



SPECIFICATIONS – Designwall 1000 Series Section 07410 Wall Panel Systems

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: Designwall 1000 Series factory insulated, shop assembled laminated steel or aluminum faced panels for the exterior walls, complete with associated trim.
- B. Related Items:
 - 1. Parapet caps and/or gravel stops
 - 2. Wall support systems
 - 3. Sealants not specified in this section
 - 4. Fenestration-window frames, glass, and glazing
 - 5. Entrance work

1.02 QUALITY ASSURANCE

Products meeting these specifications establish a standard of quality required, and shall be as manufactured by Benchmark Architectural Systems, Inc., Columbus, Ohio.

1.03 BUILDING CODE MINIMUM REQUIREMENTS

- A. Wall panel units shall fully comply with Chapter 26 of BOCA, Uniform Building Code, Standard Building Code, or other governing building code as applicable regarding the use of foam plastic. Laboratory and/or full scale fire tests as appropriate to demonstrate compliance shall be available for submission to the building official.
- B. Approved thermal barrier such as 1 / 2" or 5 / 8" gypsum board provided by other trades shall be incorporated as part of the total wall construction where necessary to comply with the governing building code or to create fire rated wall assemblies.
- C. Wall panel units and foam core shall comply with standard code requirements of maximum Flame Spread (25) and Smoke developed less than 450 per ASTM E 84.

1.04 PERFORMANCE TESTING REQUIREMENTS

- A. Structural Tests: Structural loadspan tables and design shall have been derived from and verified by witnessed structural tests for wind loads by the "chamber method" as outlined in ASTM E 72. Standard design criteria unless otherwise noted shall be ± 20 psf with a deflection limitation of L/180 under positive loading.

- B. Thermal Value: Standard 1 1/8" thick panel with expanded polystyrene (EPS) core shall have a total R-value of no less than 3.6 hrs-sf-F/BTU when tested according to ASTM C 236 and corrected to ASHRAE winter design criteria of 15 mph wind outside, still air inside.
- C. Panel with modified isocyanurate core shall have a total R-value of no less 5.6 hrs-sf-F/BTU when tested according to ASTM C 236 and corrected ASHRAE winter design.
- D. Bond Strength: There shall be no metal primer interface corrosion or delamination from the foam core after 1000 hrs at 135°F and 100% R.H. No delamination or interface corrosion after 2 1/2 hrs in a 2 psig, 217°F autoclave.
- E. Air & Water Infiltration: There shall be no water penetration and minimal air infiltration through the panel system when tested according to ASTM E 331 and ASTM E 283 under a static air pressure differential of 6.24 psf (equivalent wind velocity of 49.4 mph).

1.05 WARRANTY:

- A. Limited warranty: Benchmark Architectural Systems, Inc. warrants its wall panel systems to be free from defects in materials and workmanship for a period of two (2) years from date of shipment to the original purchaser. Benchmark's liability is limited to replacement or purchase price refund of the original materials only. This warranty is void if panels are not installed in accordance with Benchmark's currently published instructions, or are used in applications other than those referred to in manufacturer's current literature.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Laminated Wall panel System:
 - 1. 24" or 30" wide module per manufacturer standard.
 - 2. Thickness 1 1/8".
 - 3. Male and female side lap joint design with fasteners concealed.
 - 4. Flat face sheet shall be formed with 22 or 24 ga. G90 galvanized steel, or .040" aluminum. Non-directional embossed surface is recommended for optimum flatness and aesthetics.
 - 5. Flat liner sheet shall be formed with stand 24 ga., (alternate 22 ga.) G90 galvanized steel, or .040" aluminum with smooth,

non-embossed surface. Non-directional embossed liner available if specified.

- 6. Panel side joints shall have a finned self-locking gasket, factory applied to the male panel leg.
- 7. Unless specified otherwise, metal backer on vertical panels shall cover 92% min. of the actual panel face. For vertical applications with back side exposed to view, specify "full metal backer sheet".
- 8. When used in horizontal application, Designwall 1000 panels shall form a complete functional "rain-screen", maintaining uniform pressure equilibrium across each joint and assuring positive protection against water entrapment without the use of exposed wet sealants.

B. Component Materials:

- 1. Face and Liner Sheet Materials:
 - a. Shall be ASTM A 653, Grade 33, 22/24 gauge steel with a zinc coating conforming to ASTM A 525, G90.
 - b. Shall be 3003-H14 aluminum, .040" thick.
- 2. Primer: Each side of the interior and exterior face sheet shall receive an approved primer applied at a nominal thickness of 0.2 mils.
- 3. Exterior Paint Finish (face sheet):
 - a. Shall be coil coated with 70% based Kynar 500® resin and ceramic inorganic pigments. Select from 15 standard colors.
 - b. Shall be coil coated with 70% based Kynar 500®/Hylar 5000® resin and ceramic inorganic pigments. Custom color as specified by color number _____ or to match color chip as provided.
- 4. Interior Finish (liner sheet):
 - a. .2 mil epoxy primer suitable for field painting if exposed.
 - b. 1.0 mil nominal polyester finish (mfr. standard white).
 - c. 70% Kynar 500®/Hylar 5000® finish as specified for face sheet.

- 5. Core Insulation:
 - a. Shall be expanded polystyrene (EPS), Report No. NER-479, nominal density 1.0 pcf with minimum shear strength of 20 psi, Flame Spread of 10, and Smoke Developed of 130. R-Value of 4.17 per inch thickness.
 - b. Alternate – modified isocynurate, nominal density 2.0 pcf, with minimum shear strength of 24 psi, Flame Spread of 25, and Smoke Developed of 90. R-Value of 7.14 per inch thickness.
- C. Structural Adhesive shall be ICBO approved, Type II, Class 2 meeting Acceptance Criteria for Sandwich Panel Adhesives, (Report No. NER-457).
- D. Finishes:
 - 1. Accelerated Testing – Finished Color Coating 1.0 mil total DFT:
 - a. Salt Spray ASTM B 117, 1000 hrs – shall have no more than 1/16" edge creepage from score with test rating of 7 per ASTM D 1654 and ASTM D 714.
 - b. Weatherometer ASTM G 23, 5000 hrs – No cracking, peeling, blistering, loss of adhesion, or corrosion of base metal. Chalk rating of 10 per ASTM D 659 and ASTM D 4214. Less than 2 NBS units color change per ASTM D 2244.
 - c. Impact ASTM D 2794, reverse and direct – No cracking or loss of adhesion using 80 inch-lbs. And 5/8" ball indenter.
 - d. Acid Resistance ASTM D 1308, 10% hydrochloric solution and 10% sulfuric solution – no visible changes after 24 hr. exposure.
 - e. Specular Gloss ASTM D 523 @ 60 degrees – range of 30 ± 5 as measured on Bky-Gardner 4520 glossmeter.
 - f. Pencil Hardness ASTM D 3363 – HB minimum using Eagle Turquoise pencils.
 - g. Formability ASTM D 522, 180 degree bend over a 1/8" mandrel – no evidence of cracking and no loss of adhesion to the point of metal rupture.
 - h. Humidity Test ASTM D 2247, 1000 hrs @ 100% humidity and 100°F – test rating of 10, no scribe creep, no blistering, cracking, or corrosion per ASTM D 1654 and ASTM D 714.

- i. Abrasion Resistance ASTM D 968 – minimum 60 liters of sand per mil before the appearance of base metal.

plumb in order to provide the proper support for the wall panels as well as fenestration.

- C. In any case, all materials must be installed in strict accordance with approved shop/erection drawings.
- D. Remove strippable peelcoat immediately after each panel is installed. Remove and replace any panel found to be defective or damaged prior to installing the next panel and notify manufacturer.

PART 3 EXECUTION

3.01 FABRICATION

- A. Comply with dimensions, profile limitations, gauges, and fabrication details as shown, and if not shown, provide Benchmark standard product fabrication.
- B. Fabricate components of the system at factory, ready for field assembly.
- C. Fabricate components and assemble units to comply with fire and performance requirements specified.
- D. Apply specified finishes in conformance with manufacturer's standards, and coating manufacturer's instruction.
- E. Changes of plane, parallel or transverse to longitudinal axis, shall be accomplished as detailed on drawings.

3.05 DAMAGED MATERIAL

- A. Repair or replace all damaged material to the satisfaction of the architect and/or contractor if damage has been caused by manufacturer or wall panel erector. The general contractor or builder shall be responsible for the protection of completed or installed walls from damage by other trades. Installed areas or portions of the work shall be inspected by the owner or general contractor and approved immediately following the completion of such areas. Any subsequent damage will then be the responsibility of others.

3.02 APPROVED SHOP/ERECTION DRAWINGS

- A. Furnish shop drawings complete with details of all major interfaces and periphery conditions.
- B. Shop drawings shall specify and indicate all materials furnished as well as finishes to be applied.
- C. These shop drawings shall also serve as field installation drawings and be complete with specific instructions for the application of the products, periphery trim, sealants, lap strips, etc. to insure a weather tight installation.

3.06 CLEANING

- A. The panel erecting contractors shall provide a dry wipe-down cleaning of all work as it is erected and prior to moving to the next portion or area.
- B. The general contractor and/or owner shall be responsible for the subsequent and final cleaning of the wall system.

3.03 INSPECTION

- A. Examine alignment of structural steel and/or wall panel support systems prior to installation and do not proceed until any defects are corrected by responsible contractor. Building tolerances shall not exceed maximums as defined in AISC or ACI specifications.
- B. Inspect all material included in this contract prior to installation. Manufacturer to be notified of any unacceptable material prior to installation on the wall.
- C. When necessary, contractor to provide field measurements as requested by manufacturer in order to achieve proper geometric fit of wall panel system.

3.04 INSTALLATION AND ERECTION

- A. Install metal wall panels, fasteners, trim and related items in accordance with approved shop/erection drawings and manufacturer's installation instructions.
- B. The installation of the girt/support and anchoring systems shall be true and