Green Span Profiles

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**Section 07 40 00**

**Insulated Metal Wall Panels**

**general specification for commercial/industrial and architectural applications**

**WaveLine Panel**

**Part 1 GENERAL**

**1.1 Summary**

­­A. The contract drawings indicate the extent and general details of the walls. This section

 includes requirements for the factory-formed, pre-insulated, metal, wall panel cladding

 system and the corresponding metal flashings, sealants, fasteners, clips and other

 accessories.

**1.2 References**

A. AISC

1. Steel Construction Manual – 15th Edition

B. AISI

1. North American Specification for the Design of Cold-Formed Structural Members,

 2016

C. ASCE 7

1. Minimum Design Loads for Buildings and Other Structures

D. ASTM

1. C518-10 Standard Test Method for Steady-State Thermal Transmission Properties by

 Means of the Heat Flow Meter Apparatus

2. C1363-05 Standard Test Method for Thermal Performance of Building Materials and

 Envelope Assemblies by Means of a Hot Box Apparatus

3. C273-07 Standard Test Method for Shear Properties of Sandwich Core Materials

4. D1621-10 Standard Test Method for Compressive Properties of Rigid Cellular Plastics

5. D1623-09 Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid

 Cellular Plastics

6. D1622-08 Standard Test Method for Apparent Density of Rigid Cellular Plastics

7. D6226-10 Standard Test Method for Open Cell Content of Rigid Cellular Plastics

8. E72-10 Standard Test Methods of Conducting Strength Tests of Panels for Building

 Construction

9. E84-10b Standard Test Method of Surface Burning Characteristics of Building

 Materials

10. E283-04 Standard Test Method for Determining Rate of Air Leakage Through Exterior

 Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the

 Specimen

11. E331-00 Standard Test Method for Water Penetration of Exterior Windows,

 Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference

12. E1592-05 Standard Test Method for Structural Performance of Sheet Metal Roof and

 Siding Systems by Uniform Static Air Pressure Difference

E. FM Global

1. 4880 Approval Standard for Class 1 Fire Rating of Insulated Wall or Wall and

 Roof/Ceiling Panels, Interior Finish Materials or Coatings and Exterior Wall Systems

2. 4881 Approval Standard for Class 1 Exterior Wall Systems

F. International Building Code, 2018

**1.3 Submittals**

A. Manufacturer’s product literature

B. Shop drawings showing elevations, panel layout and calling out panel profile, thickness,

 gauge, width, finish and texture. The drawings shall also illustrate product components

 including fasteners, clips, sealants, trims and any other necessary accessories.

C. Engineering package illustrating the panels will resist the code stipulated loads.

D. Color chip and/or chart

E. Installation instructions

F. Sample warranties (substrate and finish).

G. Letter of Certification stating that all parts of this specification were satisfied.

**1.4 Quality Assurance**

A. Manufacturer – Shall have a minimum of five (5) years’ experience in the production of

 continuously, foamed-in-place insulated metal panels.

B. Designer – Experienced in the design of insulated metal panels and a registered Professional

 Engineer

C. Installer - Authorized by the manufacturer and having a minimum of (3) years’ experience

 installing insulated metal wall panels.

**1.5 Delivery, Storage, and Handling**

A. Deliver panels in the original manufacturer’s weather-resistant, shrink-wrapped packaging

 with clearly marked, weather-resistant labeling.

B. Store the panels in a clean, level, protected and sufficiently compacted area. Provide

 ventilation if the bundles are exposed to moisture; further, elevate one end of the bundle to

 ensure adequate runoff. Do not stack more than two bundles high. Stack material to

 prevent twisting, bending, abrasion, scratching and denting.

C. Use proper care in unloading, storing and installing the wall panels. Handle panels in a

 fashion that will not bend, dent, scratch, or otherwise damage the product.

D. Refer to the Green Span Profiles Insulated Metal Panel Handling & Maintenance Guide for

 specific information regarding the following; handling, storage, strippable film, steel debris,

 corrosion, cleaning and field painting.

**1.6 Warranty**

A. The manufacturer warrants the panels as free of defects in material and workmanship for a

 period of (2) years from the date of production. This excludes the material coatings and

 finishes which are covered under separate warranties.

B. The manufacturer warrants the GALVALUME® substrate for a period of 20-years subject to

 the terms and conditions set forth in the manufacturer’s GALVALUME® 20-Year Limited

 Warranty.

C. The manufacturer warrants the Kynar 500® coating system for a period of 25-years subject to

 the terms and conditions set forth in the manufacturer’s Coating System Limited Warranty.

D. The installer warrants the panels as free of defects in material installation and workmanship

 for a period of (2) years from the date of substantial completion.

**1.7 Maintenance**

A. Keep the interior and exterior panel surfaces clean. Immediately remove dust, dirt, mud,

 mortar, chalk, excess sealants, or any other type of foreign substance from the panel

 surfaces.

B. Refer to the Green Span Profiles Insulated Metal Panel Handling & Maintenance Guide for

 specific information regarding the following: handling, storage, strippable film, steel debris,

 corrosion, cleaning, and field painting.

**PART 2 PRODUCTS**

**2.1 Manufacturer/Supplier**

A. Green Span Profiles

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**2.2 Components**

A. Panels

1. Type: “Insulated Metal Wall Panels” consisting of roll-formed interior and exterior

 profiles chemically bonded to a continuously, foamed-in-place, polyisocyanurate,

 insulating core.

2. Classification

a. FM Global 4880 Approved Class 1 Fire Rated Insulated Wall/Ceiling System.

b. FM Global 4881 Approved Class 1 Exterior Wall System.

c. State of Florida Approved Building Product

d. Miami Dade County Approved

3. Product Name: WaveLine

a. Panel Use: Exterior Wall

b. Coverage Width: 42-inch

c. Thickness: 2, 2.5, 3, 4-inch

d. Length: 8’-0” to 40’-0”

e. Exterior Gauge: 24, 22

f. Interior Gauge: 26

g. Exterior Substrate: Galvalume®, G90

h. Interior Substrate: Galvalume®, G90

i. Exterior Finish: Siliconized Polyester, low-gloss PVDF

j. Interior Finish: Polyester, Siliconized Polyester

k. Exterior Texture: Embossed, Smooth

l. Interior Texture: Embossed, Smooth

m. Joint: Green-Lock offset double tongue-and-groove

n. Core: Continuously poured-in-place polyisocyanurate insulating foam

o. R-Value: R-8 per inch of thickness (nominal)

 B. Flashing

1. Match all flashings and trims with the adjacent panels in material gauge and finish.

 Install these trims per the panel manufacturer’s details.

C. Accessories

1. Clips

a. 14-ga., 4”, 5-hole wall panel clip (AC-01)

b. 14-ga., 8”, 3-hole wall panel clip (BAC-08)

c. 12-ga., 12”, 3-hole wall panel clip (BAC-12)

2. Fasteners – Self-Drilling or Self-Tapping, Hex Head of appropriate length

3. Closures – UV resistant per the manufacturer’s details (if necessary)

4. Sealers

a. Tube Sealants

b. Non-skinning

c. Polyurethane

d. Tape Sealants – Butyl

**2.3 System Performance**

A. Structural

1. Load Capacity - Determine positive and negative load resistance based on tests

 conducted in accordance with ASTM E 1592 and/or ASTM E 72.

2. Load Calculation – Dictated by ASCE 7 16 and the building dimensions

3. Deflection Limit – per code or L/180, whichever is greater.

4. Connection – Designed considering the load (psf.), tributary area (sq. ft.), ultimate

 fastener pullout/pullover (lbs.) and appropriate factor of safety.

5. Factor of Safety (panel): 2.0

6. Factor of Safety (fasteners)

7. Two fasteners into steel: 2.25

8. One fastener into steel: 3.00

9. One or two fasteners into masonry: 4.00

10. Material Thickness – The delivered material thickness (steel) shall be within 95% of

 the design thickness.

B. Impact Resistance

1. Very severe hail (VSH) resistance when tested in accordance with FM Standard

4881.

2. Large Missile Impact tested in accordance with Miami Dade County TAS 201.

C. Water-tightness

 1. Verify the panels allow no uncontrolled water penetration when subjected to a

 pressure differential of -20-psf when tested in accordance with ASTM E 331.

D. Air-tightness

1. Verify the panels allow no more than 0.0011 cfm/sf at a pressure differential of +/-

 20-psf when tested in accordance with ASTM E 283.

E. Metal Facing to Foam Core Bond Strength

1. Fatigue – Upon being subjected to two-million alternating cycles of L/180

deflection, the panels shall exhibit no evidence of delamination of the fascia or

liner elements, cracking of the foam core, or permanent set.

2. Freeze/Heat Cycling – At the conclusion of twenty-one (21) eight-hour

temperature cycles (-20° F to 180° F), the panels shall exhibit no evidence of

delamination, blistering or permanent set.

3. Humidity – After enduring 1200 hours of 93% humidity at a temperature of 158° F,

the panels shall exhibit no evidence of delamination, blistering, or interface

 corrosion.

4. Autoclave – When exposed to 218°F and a pressure of 2-psig for 2-1/2 hours, the

panels shall exhibit no delamination of the foam core from the metal skins.

F. Energy Efficiency

 1. When tested in accordance with ASTM C 518 the panels provide a K-factor of: 0.139

 Btu-in/hr-ft2-F° @ 75° F mean temperature (R-7.20) and 0.129 Btu-in/hr-ft2-F° @ 35°

 F mean temperature (R-7.75).

G. Fire Safety

 1. The panels will be classified according to FM 4880 for unlimited height and NFPA 285.

H. Surface Burning Characteristics

1. Verify the panels have a maximum Flame Spread of 25 and maximum Smoke

 Developed of 450 when tested in accordance with ASTM E84.

I. Material Compatibility

1. Prevent galvanic action of dissimilar metals. This includes but is not limited to any

 Direct contact of panels and/or trim with treated lumber or copper lightening

 attenuation equipment or indirect contact constituted by water runoff from HVAC

 drain lines etc.

J. Finish

1. Humidity

2. Salt Spray

3. Color Retention

4. Chalk Resistance

5. Gloss Retention

6. Dry Adhesion

7. Flexibility

**PART 3 EXECUTION**

**3.1 General**

A. The Erector, upon entering into a contract to erect the Wall Panel System, claims itself

 competent in the erection of these systems and is responsible for complying with all

 applicable local federal and state construction and safety regulations, including OSHA

 regulations.

**3.2 Preparation**

A. Erector - Before wall panel installation begins, meticulously review, and accept the shop

 drawings as correct.

**3.3 Examination**

A. Shipment - Immediately upon delivery of the wall panels and accessories, crosscheck the

 delivered materials against the shipper to insure a complete shipment.

B. Substrate – Before installation begins, inspect and accept the structure with regard to plumb,

 level and true. The maximum deviation of steel alignment shall be limited to 0 (+\-) 3/16”

 from the control with a 1/8” maximum change in deviation for any member of any 10-ft

 panel run. The erector shall not proceed with installation if the structural steel is not within

 the specified tolerances.

C. Panels – During installation, examine the individual panels. Immediately notify the

 manufacturer of any panel defects. Do not install defective panels.

**3.4 Installation**

A. Panels

1. Install in accordance with the manufacturer’s recommended procedures, details and the

 construction drawings. Install the panels plumb, level, and true. If necessary, make

 panel cuts with a “metal cutting” circular saw.

B. Fasteners

1. Install fasteners in the locations shown on the construction drawings. Take care not to

 overdrive fasteners. Replace stripped fasteners by installing a new fastener in a

 different location.

C. Trim

1. Install the flashing true-to-line and level or plumb and in accordance with the

 manufacture’s details and the construction drawings.

D. Sealants

1. Before sealants are applied, clean and prime the surfaces according to the sealant

 manufacturer’s guidelines. Locate the sealants per the manufacturer’s details and

 the shop drawings without skips or voids.

E. Manual

 1. Refer to the Green Span Profiles Installation Guide for specific information regarding

 accountability, conditions, heavy equipment, verification of structure, alignment,

 side joints, vapor barrier, sealants, field applied insulation, threaded fasteners,

 strippable film, field cutting, appearance, general installation sequence, and details.

**3.5 Protection**

A. Remove any and all strippable films either prior to or directly following installation. Take

 measures to avoid exposure of the film to direct sunlight for more than 24 hours.

**3.6 Cleaning**

A. Touch Up – “Touch up” minor damage to factory applied finishes using factory approved,

 matching coatings provided by the manufacturer.

B. Soap - If necessary, clean panel surfaces with a combination of water and a light detergent.

**END OF SECTION**

 **Rev. 7/20**