1. Section 074226.13
Porcelain Tile Rainscreen Wall Panels
2. **TIPS:**
3. This document includes **Specifier/Editor Notes** in hidden text. To view non-printing notes, turn on Hidden Text display option.
4. Revise this Section by adding, changing, and deleting text to meet Project-specific requirements.
5. **DISCLAIMER:**
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	1. PART 1  GENERAL
		1. Section Includes
			1. Porcelain tile rainscreen system.
		2. Related Requirements

Coordinate list of sections with project requirements.

* + - 1. Section 072100 - Thermal Insulation:  Board insulation.
			2. Section 072500 - Weather Barriers:  Water-resistive barrier applied on wall substrate.
			3. Section 072700 - Air Barriers:  Air barrier applied on wall substrate.
			4. Section 076200 - Sheet Metal Flashing and Trim:  Flashings, trims, and other sheet metal fabrications.
		1. Reference Standards
			1. ANSI A137.1 - American National Standard Specifications for Ceramic Tile.
			2. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures.
			3. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
			4. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
			5. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
			6. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).
			7. ASTM C373 - Standard Test Methods for Determination of Water Absorption and Associated Properties by Vacuum Method for Pressed Ceramic Tiles and Glass Tiles and Boil Method for Extruded Ceramic Tiles and Non-tile Fired Ceramic Whiteware Products.
			8. ASTM C485 - Standard Test Method for Measuring Warpage of Ceramic Tile.
			9. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
			10. ASTM C648 - Standard Test Method for Breaking Strength of Ceramic Tile.
			11. ASTM C1026 - Standard Test Method for Measuring the Resistance of Ceramic and Glass Tile to Freeze-Thaw Cycling.
			12. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
			13. ASTM E136 - Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 Degrees C.
			14. ICC-ES AC504 - Façade and Wall Cladding Systems with Porcelain, Ceramic or Terra Cotta Panels.
			15. ICC-ES ESR-4555 - Evaluation Report for XTONE Porcelain Facade System.
		2. Administrative Requirements
			1. Coordination:
				1. Coordinate panel installation with adjoining work, including weather barrier, insulation, water drainage, flashings, trims, back-up wall, and soffits.
				2. Coordinate training requirements with manufacturer.
			2. Preinstallation Meeting:  Conduct preinstallation meeting two weeks before starting work of this section.
				1. Attendees:  Contractor, ​Architect​, ​Owner​, Installer, wall panel Manufacturer's Representative, and other affected installers of adjacent systems.
				2. Review storage and handling procedures.
				3. Review installation details and manufacturer’s written instructions.
				4. Review flashings, wall penetrations, openings, and conditions of adjacent construction.
				5. Review protection and repair procedures.
		3. Submittals
			1. See Section 013000 - Administrative Requirements for submittal procedures.
			2. Product Data:  Manufacturer's data sheets on each product. Include the following:
				1. Physical characteristics of components shown on shop drawings.
				2. Storage and handling requirements and recommendations.
				3. Installation instructions and recommendations.
			3. Shop Drawings:  Indicate dimensions, layout, joints, trims, flashings, construction details, and methods of anchorage.
				1. Indicate substrates and adjacent work with which the wall panel system must be coordinated.
				2. Include design engineer's stamp or seal on shop drawings for attachments and anchors.
			4. Verification Samples:  For each finish product specified, submit at least ​[**three**]​ <**Insert Number**>samples, minimum size ​[**3 15/16-inch by 7 7/8-inch (100 mm by 200 mm)**​] ​[**9 13/16-inch by 11 13/16-inch (250 mm by 300 mm)**​] square, and representing range of color and texture.
			5. Manufacturer's qualification statement.
			6. Installer's qualification statement.
			7. Sustainable Design Submittal:  Manufacturer’s certification indicating percentage of recycled content in system components.
			8. Executed warranty.
			9. Specimen warranty.
		4. Quality Assurance
			1. Design Engineer's Qualifications:  Design structural supports and anchorages under direct supervision of a Structural Engineer experienced in design of this type of work and licensed in ​the State in which the Project is located​.
			2. Manufacturer Qualifications:  Company specializing in manufacturing products specified in this section with minimum [**five**] <**Insert Number**>years of documented experience.
			3. Installer Qualifications:  Company specializing in installing products of type specified within this section with minimum [**five**] <**Insert Number**>years of documented experience, and having successfully completed manufacturer training.
			4. Single Source Responsibility:  Provide panels, attachment system, fasteners, sealants, anchors and accessories from a single source.

Retain article below if mock-ups are required. Edit to suit project requirements.

* + 1. Mock-Ups
			1. Construct mock-up, one bay wide by one bay high with a minimum area of 50 square feet. Include wall panel system components, attachments to supporting substrate, associated air and water-resistive barriers, flashings, trims, sealants, and insulation.
			2. Do not proceed with wall panel system work until Architect approves mock-up.
			3. Locate where directed by Architect.
			4. Mock-up may remain as part of work.
		2. Delivery, Storage, and Handling
			1. Deliver system and other components so they will not be damaged or deformed.  Package system for protection against damage during transportation or handling.
			2. Exercise care in unloading, storing, and erecting wall system to prevent bending, twisting, and surface damage.
			3. Store panels and other components in dry location on platforms or pallets, covered with tarpaulins or other suitable weathertight and ventilated covering. Handle in manner preventing chipping, breakage, and staining.
		3. Field Conditions
			1. Do not install panels when air temperature, relative humidity, or forecasted weather conditions are outside manufacturer's limits.
			2. Field Measurements:  Verify actual dimensions by field measurement before fabrication. Show recorded measurements on shop drawings.
		4. Warranty
			1. Manufacturer Warranty:  Provide 10-year manufacturer warranty for materials. Complete forms in Owner's name and register with manufacturer.
			2. Installer Warranty:  Provide 2-year warranty for rainscreen installation commencing on Date of Substantial Completion. Complete forms in Owner's name and register with installer.
	1. PART 2 PRODUCTS
		1. Manufacturers
			1. Porcelanosa USA; XTONE Porcelain Facade System:  www.porcelanosa-usa.com.
			2. Substitutions:  Not permitted.
		2. PORCELAIN Tile Rainscreen System
			1. Description:  Non load-bearing, exterior rainscreen panel system, site-assembled; complying with ICC-ES AC504​​.

The Evaluation Report listed below is specific to this product and manufacturer. Consult manufacturer for most current versions.

* + - * 1. Evaluation Report:  ICC-ES ESR-4555
			1. System Performance Requirements:
				1. Design and size components to support assembly dead loads and withstand live loads caused by positive and negative wind pressure acting normally to plane of wall.
				2. Structural Performance:

Design Wind Loads:  Comply with ASCE 7.

Maximum Allowable Deflection of Panel:  ​L/360 for length of span.

* + - * 1. Combustibility: Non-combustible, when tested in accordance with ASTM E136.
				2. Movement:

Accommodate movement within system and deflection of structural support framing without damage to components.

Accommodate movement between system and perimeter components when subject to seasonal temperature cycling, dynamic loading, release of loads, and support framing deflection.

* + - * 1. Drainage:  Provide positive drainage to exterior for moisture entering system and condensation occurring within system.
			1. Porcelain Tile Panels:  Porcelain panels with factory-laminated safety mesh backing.
				1. Performance Requirements:

Grade:  ANSI A137.1.

Surface Burning Characteristics:  Flame spread and smoke developed index of 0, when tested in accordance with ASTM E84.

Flammability:  Noncombustible, when tested in accordance with ASTM E136.

Breaking Strength:  Able to withstand minimum 250 lbf (1112.06 N) without breakage, when tested in accordance with ASTM C648.

Moisture Absorption:  0 to 0.5 percent when tested in accordance with ASTM C373.

Warpage:  Maximum 1 percent along edges and maximum 0.75 percent on diagonals when tested in accordance with ASTM C485.

Freeze-Thaw Resistance:  No damage when tested in accordance with ASTM C1026.

* + - * 1. Panel Size:  [**As indicated on drawings**] <**Insert Size**>.
				2. Thickness: ​1/2 inch (12 mm)​.
				3. Outside Corners: [**Typical**] [**Recessed**] [**Mitered**].
				4. Typical Joint Dimension:  ​[**0.39 inches (10 mm)**] <**Insert Dimension**>​, except where larger joints are required to accommodate movement.

Refer to website for applicable colors and finishes.

* + - * 1. Color and Surface Finish: [**As indicated on drawings**] [**As selected by Architect from manufacturer's full range**] <**Insert Requirement**>.
			1. Aluminum Support System:  Manufacturer's engineered support system consisting of brackets, profiles, rails, and clips.
				1. Omega Profiles: Horizontal extruded aluminum profiles for attachment to structural stud back-up.
				2. Thermal Isolator:  Thermoplastic thermal insulation gasket at base of brackets, with 1/8 inch (3 mm) nominal thickness.
				3. Brackets:  Extruded aluminum angles, allowing for field rail adjustment and alignment.
				4. Vertical Rails: Extruded aluminum profiles with0.106-inch (2.7 mm) minimum thickness for attachment to brackets.

L Rail:  2-3/8-inch (60 mm) long leg, and 1-9/16-inch (40 mm) short leg.

T Rail:  ​2-3/8-inch (60 mm)​ long leg, and ​[**2-3/8-inch (60 mm)**] [**3-15/16-inch (100 mm)**]​ wide face.

* + - * 1. Horizontal Cladding Support Rails: Extruded aluminum c-shaped profiles with 0.106-inch (2.7 mm) 0.094 inch (2.4 mm) minimum thickness for attachment to vertical rails.

Size:  [**1 inch (25 mm)**] [**2 inch (50 mm)**].

* + - * 1. Clips:  Extruded aluminum fixed clips for attaching panels to supports.
			1. Flashings and Trim: Brake-formed [**prefinished galvanized steel**] [**prefinished aluminum**] [**stainless steel**].
		1. Materials
			1. Aluminum:  ASTM B209/B209M, 6063 alloy, T6 temper.
			2. Extruded Aluminum:  Comply with ASTM B221 and ASTM B221M.
			3. Stainless Steel:  Comply with ASTM A666, ​type 304​.
			4. Insulation: Mineral fiber board complying with ASTM C612 with flame spread index of 25 and smoke developed index 450, maximum, when tested in accordance with ASTM E84.
				1. Fiber Color:  Natural, except provide darkened surface where visible through cladding joints.
				2. Density:  [**4 pcf (64 kg/cu m)**] <**Insert Density**>, nominal.
				3. Thickness:  ​[**2 inch (50mm)**] <**Insert Thickness**>​.
				4. Thermal Resistance:  R-value (RSI-value) of ​[**8.4**] <**Insert Value**>​.
		2. Accessories
			1. Sealants:  As recommended by panel manufacturer. Do not use sealants capable of staining or damaging panels.
			2. Bituminous Paint:  Asphalt based.
			3. Wall Anchors: [**Galvanized steel**] [**or**] [**Stainless steel**].
			4. Fasteners:  As recommended by system manufacturer.
	1. PART 3  EXECUTION
		1. Examination
			1. Examine support conditions for compliance with requirements, including tolerances and attachment to structural back-up.
			2. Report unsatisfactory conditions to ​Architect​. Correct unsatisfactory conditions before starting work.
		2. Installation
			1. Support System:  Securely fasten. Shim and level to uniform plane.
				1. Spacing:  As indicated on approved shop drawings, but not exceeding [**24 inches (610 mm)**] <**Insert Spacing**> on center.
			2. Install panels in accordance with manufacturer's instructions. Ensure adjoining surfaces are in plane with each other.
			3. Fasten panels aligned, level, and plumb to structural supports.
			4. Locate joints over supports.
			5. Do not use exposed fasteners.
		3. Tolerances
			1. Offset from True Alignment between Adjacent Members, Abutting or In-Line:  1/16 inch (1.6 mm), maximum.
			2. Variation from Plane or Location as Indicated on Drawings:  [**1/8 inch (3.2)**] [**1/4 inch (6.4 mm)**], maximum.
		4. Cleaning
			1. Clean exposed surfaces in accordance with manufacturer's instructions.
		5. Protection
			1. Protect wall panels from subsequent construction operations.
			2. Touch-up, repair, or replace damaged wall panels and accessories in manner indistinguishable from undamaged components.
1. END OF SECTION