1. Section 074243
COMPOSITE 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. Composite wall panel 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. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures.
			2. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
			3. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
			4. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
			5. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).
			6. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
			7. ASTM D638 – Standard Test Method for Tensile Properties of Plastics.
			8. ASTM D790 – Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
			9. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
			10. ASTM G155 – Standard Practice for Operating Xenon Arc Lamp Apparatus for Exposure of Materials.
			11. ASTM G21 – Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
			12. ASTM G22 – Standard Practice for Determining Resistance of Plastics to Bacteria.
		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 11-inch by 11-inch (280 mm by 280 mm)​ square, and representing range of surface finish, color, and texture.
			5. Manufacturer's qualification statement.
			6. Installer's qualification statement.
			7. Sustainable Design Submittal:
				1. Manufacturer’s certification indicating percentage of recycled content in system components.
				2. Manufacturer’s Environmental Product Declaration (EPD).
			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 staining, scratching, or other surface damage.
		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; KRION® Solid Surface Cladding System:  www.krion.com.
			2. Substitutions:  Not permitted.
		2. WALL PANEL System
			1. System Description: Provide factory-fabricated wall panels, engineered support system, components and accessories required for complete installation.
		3. 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:
				1. Design Wind Loads:  Comply with ASCE 7 <**Insert Requirement**>.
				2. Maximum Allowable Deflection of Panel:  ​L/360 for length of span.
			3. Movement:
				1. Accommodate movement within system and deflection of structural support framing without damage to components.
				2. Accommodate movement between system and perimeter components when subject to seasonal temperature cycling, dynamic loading, release of loads, and support framing deflection.
				3. Allow for thermal movements from ambient and surface temperature changes by preventing buckling, failure of connections and components and other detrimental effects.

Temperature Range: Minus 40 degrees F (Minus 40 degrees C) to 176 degrees F (80 degrees C).

* + - 1. Drainage:  Provide positive drainage to exterior for moisture entering system and condensation occurring within system.
		1. components
			1. Solid Surface Wall Panels:  Solid, non-porous, homogeneous material made of acrylic polymers, natural minerals, and pigments, with color and pattern consistent throughout thickness.
				1. Performance Requirements:

Surface Burning Characteristics:  Class A, when tested in accordance with ASTM E84.

Flexural Strength: Minimum 8,700 psi (60 MPa), when tested in accordance with ASTM D790.

Tensile Strength: Minimum 5,800 psi (40 MPa), when tested in accordance with ASTM D638.

UV Resistance: No cracking, checking, or erosion, when tested for 2000 hours in accordance with ASTM G155.

Fungi and Bacteria Resistance: No proliferation when tested in accordance with ASTM G21 and ASTM G22.

* + - * 1. Panel Size:  [**As indicated on drawings**] <**Insert Size**>.
				2. Thickness: 1/2-inch (12 mm)​.
				3. Joint: [**Butt Joint**] [**Standard Joint**] [**45 Degree Joint**] [**45 Degree Straight Joint**].
				4. Outside Corners: [**Typical**] [**Radius**].

Radii dimensions range from 50 mm (minimum) to 200 mm (maximum).

Radius Dimension: ​[**2 inches (50 mm)**] ​[**7.87 inches (200 mm)**] <**Insert Dimension**>​.

* + - * 1. Typical [**Joint**] [**Reveal**] Dimension:  ​[**0.31 inches (8 mm)**] <**Insert Dimension**>​, except where larger joints are required to accommodate movement.

Refer to website for applicable colors.

* + - * 1. Color: [**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. FABRICATION
			1. Fabricate wall panels and accessories in factory to greatest extent possible and in accordance with manufacturer's requirements and approved submittals.
			2. Fabricate panels to size, with all anchor holes factory-drilled by the panel manufacturer.
			3. Fabricate panels with sharply cut edges.
			4. Fabrication Tolerances:
				1. Length and Width: Plus or minus 1/8-inch (3 mm) up to 48 inches; plus or minus 3/16-inch (5 mm) for more than 48 inches.
				2. Diagonal: Plus or minus 3/16-inch (5 mm).
		3. Accessories
			1. Wall Anchors: [**Galvanized steel**] [**or**] [**Stainless steel**].
			2. 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. PREPARATION
			1. Clean dirt, marks, stains and other surface blemishes from panel surfaces according to manufacturer’s instructions immediately before installation.
		3. 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 flashings as indicated on shop drawings. At flashing butt joints, provide a lap strap under flashing and seal lapped surfaces with a full bed of non-hardening sealant.
			3. Install panels in accordance with manufacturer's instructions. Ensure adjoining surfaces are in plane with each other.
			4. Fasten panels aligned, level, and plumb to structural supports.
			5. Where factory fabrication is not feasible, site fabricate panels in accordance with panel manufacturer’s written recommendations.
			6. Do not use exposed fasteners.
		4. Tolerances
			1. Offset from True Alignment between Adjacent Members, Abutting or In-Line:  [**1/16 inch (1.6 mm)**] [**1/8 inch (3.2)**], maximum.
			2. Variation from Plane or Location as Indicated on Drawings:  [**1/8 inch (3.2)**] [**1/4 inch (6.4 mm)**], maximum.
		5. Cleaning
			1. Clean exposed surfaces in accordance with manufacturer's instructions.
		6. 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