MAJOR INDUSTRIES, INC.
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PRODUCT GUIDE SPECIFICATION

Specifier Notes: This product guide specification is written according to the Construction Specifications Institute (CSI) Format, including MasterFormat (1995 Edition), SectionFormat, and PageFormat, contained in the CSI Manual of Practice.

The section must be carefully reviewed and edited by the Architect to meet the requirements of the project and local building code. Coordinate this section with other specification sections and the drawings.

Delete all "Specifier Notes" when editing this section.

SECTION 08950
TRANSLUCENT WALL SYSTEMS

Specifier Notes: This section covers Major Industries “Guardian 275®” Translucent Curtainwall Systems. The wall systems are self-supporting, structural composite sandwich panels with translucent skins and aluminum interlocking grid framework.

Consult Major Industries for assistance in editing this section for the specific application.

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Translucent wall systems.

1.2 RELATED SECTIONS

Specifier Notes: Edit the following list as required for the project. List other sections with work directly related to the translucent wall systems.

A. Section 06100 - Rough Carpentry: Wood blocking.

B. Section 07620 - Sheet Metal Flashing and Trim: Sheet metal flashing installed at wall system perimeter.

C. Section 07720 - Roof Accessories: Manufactured curbs.

D. Section 07920 - Joint Sealants: Sealants installed at sill flashing and perimeter framing.

E. Section 08630 - Translucent Skylights.

1.3 REFERENCES

Specifier Notes: List standards referenced in this section, complete with designations and titles. This article does not require compliance with standards, but is merely a listing of those used.

A. AAMA 603.8 - Pigmented Organic Coatings on Extruded Aluminum.

B. AAMA 605.2 - High Performance Organic Coatings on Architectural Aluminum Extrusions and Panels.

C. AAMA 1503.1 - Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.

D. AAMA 2603 - Pigmented Organic Coatings on Aluminum Extrusions and Panels.

E. AAMA 2605 - Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

F. ASCA 96 - Superior Performance of Organic Coatings on Architectural Aluminum Curtainwall, Extrusions and Miscellaneous Aluminum Components.

G. ASTM B 209 - Aluminum and Aluminum-Alloy Sheet and Plate.

H. ASTM B 221 - Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

I. ASTM C 236 - Steady-State Thermal Performance of Building Assemblies by Means of a Guarded Hot Box.

J. ASTM C 297 - Tensile Strength of Flat Sandwich Constructions in Flatwise Plane.

K. ASTM D 395 - Rubber Property - Compression Set.

L. ASTM D 635 - Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position.

M. ASTM D 865 - Rubber - Deterioration by Heating in Air (Test Tube Enclosure).

N. ASTM D 925 - Rubber Property - Staining of Surfaces (Contact, Migration, and Diffusion).

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O. ASTM D 1002 - Apparent Shear Strength of Single-Lap-Joint Adhesively Bonded Metal Specimens by Tension Loading (Metal-To-Metal).

P. ASTM D 1037 - Evaluating Properties of Wood-Base Fiber and Particle Panel Materials.

Q. ASTM D 1056 - Flexible Cellular Materials - Sponge or Expanded Rubber.

R. D 1149 - Rubber Deterioration - Surface Ozone Cracking in a Chamber.

S. ASTM D 1435 - Outdoor Weathering of Plastics.

T. ASTM D 1929 - Ignition Properties of Plastics.

U. ASTM D 2244 - Calculation of Color Differences from Instrumentally Measured Color Coordinates.

V. ASTM D 3841 - Glass-Fiber-Reinforced Polyester Plastic Panels.

W. ASTM E 72 - Conducting Strength Tests of Panels for Building Construction.

X. ASTM E 84 - Surface Burning Characteristics of Building Materials.

Y. ASTM E 108 - Fire Tests of Roof Coverings.

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

AA. ASTM E 330 - Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

BB. ASTM E 331 - Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

CC. NFRC 100 - Determining Fenestration Product Thermal Properties

DD. ICBO listed FRP Sheet Component (ER 1412)

EE. ICBO Listed Translucent Wall, Skylight and Roof Panels (ICBO PFC 5620).

FF. UL 790 - Fire Resistance of Roof Covering Materials

GG. UL 972 - Burglary-Resisting Glazing Material

1.4 DESIGN REQUIREMENTS

A. Framing Components: Extruded aluminum shapes providing geometric appearance as indicated on the drawings.

Specifier Notes: Provide project design data as required.

B. Design Loads: Framing components shall be designed to support following loads:
   1. Live Load: _____ psf.
   2. Wind Load: _____ psf.
   3. Alternate Design Loads: Conform to state and local codes.

C. Maximum Allowable Deflection of Structural Members: Maximum of L/100 of clear span.

D. Safety Factors: Allowable stresses shall incorporate following safety factors, unless otherwise specified.
   1. Load Carrying Members: 1.65.
   2. Load Carrying Fasteners: 2.0.

1.5 SUBMITTALS

A. Comply with Section 01330 - Submittal Procedures.

B. Product Data: Submit manufacturer's product data, including materials, components, fabrication, finishes, and installation instructions.

C. Shop Drawings: Submit manufacturer's shop drawings, including plans, elevations, sections, and details, indicating dimensions, tolerances, profiles, anchorage, connections, fasteners, provisions for expansion and contraction, drainage, flashings, finishes, glazing, and attachments to other Work.

D. Samples: Submit manufacturer's 6 inch x 6 inch sample of translucent panel showing panel skin color, panel light transmittance, and aluminum finish.

E. Test Reports: Submit certified test reports from a qualified independent testing agency, indicating wall systems comply with specified requirements, based on testing of current products. Submit results from the following tests:
   1. Flame spread and smoke development, ASTM E 84.
   2. Burn extent, ASTM D 635.
   3. Color change, ASTM D 2244 in accordance with ASTM D 1435.
   4. Impact strength, exterior face sheets, ASTM D 3841 and UL 972.
   5. Accelerated aging, ASTM D 1037.
   6. Bond strength, ASTM C 297.
   7. Insulating U-factor, ASTM C 236.

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8. Self-ignition, ASTM D 1929.
9. Class A burning brand, ASTM E 108 and UL 790.
10. Air infiltration, ASTM E 283.
11. Water penetration, ASTM E 331.
12. Uniform load deflection, ASTM E 72 and E 330.
13. Concentrated and Impact, ASTM E 661
14. Certification authorization under the NFRC PCP (framing and panel).

F. Manufacturer's Project References: Submit list of completed projects including project name and location, name of architect, and type and quantity of wall systems manufactured.

G. Installer's Project References: Submit list of completed projects including project name and location, name of architect, and type and quantity of wall systems installed.

H. Warranty: Submit manufacturer's standard warranty.

1.6 QUALITY ASSURANCE

A. Manufacturer's Qualifications:
1. Continuously engaged in translucent wall system manufacturing with a minimum of 20 years successful experience.
2. Able to demonstrate successful performance on comparable projects.
3. Responsible for all components, including structural design.
4. Curtain wall system and the individual FRP sheet components must be listed by the International Conference of Building Officials.
5. Curtain wall system must be certified by The National Fenestration Ratings Council and comply with all requirements for certification authorization under the NFRC.

B. Installer's Qualifications:
1. Minimum of 5 consecutive years successful experience in installation of similar wall systems.
2. Approved by manufacturer.

Specifier Notes: Describe requirements for a preinstallation meeting to coordinate the installation of the translucent wall systems. Edit the paragraph as required for the project.

C. Preinstallation Meeting: Convene a preinstallation meeting [2] [_____] weeks before start of installation of translucent wall systems. Require attendance of parties directly affecting work of this section, including Contractor, Architect, Installer, and manufacturer's representative. Review preparation, installation, cleaning, protection, and coordination with other work.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name, manufacturer, and location of installation.

B. Storage: Store materials in a clean, dry area in accordance with manufacturer's instructions. Store panels above floor, and under cover.

C. Handling: Protect materials and finishes from marking, contamination, and damage during handling and installation.

PART 2 PRODUCT

2.1 MANUFACTURER

A. Major Industries, Inc., PO Box 306, 7120 Stewart Avenue, Wausau, Wisconsin 54402-0306. Toll Free (888) 759-2678. Phone (715) 842-4616. Fax (715) 848-3336.

2.2 TRANSLUCENT WALL SYSTEMS

Specifier Notes: Consult Major Industries for assistance in determining required wall systems for the specific application.

A. Translucent Panel Units:
   1. Model: Guardian 275® Translucent Wall System Panels.
   2. Construction: Translucent facings of ICBO listed flat, architectural-grade, fiberglass reinforced polymer sheets bonded under controlled heat and pressure to a mechanically-interlocked aluminum I-beam grid core framework to form double-faced, self-supporting, structural composite, sandwich panels.
   3. Wall System Design Wind Load: 20 psf.

Specifier Notes: Specify one of the following panel thicknesses. 2-3/4 inch thickness is standard. Consult Major Industries for assistance in determining required panel thickness for the specific application.

   4. Thickness: [2-3/4 inches] [1-1/2 inches].

Specifier Notes: Specify one of the following insulating U-factors. Consult Major Industries for assistance in determining required U-factor for the specific application.

NFRC 100 equivalent values are available for standard configurations. Test sample 80 inches x 80 inches, 15 mph wind at 70-degrees F. temperature difference. Consult Major Industries.

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5. Insulating U-Factor, ASTM C 236 and AAMA 1503.1, 2 mph:
   a. 2-3/4 Inch Panels: [0.40] [0.24] [0.15].
   b. 1-1/2 Inch Panels: [0.70] [0.44] [0.28].

Specifier Notes: Specify required grid pattern and nominal grid size. Consult Major Industries for availability of custom grid patterns and nominal grid sizes.

6. Grid Pattern: [In-line Shoji] [Staggered Shoji] [Tuckerman] [_____]. Symmetrical about horizontal and vertical center lines of panel.
7. Nominal Grid Size: [12 inches x 24 inches] [12 inches x 12 inches] [8 inches x 20 inches] [8 inches x 8 inches] [6 inches x 6 inches] [_____].
8. Unbonded Areas: Maximum of 4 unbonded areas, a maximum of 3/64 inch in diameter, in an area a maximum of 40 square feet of panel surface.
9. Panel Weeps: Weep holes on bottom side of installed panels to permit condensation to leave panel interior.
10. Panel Corners: Notch and interlock or reinforce with aluminum angle for radius conditions.
11. Assembly: Factory assembled and factory sealed. Field assembly of major components will not be allowed.

B. Physical Properties:
   1. Burning Brand, ASTM E 108: Class A rating.
   2. Aged Adhesive Bond Strength, ASTM D 1037:
      a. Shear Strength, ASTM D 1002: 764 psi.
      b. Tensile Strength, ASTM C 297: 813 psi.
   3. Uniform Load Deflection, ASTM E 72 and E 330: Maximum deflection of L/100.
   4. Concentrated and Impact, ASTM E 661.
   5. Air Infiltration, ASTM E 283: Maximum of 0.04 cfm/ft of panel perimeter at 15 psf air pressure (77 mph constant wind).
   6. Water Penetration, ASTM E 331: No water penetration through perimeter framing of mullions when tested with a uniform water spray against entire exterior of test unit at a minimum rate of 5 gal/sq ft/hr for 15 min (8 inches per hour rainfall) at 15 psf air pressure (77 mph constant wind).

C. I-Beam Grid Core:
   1. Material: Aluminum Alloy 6061-T6 or equivalent.
   2. Flange Width: 7/16 inch minimum.
   3. Web Thickness: 0.050 inch.
   4. Mechanically interlocked.
   5. Full surface contact with face sheets.
   6. Welded or web interlock grid system will not be acceptable.

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Specifier Notes: The following thermal break is available as an option on 2-3/4 inch thick panels. Delete if not required. Consult Major Industries for assistance in determining if thermal break is required for the specific application.

7. Thermal Break (Optional):
   a. Located in panel grid core.
   b. Poured and debridged structural polyurethane, insulating U-Factor of 0.5.
   c. FRP thermal breaks will not be acceptable.

D. Adhesive:
1. Laminate Adhesive: Waterproof resin for use in laminating polyester sheet to aluminum grid core.
2. Impact and Thermal Shock: Adhesive capable of withstanding impact and thermal shock normally encountered in exterior construction.
3. Adhesive Bond Line: Straight, black, cover entire width of I-beam, with neat, sharp edge.
4. Initial Bond Strength Between Face Sheet and Grid Core, ASTM C 297: 750 psi minimum.
5. After Accelerated Aging, ASTM D 1037: No significant change in bond strength, ASTM C 297.

Specifier Notes: Thermal barriers are optional. Delete if not required. Consult Major Industries for assistance in determining if thermal barriers are required for the specific application.

E. Thermal Barriers (Optional):
1. Perimeter Framing System: Cast-in-place rigid polyurethane, insulating U-Factor 0.5.
2. Screw-applied thermal barriers will not be acceptable.

2.3 TRANSLUCENT FACE SHEETS

A. Appearance of Face Sheets:
1. Uniform in color to prevent splotchy appearance.
2. Free of ridges and wrinkles that prevent proper surface contact for bonding to grid core.
3. Free of clusters of air bubbles and pinholes that collect moisture and dirt.
4. ICBO listed face sheet (ER 1412).

B. Exterior Face Sheet:
1. Darkening, ASTM D 2244: Not darken more than 3.0 Delta E units after 5 years of outdoor weathering in South Florida at 45 degrees facing south.
2. Protective Weathering Surface:
   a. Material: “State-of-the-art” surface protection.
   b. Application: Factory-applied.
   c. Minimum Thickness: Minimum 1.0 mil.
   d. Repairs: Fully field repairable.

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Specifier Notes: Optional high-impact strengths to a maximum of 230 foot-pounds are available. Consult Major Industries for assistance in determining the required impact strength for the specific application.

3. Impact Strength, ASTM D 3841 and UL 972: [60] [_____] foot-pounds.

Specifier Notes: Standard thickness is 0.070 inches. Optional thickness for high-impact strengths is 0.060 inches. Consult Major Industries for assistance in determining the required thickness for the specific application.

4. Thickness: [0.070 inches] [0.060 inches].

Specifier Notes: Specify the color for the exterior face sheet. Consult Major Industries for availability of custom colors.

5. Color: [White] [Antique Crystal] [Crystal Super Clear] [Ice Blue] [Aqua] [Rose] [_____].

C. Interior Face Sheet:
   1. Flame Spread, ASTM E 84: 20 maximum.
   2. Smoke Development, ASTM E 84: 200 maximum.
   3. Burn Rate, ASTM D 635: 1.0 inch per minute maximum.
   4. Self-Ignition, ASTM D 1929: Greater than 650 degrees F.

Specifier Notes: Standard thickness is 0.045 inches. Optional thickness for high-impact strengths is 0.060 inches. Consult Major Industries for assistance in determining the required thickness for the specific application.

5. Thickness: [0.045 inches] [0.060 inches].

Specifier Notes: Specify the color for the interior face sheet. Consult Major Industries for availability of custom colors.

6. Color: [White] [Antique Crystal] [_____].

2.4 FRAMING MATERIALS

A. Aluminum:
   1. Extruded Aluminum: ASTM B 221, Alloy 6063-T5/T6, 6061-T5/T6, or equivalent.
   2. Formed Aluminum Components and Flashing: ASTM B 209, Alloy 5005-H34 or equivalent.
   3. Minimum Thickness: 0.040 inch.
   4. Construct wall systems of extruded aluminum shapes similar to sections indicated on the drawings.

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B. Interior and Exterior Glazing Gaskets:
   1. Extruded closed cell sponge neoprene hybrid, 9/16 inch wide.
   2. Factory installed in extruded dovetail slots.
   3. Compression Deflection, 25 Percent Deflection Limits, ASTM D 1056: 13 to 24 psi.
   4. Compression Set, 22 Hours at 158 Degrees F, Maximum Percent, ASTM D 395, Method B: 30 psi.
   5. Heat Aging, 70 Hours at 212 Degrees F, Change in Compression Values, ASTM D 865 and D 1056: 0 to 10 psi.
   6. Dimensional Stability, Change Maximum Percent After Heat Aging, 70 Hours at 212 Degrees F, 4 Psi: 11.4 percent.
   7. Ozone Resistance at 40 Percent Elongation, 100 Hours at 104 Degrees F, ASTM D 1149:
      a. Type I, 1 ppm Ozone: No cracks.
      b. Type II, 3 ppm Ozone: No cracks.
   8. Water Absorption, Percent of Weight:
      a. Option I: 5.0 percent.
      b. Option II: 11.7 percent.
   9. Flame Propagation:
      a. Option I, 4 Inch Maximum: 11.7 percent.
      b. Option II, No Limit: 11.8 percent.
   10. Straining of Surface, ASTM D 925: Nonstraining, no migratory strain.

C. Condensation Control System: Mechanically design entire condensation control system to function properly with minimal dependency upon sealants.

D. Custom Designs:
   1. Perform fitting and assembly of custom designs at factory, insofar as practicable.
   2. Completely assemble, mark, and disassemble components which cannot be permanently factory assembled, before delivery to site to ensure proper assembly in field.

E. Expansion and Contraction: Design and install components with provisions for expansion and contraction due to a 100 degree F temperature variation.

F. Glazing Caps:
   1. Extruded aluminum.
   2. Attach glazing caps with glazing cap fasteners located at a maximum of 9 inches on center or as required to resist negative loading.

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G. Fasteners:
   1. Clips for Attachment of Mullions:
      a. Aluminum.
      b. Attach using bolted fastening methods.
   2. Construction and Glazing Cap Fasteners:
      a. 18-8 stainless steel.
      b. Include gasketed sealing washers.
   3. Field Anchors: Cadmium plated, unless otherwise specified.
   4. Exposed Fasteners:
      a. Only as required to attach special trim or hardware.
      b. Finish to match aluminum.

H. Perimeter Framing: Two-piece, snap and capture channel.

I. Welding:
   1. Heliarc welding process.
   2. Grind exposed welds smooth and finish to match adjacent surfaces.

J. Weep Holes:
   1. Sill Components: Weep holes located as required to control condensation that may enter system by allowing it to pass to exterior.
   2. Baffles: Weep holes baffled to prevent water infiltration due to unequal pressures.

2.5 ALUMINUM FINISHES

Specifier Notes: Specify one of the following aluminum finishes. Consult Major Industries for assistance in determining required finish for the specific application.

A. Anodized Coating: Architectural Class I clear anodized, Type AA-M10C22A41.

B. Anodized Coating: Architectural Class II clear anodized, Type AA-M10C22A31.

C. Anodized Coating: Architectural Class I pigmented anodized, Type AA-M10C22A42/A44.
   1. Color: [_____] [As selected by Architect from manufacturer's standard colors]
      [As indicated on the drawings].

D. Pigmented Organic Coating: AAMA 2603.
   1. Color: [_____] [As selected by Architect from manufacturer's standard colors]
      [As indicated on the drawings].

E. High-Performance Pigmented Organic Coating: AAMA 2605.
   1. Color: [_____] [As selected by Architect from manufacturer's standard colors]
      [As indicated on the drawings].

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine areas to receive translucent wall systems, with installer and manufacturer's representative present, including supporting structure and substrate for dimensions, tolerances, material conditions, and support.

B. Notify Architect of conditions that would adversely affect installation or subsequent utilization of wall systems. Do not proceed with installation until unsatisfactory conditions are corrected.

3.2 PREPARATION

A. Supports: Ensure supports to receive translucent wall systems are clean, flat, level, plumb, and square.

B. Aluminum Protection: Apply a protective coating of bituminous paint or other neutral material to dissimilar materials coming in contact with aluminum or separate with a nonabsorbent isolator.

3.3 INSTALLATION

A. Install translucent wall systems in accordance with manufacturer's instructions at locations indicated on the drawings.

B. Install wall systems level, plumb, square, accurately aligned, correctly located, and without warp or rack.

C. Anchor wall systems securely in place to supports. Use attachment methods permitting adjustment for construction tolerances, irregularities, alignment, and expansion and contraction.

D. Install wall systems including flashings, fasteners, hardware, sealants, and glazing materials required for a complete, weatherproof installation.

E. Sheet Metal Flashing: Install sheet metal flashing at wall system perimeter as specified in Section 07620.

F. Sealants: Install sealants at sill flashing and perimeter framing as required to prevent air and water intrusion as specified in Section 07920.

G. Repair damages to protective weathering surface of exterior face sheet in accordance with manufacturer's instructions and as approved by Architect.

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3.4 CLEANING

A. Clean wall systems in accordance with manufacturer's instructions.

B. Clean wall systems inside and outside, including member connections and inside corners, immediately after installation and after sealants have cured.

C. Remove temporary protective coverings and strippable coatings from prefinished metal surfaces.

D. Remove labels and part number markings from components.

E. Remove excess sealant in accordance with sealant manufacturer's instructions.

F. Do not use harsh cleaning materials and methods that would damage metal finishes or glazing.

3.5 PROTECTION

A. Protect wall systems in accordance with manufacturer's instructions.

B. Maintain protection to ensure that, except for normal weathering, wall systems will be without damage or deterioration at time of substantial completion.

C. Remove and replace wall system panels which are broken, chipped, cracked, abraded, or damaged.

END OF SECTION

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