusively.

E. Terminations:
   1. Hold system back from adjoining materials 3/4 inch (19 mm) minimum for sealant application. See Dryvit's Infinity Installation Details, DS120.
   2. Terminate Infinity 8 inches (200 mm) minimum above finished grade.
   3. Cover Infinity terminations along tops of parapet walls with a continuous metal coping.

1.5 PERFORMANCE REQUIREMENTS

A. Comply with the following for durability and structural performance of completed system:
   1. Wind Load: 100 psf minimum, per ASTM E 330.
   2. Water Penetration: No penetration per ASTM E 331.
   3. Water Resistance: Passes, per ASTM D 2247.

4. Dynamic Pressure Equalization: At 750 Pa, K = 0.99; phi = 3.7 degrees; per National Research Council of Canada.
5. Impact: I.S. Reinforcing Mesh 25-49 inch-lbs., Panzer7 20 with I.S. Reinforcing Mesh greater than 350 inch-lbs, per EIMA 101.86.
6. Absorption/Freeze/Thaw: Passes ICBO Procedure, 10 cycles.
7. Accelerated Weathering: Passes after 2,000 hours, per ASTM G 23.
8. Absorption Freeze/Thaw: Passes after 60 cycles, per ASTM C 67.
9. Tensile Bond: Passed ICBO procedure; passed accelerated weathering, per ASTM C 297.
10. Air Leakage: Less than 0.001 CFM/sq. ft. (0.3 L/min/sq. m), per ASTM E 283.
11. Moisture Drainage Efficiency: Minimum 95 percent, per ASTM E 331 (modified).
12. Transverse Load Test: Negative 100 psf (4.8 kPa) minimum, par ASTM E 330.

B. Comply with the following for fire performance of completed system:
1. Fire Testing: No propagation, per ASTM E 108.
2. Multi-Story Test: Passed UBC 26-9 ISMA Multi-Story Test.
3. Full Scale Test: Passed ASTM E 108 (Modified).
4. Rated Wall Test: Passed ASTM E 119 (one hour).
5. BOCA Radiant Heat Ignitability Test: Passed.
6. Surface Burning, Insulation Board: Flame spread less than 25, smoke developed less than 450, per ASTM E 84.
7. Surface Burning, Infinitex Finish: Flame spread 10, smoke developed 5, per ASTM E 84.
8. Surface Burning, Dryshield ABA: Flame spread 5, smoke developed 0, per ASTM E 84.
9. Surface Burning, I.S. Base: Flame spread 3, smoke developed 0, per ASTM E 84.
10. Surface Burning, Stone Mist: Flame spread 10, smoke developed 30, per ASTM E 84.

C. Comply with the following for sealant testing:
1. Adhesion In Peel: 5 lbs/inch (89 kg/m) minimum, per ASTM C 794.
2. Tensile Bond at 50 Percent Elongation, per ASTM C 1135 (modified):
   a. Dry: 20 psi (138 kPa).
   b. 1 and 7 Day Immersion: 15 psi (104 kPa).
   c. Frozen: 20 psi (138 kPa).

3. Modulus of Elasticity at 50 Percent Elongation, per ASTM C 1135 (modified):
   a. At Minus 40 Degrees F. (Minus 40 Degrees C): 35 psi (241 kPa).
   b. At 180 Degrees F. (82.3 Degrees C): 20 psi (138 kPa).

1.6 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's descriptive literature for each specified product, including complete installation instructions.

C. Shop Drawings: Include layout of compartment and venting systems, layout of expansion joints, and typical details.

D. Quality Assurance Submittals:
   1. Submit results of full scale air leakage test performed in accordance with ASTM E 283 and conducted by a recognized independent testing laboratory.
   2. Submit results of dynamic pressure equalization evaluation conducted in accordance with procedures developed by the National Research Council of Canada, Institute for Research in Construction by a recognized independent testing laboratory.
   3. Submit full scale ISMA Multi-Story Fire Test in accordance with UBC 26-9 procedure.
   4. Material shall be manufactured at a facility covered by a current ISO 9001 certification.

E. Closeout Submittals: Warranty documents, issued and executed by manufacturer of EIFS materials and installer.

1.7 QUALITY ASSURANCE

A. Qualifications:
   1. Manufacturer of EIFS Materials: Minimum five (5) years documented experience producing EIFS materials specified in this section, sponsor of applicator certification program, and sponsor of certification and quality assurance program for manufacturers of materials for EIFS installations not produced by EIFS materials manufacturer.
   2. Manufacturer of Insulation Materials: Manufacturer having insulating board product listed as meeting EIFS materials manufacturer's insulation board

specification, and as participant in EIFS manufacturer's third-party certification and quality assurance program.
3. Installer: Listed by manufacturer of EIFS materials as a trained contractor and currently certified for installation of the Infinity system.

B. Mock-Ups:
1. Construct mock-up of size indicated on drawings; locate on project site as directed by Architect.
2. Prepare substrate and apply finish as specified in this section.
3. Maintain mock-up at project site until Architect directs its removal.

C. Pre-Installation Meeting: Conduct pre-installation meeting at project site not less than one week before beginning work of this section, to review contract documents. Require attendance by representatives of Owner, Architect, Contractor, independent inspection agency, manufacturers of major systems, and installers of EIFS and joint sealers.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Packing, Shipping, Handling and Unloading: Deliver products to project site in manufacturer's labeled and sealed packaging.

B. Acceptance at Site: Accept only products in sealed in unopened manufacturer's packaging with labels intact.

C. Storage and Protection:
1. Store products in manufacturer's unopened packaging until installation.
2. Maintain dry storage area at minimum 40 degrees F for products until removal for installation.
3. Take precautions to avoid condensation and excessive heat build-up when using tarpaulins or plastic sheet coverings.

1.9 PROJECT CONDITIONS

A. Environmental Requirements:
1. Applying products of this section during periods of inclement weather is prohibited, except where surfaces to receive products are protected from

weather during application and until applied products are cured.
2. Apply products of this section only at minimum ambient temperature of 40 degrees F and when minimum ambient temperature will remain minimum 40 degrees F for following 24 hour period.

B. Sequencing and Scheduling:
1. Coordinate installation of work of this section with other work.
2. Employ sufficient equipment and personnel to ensure a continuous operation and an installation free of cold joints, scaffold lines, texture variations, and other irregularities.

1.10 WARRANTY

A. Manufacturer's Warranty: Manufacturer's performance warranty against water intrusion through the system and into wall cavity, as follows:
1. Pressure Equalized System: 12 years.
2. Non-Compartmentalized System: 10 years.

B. Installer's Warranty: Written limited 5-year labor warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable EIFS System Manufacturer: Dryvit Systems, Inc.; One Energy Way, P.O. Box 1014, West Warwick RI 02893; ASD. Tel: (800) 556-7752 and (401) 822-4100.

B. Acceptable Substrate Manufacturer: Georgia Pacific Corporation.

C. Acceptable Joint Sealer Manufacturer: Dow Corning Corp.
D. Requests for substitutions will be considered in accordance with provisions of Section 01600.

E. Substitutions: Not permitted.

2.2 MATERIALS

A. Substrate: Silicone treated gypsum core board, surfaced with inorganic glass mats and a gold color, alkali-resistant coating; thickness of 1/2 inch and 5/8 inch, as indicated; type X fire-resistant.
   1. Provide Dens-Glass Gold by Georgia-Pacific Corporation.

B. Air Barrier Components:
   1. Polymer: High performance polymer based blend material.
      a. Provide DryShield ABA by Dryvit Systems, Inc.
   2. Portland Cement: ASTM C 150, Type I, I-II, or II, white or gray in color, fresh and free of lumps.
   3. Grid Tape: Open weave pressure sensitive fiberglass mesh available in rolls 4 inches wide by 100 yards long.
      a. Provide Dryvit Grid Tape.
   4. Flashing Tape: High density polyethylene film backed with a rubberized asphalt adhesive available in rolls 4 inches and 6 inches wide by 100 feet long.
      a. Provide Dryvit Flashing Tape.

C. Adhesive Material:
   1. Polymer: High performance polymer based blend material.
      a. Provide DryShield ABA by Dryvit Systems, Inc.
   2. Portland Cement: ASTM C 150, Type I, I-II, or II, white or gray in color, fresh and free of lumps.

D. I.S. Insulation Board: Aged, expanded polystyrene with a nominal density of 1.0 lb per cubic foot, and meeting current published specifications of Dryvit's Publication DS131.
   1. Minimum density for every board supplied for the work shall be 0.95 pcf, not as an average.
   2. Dimensions: 2 ft by 4 ft maximum, with minimum thickness of 2 inches. Provide 45 degree factory cut bevels at perimeter, as indicated in Infinity Installation Details DS120.
   3. Back Surface: Factory cut vertical grooves running the width of the board and measuring 1/4 inch deep by 1 inch wide, positioned 12 inches on center.

E. I.S. Insulation Board Closure Blocks: Aged, expanded polystyrene with a nominal density of 1.0 lb per cubic foot, and meeting current published specifications of Dryvit's Publication DS131.

1. Minimum density for every board supplied for the work shall be 0.95 pcf, not as an average.
2. Dimensions: Minimum 6 inches wide.

F. Dryvit Starter Strip: Expanded polystyrene configured to receive Dryvit Vent Track and Dryvit Track.
1. Dimensions: 2 inches by 6 inches by 48 inches.
2. Locations: Base of all walls, base of horizontal compartments, head of windows, and other openings.

G. Dryvit Vent Assembly: Expanded polystyrene configured to contain Dryvit Vent Material and receive Dryvit Vent Track.
1. Locations: Base of all walls and base of horizontal compartments.
2. Vent Material: Formed aggregate matrix capable of draining water; 2 inches by 6 inches by 10 inches.

H. Dryvit Vent Track: J-shaped track complying with ASTM D 1784 and ASTM C 1063 and containing a slot for venting and drainage.
1. Locations: Base of all walls and base of horizontal compartments.

I. Dryvit Track: Solid, J-shaped track complying with ASTM D 1784 and ASTM C 1063.
1. Locations: Above Dryvit Starter Strip.

J. Reinforcing Mesh:
1. I.S. Reinforcing Mesh:
   a. Minimum weight: 5 oz per sq. yard.
   b. Minimum tensile strength: 225 pounds/inch.
2. Panzer 20 Mesh:
   a. Minimum weight: 20 oz per sq. yard.
   b. Minimum tensile strength: 550 pounds/inch.
3. Corner Mesh:
   a. Minimum weight: 7.2 oz per sq. yard.
   b. Minimum tensile strength: 274 pounds/inch.
4. Detail(R) Mesh:
   a. Minimum weight: 4.3 oz per sq. yard.
   b. Minimum tensile strength: 150 pounds/inch.

K. I.S. Base Material:
1. Acrylic base material.
2. Portland Cement: ASTM C 150, Type I, I-II, or II, white or gray in color, fresh and free of lumps.

L. Finish Material:
    1. Elastomeric finish with quartz aggregate, mildewcide chemistry, and dirt resistant technology:
        a. Coarse Texture: Infinitex QP.
        b. Rough Pebble Texture: Infinitex SP.
        c. Fine Pebble-Like Texture: Infinitex SPF.
        d. Smooth Texture: Infinitex ADB.
    2. Specialty finish:
        a. Blend of natural aggregates varying in size and color.
            1) Ameristone, multi-colored flamed granite appearance.
            2) Stone Mist, ceramically-colored quartz aggregate.

M. Primer: A water-based, pigmented acrylic primer.
    1. Provide Color Prime.

N. Coatings:
    1. Non-textured, water based acrylic coating: Demandit PMR.

O. Joint Sealer Materials:
    1. Primer: Dow 1200 Primer.
    2. Ultra-Low-Modulus Silicone Sealant: Dow Corning 790.
    3. Medium Modulus Sealant: Dow Corning 791 or 795.
        a. Application: Sealing between EIFS and aluminum frames only.

P. Water: Clean and potable.

2.3 MIXES

A. Air Barrier: Mix DryShield ABA one-to-one by weight with Portland cement.
B. Adhesive Material: Mix DryShield ABA one-to-one by weight with Portland cement.
C. Base Material: Mix I.S. Base two-to-one by weight with Portland cement.

2.4 MIXING

A. Perform all mixing with a clean mixer equivalent to Goldblatt Jiffler Mixer No. 15311H7, powered by a 1/2 inch drill or equivalent, at 400-500 rpm.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verification of Conditions:
   1. Substrates are in proper condition to receive Infinity.
   2. Expansion joints are located and sized as indicated on drawings.
   3. Products indicated to be installed in surfaces to receive Infinity are installed in correct locations.

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 PREPARATION

A. Protection: Mask surfaces of adjacent materials to prevent damage to finishes.

B. Surface Preparation: Prepare surfaces to receive Infinity in accordance with manufacturer's printed installation instructions.

3.3 INSTALLATION

A. Comply with manufacturer's latest printed instructions for installation of each system component.

B. Substrate: Install in accordance with Georgia-Pacific Bulletin No. 94-2; Dens-Glass Gold Application Procedures for Dryvit Infinity Series.
   1. Examine installed substrate to verify that it meets specified performance criteria and is clean, dry, free of grease, oil, paint, and other foreign materials.

2. Replace any areas of substrate not in compliance with specified requirements or where gaps or damage to surface exceed 3/8 inch in any direction.

C. Air Barrier:
1. Install pressure sensitive grid tape at all vertical and horizontal joints, exposed edges at terminations, and inside and outside corners of substrate.
2. Apply Dryshield ABA mixture to substrate, including exposed edges, prior to installing I.S. insulation board.
3. Cover all expansion joints with flashing tape.

D. Accessories:
1. Install Dryvit Starter Strip, Dryvit Vent Assembly, and Dryvit Vent Track at the base of walls and the base of horizontal compartments, in compliance with manufacturer's typical details and printed instructions.
2. Install I.S. Insulation Board Closure Blocks around the perimeter of all openings and to close off vertical compartments where indicated.

E. I.S. Insulation Board:
1. Apply insulation board to completed air barrier in running bond pattern starting from base of wall, with long edges oriented horizontally.
   a. Begin in field of wall and work outward to corners, ensuring alignment of vertical drainage grooves.
   b. Offset joints in insulation board from joints in substrate by a minimum of 8 inches.
2. Install I.S. Insulation Board Closure Blocks at corners in staggered and interlocked pattern, field cutting adjacent I.S. insulation board as necessary to achieve proper fit.
3. Precut insulation board to fit openings, corners, or projections. Do not allow board edges to align with corners of wall openings.

F. Base and Finish Coat Application: Comply with manufacturer's detailed installation instructions.
1. Install double layer of reinforcing mesh at ground floor and high traffic areas, as indicated on drawings. In these areas, use mesh types specified but not less than base layer of Panzer 15 and top layer of I.S. Reinforcing Mesh.

2. Reinforce corners by double wrapping reinforcing mesh or by using corner mesh.
3. Reinforce corners of openings using strips of Detail Reinforcing Mesh laid at a 45 degree angle.
4. Cover terminations of Infinity System with continuous metal coping, as shown in manufacturer's standard details.

G. Joint Sealers: Install sealants in accordance with Dow Corning Procedures for the installation of Dow Corning Silicone Building Sealants with Dryvit Infinity System.

3.4 PROTECTION

A. Protect finishes from damage by subsequent construction activities until Date of Substantial Completion.

B. Repair finishes damaged by subsequent construction activities in accordance with manufacturer's printed installation instructions; replace finish to extent of nearest adjacent termination each way at areas where repair to finish is judged unacceptable.

C. Architect will be sole judge of acceptability of repaired finishes.

3.5 SCHEDULES

A. Location: _____.
1. Texture: _____.
2. Color: _____.

END OF SECTION