
SECTION 07 46 46 – FIBER CEMENT SIDING**Wallshell® U-Shield™ Panel System****PART 1 - GENERAL****1.1 SUMMARY****A. Section Includes:**

1. Wallshell U-Shield fiber cement panels mounted as building façade using hidden fastener solutions in the back ventilated rain screen system design.
2. Wallshell U-Shield fiber cement panels mounted as building parapet using hidden fastener solutions to form the parapet areas.
3. Wallshell U-Shield fiber cement panels mounted as building louver using hidden fastener solutions to form the parapet areas.
4. Wallshell panel and louver hidden fasteners.

B. Related Sections:

1. Section 05 41 00 - Structural Metal Stud Framing
2. Section 06 16 00 Sheathing
3. Section 07 20 00 – Thermal Protection
4. Section 07 25 00 - Weather Barriers
5. Section 07 60 00 - Flashing and Sheet Metal
6. Section 07 90 00 – Joint Protection
7. Section 08 50 00 - Windows

1.2 REFERENCES**A. ASTM International (ASTM)**

1. ASTM C1185 Standard Test Methods for Sampling and Testing Non Asbestos Fiber Cement Flat Sheet, Roofing and Siding Shingles, and Clapboards.
2. ASTM C1186 Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems.
3. ASTM C1354 Standard Test Method for Strength of Individual Stone Anchorages in Dimension Stone.
4. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
5. ASTM E136 Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C.

6. ASTM E330 Standard Test Method for Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

B. ICC Evaluation Service Report

<https://www.icc-es.org/wp-content/uploads/report-directory/ESR-4333.pdf>

1.3 SYSTEM DESCRIPTION

A. Design Requirements:

1. Rain Screen System:

System panel assembly shall be designed in accordance with manufacturer's the *Wallshell U-Shield System Architectural Details*, installed in accordance with manufacturer's the *Wallshell U-Shield System Installation Manual*, thus providing a back ventilated rain screen system.

2. Expansion and Contraction:

System panel assembly shall be designed with provisions for thermal expansion and contraction of the component parts to prevent buckling, undue stress on fasteners or other detrimental effects due to accumulation of dead loads and various live loads, and in accordance with manufacturer's *Wallshell U-Shield System Architectural Details*.

3. Allowable Wind Load:

System panel assembly shall be designed in accordance with the Design section in *ICC ESR 4333* report to withstand the positive and negative wind load pressures acting inward and outward normal to the plane of the wall to meet the requirements of the latest adopted Local Building Code.

B. General Performance:

U-Shield panel assembly shall comply with performance requirements, as determined by the following tests performed by a qualified agency.

1. NFPA 285
2. ASTM E84
3. ASTM E136
4. ASTM E330
5. ASTM C1354
6. ASTM C1186

1.4 SUBMITTALS

A. Product Data:

1. Submit manufacturer's *Wallshell U-Shield System Technical Data Sheet*.
2. Submit manufacturer's. *Wallshell U-Shield System Architectural Details*.
3. Submit manufacturer's storage and handling instruction, installation guidelines, *Wallshell U-Shield System Installation Manual*.

B. Shop Drawings:

Submit shop drawings indicating project panel layout for elevations, fastening and anchoring methods, dimensions of individual components and profiles, detail and location of joints, parapets, corners, window connections, closures, flashings and accessories.

C. Samples:

1. Submit two samples 150x200 mm of each product specified.
2. Submit two samples 150x200 mm of each finish specified.

D. Code Compliance:

Submit manufacturer's *ICC-ESR report for Wallshell U-Shield System*, demonstrating the compliance of products with local building code.

Submit manufacturer's fire rate test report for Wallshell fiber cement panel, demonstrating the compliance of products with NFPA 285.

E. Warranty:

Submit manufacturer's warranty meeting the requirements of this section.

1.5 QUALITY ASSURANCE**A. Qualifications:****1. Manufacturer:**

Manufacturer shall have a minimum of 20 years experience in the manufacture of this fiber cement product.

2. Installer:

Installer shall be minimum 10 years experience in performing work of this section and in work of similar scope required by this project. Installer shall be approved or certified by manufacturer or representative.

B. Mock-up Wall:

Provide a mock-up as evaluation tool for product and installation workmanship.

C. Pre-Installation Meeting:

Conduct pre-installation meetings to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements and project requirements.

D. Color:

Some acceptable degree of color variation is to be expected.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Acceptance at Site:

Materials to be packaged to protect against transportation damage. Examine materials upon receipt to insure that no damage has occurred during shipment.

B. Storage and Protection:**1. Storage:**

Materials should be stored in accordance with section in manufacturer's the *Wallshell U-Shield System Installation Manual*,

2. Material Handling:

Panels **MUST** be handled in accordance with section in manufacturer's the *Wallshell U-Shield System Installation Manual*,

1.7 PROJECT CONDITIONS**A. Field Measurements:**

Verify location and dimension of all elements related to the installation of the U-Shield panel assembly. Indicate those as-built measurements on the shop drawings prior to panel precutting.

B. Limitations:

Proceed with installation of U-Shield panel assembly only when existing site conditions comply with manufacturer's recommendations.

1.8 WARRANTY**A. Exterior Cladding Panel:**

1. Provide manufacturer's 30-year limited warranty against manufactured defects in U-Shield panels.
2. Provide manufacturer's 20-year limited warranty against manufactured defects in panel finish.
3. Warranty provides for the original purchaser and transfers to one subsequent owner. See *Wallshell Façade Panel Warranty* for detailed information on terms, conditions and limitations.

B. Installation System:

1. Provide fabricator or installer standard purchase agreement in which they shall agree to repair or replace components of exterior cladding wall panel assemblies that fail in materials or workmanship within specified warranty period.
2. Provide fabricator or installer the system warranties or other such guarantees regarding installation shall be the responsibility of the installing contractor.

C. Accessories:

Provide warranties or other such guarantees regarding accessories used during installation shall be the responsibility of the installing contractor.

PART 2 – PRODUCT: FIBER CEMENT SIDING

2.1 MANUFACTURERS

A. Basis of Design:

Walpanel Inc.

www.wallshell.com

B. Substitutions:

1. Not permitted without approval of the architect.
2. Items being submitted for consideration must be of the same function and meet the performance requirements set forth in this section.

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

1. Product Data:

Submit product data including testing performed by a qualified agency indicating compliance with performance requirements specified in this section.

2. Samples:

Submit two samples 150x200 mm of each proposed product substitution.
Submit two samples 150x200 mm of each proposed finish substitution.

2.2 PERFORMANCE CRITERIA

A. Flexural Strength:

Panel Thickness	10mm	12mm	15mm
Equilibrium Conditioning	3292.4psi (22.7MPa)	3089.3psi (21.3MPa)	2799.2psi (19.3MPa)
Wet Conditioning	2378.6psi (16.4MPa)	2320.6psi (16.0MPa)	2233.6psi (15.4MPa)

B. Comply with ASTM C1186:

1. Density: 1.55 g/cm³
2. Moisture Content: 6.6%
3. Water Absorption before treated: 14.9%
4. Water Absorption after treated: less than 0.5%
5. Moisture Movement: 0.07%
6. Thickness, Square and Straightness Tolerance: Pass
7. Freeze-Thaw: Pass (No damage or defects observed)
8. Water Tightness: No visible droplets or surface wetting

9. Warm Water: Pass (No evidence of cracking, delamination, swelling, or other defects)
10. Heat-Rain: Pass (No crazing, cracking, or other deleterious effects, surface or joint changes observed in any specimen)

C. Fire Resistance:

Must pass fire test in compliance with NFPA 285.

Must be Class A according to ASTM E84.

D. Combustion Characteristics Temperature Rise:

Must pass noncombustible test according to ASTM E136.

E. Allowable Wind Load:

Positive: 63 psf (3016 Pa); Negative: 70 psf (3367 Pa) according to ASTM E330

F. Allowable Transverse Load per Single Fastener:

Negative: 361 N (81 lbf); Shear: 511 N (115 lbf) according to ASTM C1354.

2.3 CLADDING PANEL ASSEMBLY**A. Panel:**

Wallshell U-Shield panel (fiber cement panel)

1. Thickness:

10 mm; 12 mm;

2. Height x Width:

Façade Panel:

500 x 1500 mm; 500 x 1700 mm 500 x 1800 mm 500 x 2000 mm

600 x 1500 mm; 600 x 1700 mm 600 x 1800 mm 600 x 2000 mm

700 x 1500 mm; 700 x 1700 mm 700 x 1800 mm 700 x 2000 mm

600 x 2400 mm

Louvre Panel:

2400 x 100 mm.

3. Dimensional tolerance:

max. 2.0 mm per 1200 mm width;

max. 1.0 mm per 600 mm height.

4. Unit weight:

16.40 kg/m² for 10 mm thickness panel

19.70 kg/m² for 12 mm thickness panel

5. Material:

Fiber cement panels are manufactured from a high-pressed, stamped, and autoclaved mix of cement, quartz powder and wood fiber bundle.

B. Finish:

1. Finish texture:

The following finish texture must be available for architect's selection:
Semi-gloss, satin, matte, fabric, metallic, bush-hammered, flamed.

2. Finish color:

Standard finish colors selected by architect from manufacturer's color catalog;
Customized finish colors provided by architect.

C. Installation System:

1. Metal extrusion panel supports:

Metal extrusion supports of panel are specified by the panel manufacturer or designed and specified by licensed professional engineer.

2. Panel anchoring: Wallshell CG anchoring system

- a. Concealed Undercut
- b. H-profile clip, J-profile clip and G-profile clip
- c. Alignment Adjuster
- d. Clip anchor

3. Supporting sub-frames or extrusions:

- a. Hat/Z-profile vertical extrusions
- b. Hat-profile horizontal supporting rails
- c. Extrusion fasteners

4. Accessories:

- a. Wallshell edge sealant and coat touch up.
- b. Aluminum Ventilation rail.
- c. Aluminum Capping rail.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrate to receive the work of this section to verify that the conditions are acceptable for installation.

1. Substrate to receive panels shall be even, smooth, sound, clean, dry, and free from defects detrimental to work. Notify contractor in writing of conditions detrimental to proper and timely completion of the work.
2. Substrate thermal control, water control and vapor control are installed and acceptable per examination.
3. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of rear ventilated rain screen cladding.
4. Prior to panel installation verify horizontal panel support sub-frame compliance with Design and Installation Manual.

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- B. Proceed with installation only after all unsatisfactory conditions have been corrected in a manner acceptable to installer. Starting work within a particular area will be construed as installer's acceptance of surface conditions.

3.2 PREPARATION

- A. Verify dimensions and locations against as-built drawings as required.
- B. Protect adjacent work areas and finished surfaces to prevent damage that otherwise might occur during the work of this section.

3.3 INSTALLATION

- A. U-Shield panel assembly shall be installed in accordance with the manufacturer's *U-Shield Panel System Installation Manual* and the approved set of shop drawings.
- B. Erect U-Shield panel assembly level and true to the intended plane.
- C. Seal all the on-site cuts on the panels using manufacturer provided panel edge sealant and touchup coating.
- D. Installation Tolerance: Max tolerance of error 0.5‰ horizontally and 0.4‰ vertically.

3.4 CLEANING

- A. Remove panel masking immediately within 40 days after installation. Delay will result in difficulty with removal and possibly residue on the panel surface.
- B. Remove temporary coverings and protection to adjacent work areas.
- C. Remove and legally dispose of construction debris from project site.

END OF SECTION