SECTION 07 42 14

INSULATED METAL WALL PANELS

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\*\* NOTE TO SPECIFIER \*\* CENTRIA; commercial wall and roof metal panel systems.
This section is based on the products of CENTRIA, which is located at:700 State Hwy. 121 , Suite 200Lewisville, TX 75067Toll Free Tel: 800-759-7474Email: [request info (info@centria.com)](https://arcat.com/rfi?action=email&company=CENTRIA&message=RE%253A%2520Spec%2520Question%2520(07412cas)%253A%2520&coid=31330&spec=07412cas&rep=&fax=)
Web: <https://www.centria.com>
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CENTRIA Formawall Dimension Series Factory-Foamed Panel System
CENTRIA Formawall Factory Foamed Panel System can be oriented horizontally or vertically with a variety of reveals, thicknesses and profile configurations, providing design flexibility and options. Formawall can be easily curved or formed; mitering permits clean, sharp corners for exterior walls, and beams. Formawall panels are available with a flat or striated face that is either embossed or smooth, and with Kynar-based finishes, CENTRIA's Duracast natural aggregate-textured finishes, as well as stainless steel finishes. For additional articulation two profiled shapes are available..
Concealed clips and fasteners plus dry gaskets and concealed sealants provide a clean, uninterrupted appearance while minimizing exterior dirt streaking and staining. Formawall profiled and flat panels integrate with CENTRIA Formavue window systems and most glass wall and window systems. Formawall panels feature a complete thermal break between the face and liner panels. Pressure equalized Rainscreen Principle horizontal joinery provides superior weather resistance. The Formawall Dimension Series Panel System also offers integrated louvers and sun screen units.
A separate guide specification section is available for Formawall systems that include integrated units.
We recommend you consult with your regional CENTRIA architectural representative.
CENTRIA is a world leader in the manufacture of metal building products and systems for nonresidential walls and roofs and electrical cellular floor systems. CENTRIA is also a world-class coil coater, coating a wide range of products for customers in numerous industries.

1. GENERAL
	1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Foamed insulation core horizontal and vertical metal wall panel assembly with integral reveals and profiled panels, and related trim and accessories.

\*\* NOTE TO SPECIFIER \*\* Include below if secondary metal support system is required for project.

* + 1. Secondary metal framing support system.

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* 1. RELATED SECTIONS
		1. Section 05 40 00 - Cold-Formed Metal Framing.
		2. Section 07 60 00 - Flashing and Sheet Metal.
		3. Section 07 91 23 - Backer Rods.
		4. Section 08 83 13 - Mirrored Glass Glazing.

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* 1. REFERENCES
		1. American Architectural Manufacturer's Association (AAMA):
			1. AAMA 501.1 - Standard Test Method for Exterior Windows, Curtain Walls and Doors for Water Penetration Using Dynamic Pressure.
			2. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls and Sloped Glazing Systems.
			3. AAMA 508-07 - Voluntary Test Method and Specification for Pressure Equalized Rain Screen Wall Cladding Systems.
			4. AAMA 605.2 - Voluntary Specification for High Performance Organic Coatings.
			5. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
		2. American Society of Civil Engineers (ASCE):
			1. ASCE 7- Minimum Design Loads for Buildings and Other Structures.
		3. ASTM International (ASTM):
			1. ASTM A 653 - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
			2. ASTM A 666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
			3. ASTM A 755 - Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
			4. ASTM B 117 - Standard Practice for Operating Salt Spray (Fog) Apparatus.
			5. ASTM B 209 - Specification for Aluminum and Aluminum Alloy Sheet and Plate.
			6. ASTM C 209 - Standard Test Methods for Cellulosic Fiber Insulating Board.
			7. ASTM C 645 - Specification for Nonstructural Steel Framing Members.
			8. ASTM C 754 - Specification for Installation of Steel Framing Members to Receive Screw Attached Gypsum Panel Products.
			9. ASTM C 920 - Specification for Elastomeric Joint Sealants.
			10. ASTM C 1363 - Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus.
			11. ASTM D 968 - Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive.
			12. ASTM D 3359 - Standard Test Methods for Measuring Adhesion by Tape Tests.
			13. ASTM D 4585 - Standard Practice for Testing Water Resistance of Coatings Using Controlled Condensation.
			14. ASTM D 4587 - Standard Practice for Fluorescent UV-Condensation Exposures of Paint and Related Coatings
			15. ASTM E 72 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction.
			16. ASTM E 84 - Test Methods for Surface Burning Characteristics of Building Materials.
			17. ASTM E 119 - Test Methods for Fire Tests of Building Construction and Materials.
			18. ASTM E 283 - Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors under Specified Pressure Differences across the Specimen.
			19. ASTM E 329 - Standard Specification for Agencies Engaged in Construction Inspection and/or Testing.
			20. ASTM E 331 - Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
			21. ASTM E 1886 - Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
			22. ASTM E 1996 - Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.
		4. Factory Mutual Global (FMG):
			1. ANSI/FMG 4880 Standard for Evaluating Insulated Wall and Roof/Ceiling Assemblies.
		5. National Fire Protection Association (NFPA):
			1. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components.
			2. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.
		6. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA):
			1. Architectural Sheet Metal Manual.
		7. Underwriters Laboratories, Inc. (UL):
			1. UL 263 - Fire Resistance Tests of Building Construction and Materials.
			2. UL 723 - Test for Surface Burning Characteristics of Building Materials.
			3. UL 1040 - Fire Test of Insulated Wall Construction.
			4. UL 1715 Room Corner Test.
			5. Fire Resistance Directory.
	2. DEFINITIONS

\*\* NOTE TO SPECIFIER \*\* Retain definition below for Projects incorporating innovative sustainability goals. C2C certification described in paragraph below is a comprehensive sustainability certification that transcends LEED requirements to address life cycle analysis of entire production cycle of building products. CENTRIA and a number of leading product manufacturers have aligned their manufacturing and distribution practices with C2C core principles.

* + 1. Cradle to Cradle Certification: The Cradle to Cradle Certification process, administered by McDonough Braungart Design Chemistry (MBDC), http://www.c2ccertified.com, that evaluates materials and product ingredients and the complete formulation for human and environmental health impacts throughout its lifecycle as well as its potential for being truly recycled or safely composted.
		2. Pressure-Equalized Rainscreen Design: As defined by AAMA 508-07.
	1. PERFORMANCE REQUIREMENTS
		1. General: Provide metal wall panel system meeting performance requirements as determined by application of specified tests by a qualified testing agency on manufacturer's standard assemblies.
		2. Air Infiltration: Maximum 0.06 cfm/sq. ft. (0.3 L/s per sq. m) per ASTM E 283 at a static-air-pressure difference of 6.24 lbf/sq. ft. (300 Pa), using minimum 10-by-10 foot (3050-by-3050 mm) test panel that includes horizontal and vertical joints.
		3. Water Penetration, Static Pressure: No uncontrolled water penetration per ASTM E 331 at a minimum static differential pressure of 15 lbf/sq. ft. (718 Pa), using minimum 10-by-10 foot (3050-by-3050 mm) test panel that includes horizontal and vertical joints.
		4. Water Penetration, Dynamic Pressure: No uncontrolled water penetration per AAMA 501.1 at a minimum static differential pressure of 15 lbf/sq. ft. (718 Pa), using minimum 10-by-10 foot (3050-by-3050 mm) test panel that includes horizontal and vertical joints.
		5. System Performance: A 3rd party test report utilizing the standard ASTM E 283, E 331 and AAMA 501 procedures following the test protocol described in AAMA 508-07 shall be submitted to Architect prior to award. Test panel shall include a horizontal joint, with an imperfect air barrier.
			1. Bidders supplying panel systems that have not successfully passed AAMA 508-07 shall provide a backup system that meets the air and water infiltration values specified.

\*\* NOTE TO SPECIFIER \*\* For projects requiring inclusion of products that have not been tested under AAMA 508-07, include paragraph below requiring provision of a separate, tested air and water barrier membrane. Delete if not required.

* + - 1. System Performance, Alternate Configuration: Meet performance requirements utilizing separate air and water barrier membrane on rigid backup.
		1. Water Absorption: Maximum 1.0 percent absorption rate by volume when tested according to ASTM C 209.
		2. Structural Performance: Provide metal wall panel assemblies capable of withstanding the effects of indicated loads and stresses within limits and under conditions indicated, per ASTM E 72:

\*\* NOTE TO SPECIFIER \*\* Consult structural engineer and edit below as required by local codes. Insert structural data below if not indicated on drawings.

* + - 1. Wind Loads: Determine loads based on uniform pressure, importance factor, exposure category, and basic wind speed indicated on drawings.
			2. Limits of Deflection: Composite wall panel system shall withstand scheduled wind pressure with the following allowable deflection:
				1. Maximum allowable deflection limited to L/175 deflection of panel perimeter normal to plane of wall with no evidence of failure.
			3. Secondary Metal Framing: Design secondary metal framing according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions." Provide minimum 3 inches (76 mm) wide bearing surface for metal wall panels at the following locations:
				1. Horizontal Panel System: At vertical joints.
				2. Vertical Panel System: At horizontal stack joints.

\*\* NOTE TO SPECIFIER \*\* Coordinate information for Project wind zone, or delete subparagraph if not applicable. Consult CENTRIA for additional documentation available if required by authorities having jurisdiction, including State of Florida Product Approval and Miami Dade County Notice of Acceptance.

* + - 1. Windborne-Debris-Impact-Resistance Performance: Pass missile-impact and cyclic-pressure tests per ASTM E 1886 and ASTM E 1996 for Wind Zone indicated on Drawings.
				1. Large-Missile Test: For curtainwall located within 30 feet (9.1 m) of grade.
				2. Small-Missile Test: For curtainwall located more than 30 feet (9.1 m) above grade.
			2. Seismic Performance: Comply with ASCE 7 Section 9, "Earthquake Loads."
		1. Thermal Movements: Allow for thermal movements from variations in both ambient and internal temperatures. Accommodate movement of support structure caused by thermal expansion and contraction.
		2. Thermal Performance: Thermal-resistance (R) value indicated, per ASTM C 1363, with the following conditions:
			1. 15 mph (24.1 km/h) exterior wind speed and still air on interior.
			2. Include side joint and standard fastening.
			3. Base R value reported on performance of specified panel, taking into account integral reveals and profiling with resultant reduction in panel insulation thickness.
	1. SUBMITTALS
		1. Product Data: Manufacturer's data sheets for metal wall panels and accessories.
		2. Product Test Reports: Indicating compliance of products with requirements, from a qualified independent testing agency.

\*\* NOTE TO SPECIFIER \*\* Retain applicable paragraphs below for projects intended to be LEED-certified. Verify credits required with project LEED coordinator. For projects required to be "Cradle to Cradle" certified coordinate with the LEED or Sustainable Design Coordinator. Delete if not required.

* + 1. LEED Submittals: Credit MR 4.1/MR4.2, Manufacturer's Product Data indicating the following:
			1. Percentages by weight of post-consumer and pre-consumer recycled content.
			2. Indicate total weight of products provided.
			3. Include statement indicating costs for each product having recycled content.

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Cradle to Cradle Certification: Manufacturer to submit evidence of a minimum of a silver level Cradle-to-Cradle certification or an independent sustainability audit that evaluates and validates materials, material reutilization/design for environment, energy use, water usage and social responsibility of the product and manufacturing process.
		2. Shop Drawings: Prepared by manufacturer or factory trained authorized dealer. Include elevations showing metal wall panels, and details of each condition of installation and attachment. Indicate coordination dimensions related to structural support system elements provided by others.
			1. Include structural data indicating compliance with performance requirements.

\*\* NOTE TO SPECIFIER \*\* Retain paragraphs below when Project requirements include compliance with Federal Buy American provisions. CENTRIA FormaBond complies with requirement.

* + 1. Buy American Act Certification: Submit documentation certifying that products comply with provisions of the Buy American Act 41 U.S.C 10a - 10d.

\*\* NOTE TO SPECIFIER \*\* Retain below when authorities having jurisdiction require certification of high wind design compliance.

* + 1. Dade Country Approval, Miami-Dade County Notice of Acceptance.

\*\* NOTE TO SPECIFIER \*\* Delete selection samples if colors have already been selected.

* + 1. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
		2. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
		3. Qualification Information: For Installer firm, proof of installer's manufacturer trained field supervisor.
		4. Warranty: Submit proposed warranty meeting requirements of this Section.
	1. QUALITY ASSURANCE
		1. Manufacturer/Source: Provide metal wall panel system and panel accessories from a single manufacturer.
		2. Installer Qualifications: Experienced Installer with minimum of 5 successful completed projects of similar materials and scope, approved by manufacturer, and employing workers trained by manufacturer to install specified products.
		3. Calculations supporting structural performance of the wall panels shall be prepared by a professional structural engineer.

\*\* NOTE TO SPECIFIER \*\* Retain paragraph below for metal wall panel assemblies required to be fire-resistance rated per UL design or similar designation. Formawall panels are a component of several UL 1-, 2-, and 3-hour fire-resistance rated wall assemblies, including U017, U617, U040, U645, U605. Delete if not required.

* + 1. Fire Resistance Ratings: Where indicated by design designations, provide metal wall panels tested per ASTM E 119 or UL Standard 263 by a testing and inspecting agency acceptable to authorities having jurisdiction.
		2. Fire Performance Characteristics: Provide metal composite wall systems with the following fire-test characteristics determined by indicated test standard as applied by UL or other testing and inspection agency acceptable to authorities having jurisdiction.
			1. Surface-Burning Characteristics: Provide metal composite wall system panels with the following characteristics when tested per ASTM E 84.
				1. Flame spread index: 25 or less.
				2. Smoke developed index: 450 or less.
			2. Fire Performance of Insulated Wall: Class 1 wall panel per ANSI/FM 4880.
			3. Room Corner Test: NFPA 286 or UL 1715.
			4. Intermediate Scale Multistory Fire Test: Representative mockup tested per NFPA 285.

\*\* NOTE TO SPECIFIER \*\* Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up on a large project might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.

* + 1. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
			1. Finish areas designated by Architect.
			2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
			3. Refinish mock-up area as required to produce acceptable work.
		2. Pre-installation Conference: Conduct conference at Project site in compliance with Division 01 requirements.
	1. DELIVERY, STORAGE, AND HANDLING
		1. Protect metal wall panels during shipping, handling, and storage to prevent staining, denting, or other visible damage. Deliver, unload, store, and erect metal wall panels and accessory items without misshaping panels or exposing panels to surface damage from weather or construction operations.
	2. WARRANTY

\*\* NOTE TO SPECIFIER \*\* Additional warranty terms below are available from CENTRIA.

* + 1. Standard Manufacturer's Warranty: Manufacturer shall warrant for a period of two years that the wall system materials will be free from defects. The wall systems contractor shall warrant for a period of one year that the installation workmanship will be free from defects.
		2. Special Panel Finish Warranty: On manufacturer's standard form, in which manufacturer agrees to repair or replace metal wall panels that evidence deterioration of fluoropolymer finish within 20 years from date of Substantial Completion.
1. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable Manufacturer: CENTRIA, which is located at:700 State Hwy. 121 , Suite 200Lewisville, TX 75067Toll Free Tel: 800-759-7474Email: [request info (info@centria.com)](https://arcat.com/rfi?action=email&company=CENTRIA&message=RE%253A%2520Spec%2520Question%2520(07412cas)%253A%2520&coid=31330&spec=07412cas&rep=&fax=);Web: <https://www.centria.com>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
		2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.
			1. Approval of Comparable Products: Submit the following in accordance with project substitution requirements, within time allowed for substitution review:
				1. Product data, including certified independent test data indicating compliance with requirements. Include detailed data indicating compliance with AAMA 508.07 performance specified in this section.
				2. Samples of each component.
				3. Sample submittal from similar project.
				4. Project references: Minimum of 5 installations not less than 5 years old, with Owner and Architect contact information.
				5. Sample warranty.
			2. Substitutions following award of contract are not allowed except as stipulated in Division 01 General Requirements.
			3. Approved manufacturers shall meet separate requirements of Submittals Article.
	1. FOAMED INSULATION CORE METAL WALL PANELS
		1. Panel System Factory-foamed-in-place horizontal and vertical wall panel system consisting of exterior metal face sheet with interior metal liner panel, bonded to factory foamed-in-place core in thermally-separated profile, utilizing no glues or adhesives, with factory sealed tongue-and-groove and pressure-equalized rainscreen designed horizontal joint, attached to supports using concealed fasteners.

\*\* NOTE TO SPECIFIER \*\* Delete series not required.

* + - 1. Product: CENTRIA, FormaWall Dimension Series 2 (2 inches (51 mm) thick panel).
			2. Product: CENTRIA, FormaWall Dimension Series 3 (3 inches (76 mm) thick panel).
			3. Foamed Insulation Core: Urethane or isocyanurate, density 2.7 lb/cu. ft. min (43.4 kg/cu. m), min compressive strength 20 lb/sq. in. (137.9 kPa), and containing no CFC or HCFC compounds.
			4. Thermal performance of the wall panels shall be based on tests in accordance with ASTM C236 corrected to 15 mph outside and still air inside. Tests shall include side-joint, standard fastening and integral reveals or profiling. Where reveals exceed the standards, the manufacturer shall provide similar testing to document any adjustments required to the standard conditions.

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + - * 1. R value for Series 2 flat panel shall be 14.
				2. R value for Series 2 profile panel shall be 12.
				3. R value for Series 3 flat panel with 1/2 inch (13 mm) reveal shall be 21.
				4. R value for Series 3 T flat panel shall be 22.

\*\* NOTE TO SPECIFIER \*\* Delete panel width not required.

* + - 1. Panel Width: 24 inches (588 mm).
			2. Panel Width: 30 inches (762 mm).
			3. Panel Width: 36 inches (914 mm).
			4. Panel Width: Custom widths indicated.

\*\* NOTE TO SPECIFIER \*\* Describe panel profile by selecting option in subparagraph below, or delete and show profile in drawing details.

* + - 1. Panel Profile: Flat in locations and sizes indicated.
			2. Panel Profile: Profile-faced in locations and sizes indicated.
			3. Panel Profile: Segmented-faced in locations and sizes indicated.
			4. Panel Profile: Steep-sloped joint in locations and sizes indicated.

\*\* NOTE TO SPECIFIER \*\* Retain applicable descriptions for panel profiles in four subparagraphs below. Retain first option in first paragraphs for Series 2 panels and Series 3-T panels, and second option for Series 3 panels.

* + - * 1. Reveals: 1-3/16 inches (30.2 mm) - for 2 inches (51 mm) and 3 inches T (76 mm) deep by width indicated.
				2. Reveals: 2-3/16 inches (55.6 mm) - for 3 inches (76 mm) deep by width indicated.
				3. Profile-faced Panels: As indicated.
				4. Segmented-faced Panels: With intermediate formed joints, as indicated on Drawings.
				5. Panels with Steep Sloped Joint: 45 degree (0.77 rad) sloped joint as indicated.
			1. Panel Sealant/Vapor Seal: Factory-applied non-curing butyl.

\*\* NOTE TO SPECIFIER \*\* Delete material, face thicknesses and surface finish not required.

* + 1. Stainless-Steel Face Sheet: ASTM A 666, Type 304 architectural grade alloy.
			1. Stainless Steel Thickness: 22 gage (0.030 inches (0.76 mm).
			2. Stainless Steel Thickness: 20 gage (0.036 inches (0.91 mm).
			3. Finish: Bright, non-directional polish, No. 2B.
			4. Finish: Brushed, No. 4.
		2. Metallic-Coated Steel Face Sheet: Coil-coated, ASTM A 755/A 755M.
			1. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90, structural quality.
			2. Face Sheet Thickness: 22 gage (0.030 inches (0.76 mm).
			3. Face Sheet Thickness: 20 gage (0.036 inches (0.91 mm).
			4. Face Sheet Thickness: As required to meet performance requirements.
			5. Surface: Smooth.
			6. Surface: Smooth, striated.
			7. Surface: Smooth, variable striated.
			8. Surface: Embossed.
			9. Surface: Embossed, striated.
			10. Surface: Embossed, variable striated.
		3. Aluminum Face Sheet: Smooth surface coil-coated, ASTM B 209, 5052-H32 alloy.
			1. Face Sheet Thickness: 0.040 (1.0 mm) thick.
			2. Surface: Smooth.
			3. Surface: Smooth, striated.
			4. Surface: Smooth, variable striated.
			5. Surface: Embossed.
			6. Surface: Embossed, striated.
			7. Surface: Embossed, variable striated.

\*\* NOTE TO SPECIFIER \*\* Select metallic-coated steel face sheet or aluminum face sheet finish system from options below. AAMA 620 is aluminum sheet finish standard; AAMA 621 is metallic-coated steel sheet finish standard. Delete all finish options if specifying stainless steel face sheet.

* + 1. Exposed Coil-Coated Finish System:
			1. Fluoropolymer Two-Coat System: 0.2-mil primer with 0.8-mil 70 percent PVDF fluoropolymer color coat.
				1. AAMA 620.
				2. AAMA 621.
				3. Basis of Design: CENTRIA Fluorofinish.
			2. Fluoropolymer Two-Coat System: 0.8 mil primer with 0.8 mil 70 percent PVDF fluoropolymer color coat.
				1. AAMA 620.
				2. AAMA 621.
				3. Basis of Design: CENTRIA Duraguard.
			3. Fluoropolymer Three-Coat System: 0.8 mil primer with 0.8 mil 70 percent PVDF fluoropolymer color coat, and a 0.8 mil 70 percent PVDF fluoropolymer clear coat.
				1. AAMA 620.
				2. AAMA 621.
				3. Basis of Design: CENTRIA Duraguard Plus.
			4. Fluoropolymer Two-Coat Mica System: 0.25-mil primer with 0.8-mil 70 percent PVDF fluoropolymer color coat providing a pearlescent appearance.
				1. AAMA 620.
				2. AAMA 621.
				3. Basis of Design: CENTRIA Sundance Mica.
			5. Fluoropolymer Three-Coat Metallic System: 0.2 mil primer with 0.8-mil 70 percent PVDF fluoropolymer color coat containing metal flakes, and a 0.5-mil 70 percent PVDF fluoropolymer clear coat.
				1. AAMA 620.
				2. AAMA 621.
				3. Basis of Design: CENTRIA Sundance AM.

\*\* NOTE TO SPECIFIER \*\* CENTRIA's Duracast textured coat is available with an extended warranty; see Warranty article in Part 1.

* + - 1. Natural Aggregate Texture Coat: 0.2 mil primer with a 0.8 mil low wax polyester and a matching spray applied acrylic and silica aggregate texture coat, displaying continuing film integrity when tested as follows:
				1. QUV Weatherometer: ASTM G 154, 1000 hours, no visible change.
				2. Humidity: ASTM D 4585: 1000 hours at 120 deg. F and condensing humidity, no effect.
				3. Freeze/Thaw: ASTM D 4587: 50 cycles of freeze/thaw with humidity, no effect.
				4. Salt Fog: ASTM B 117: 1000 hours exposure of scribed specimens.
				5. Abrasion: ASTM D 968: 400 liters of falling sand, passed.
				6. Basis of Design: CENTRIA Duracast

\*\* NOTE TO SPECIFIER \*\* The three CENTRIA Versacor systems below are recommended for corrosive and abusive environments. Select system and one of three options for panel interior finish based on exposure and environmental conditions. Consult CENTRIA representative for recommended finish system. Delete finish not required.

* + - 1. Fluoropolymer Two-Coat Corrosion and Abrasion Resistant System: 3.0 mil primer with 0.8 mil 70 percent PVDF fluoropolymer color coat
				1. Interior Finish: 3.0 mil primer and wash coat topcoat.
				2. Interior Finish: 3.0 mil primer and polyester topcoat.
				3. Interior Finish: 3.0 mil primer and urethane topcoat.
				4. Basis of Design: CENTRIA Versacor Ultra PF.
			2. Urethane Two-Coat Corrosion and Abrasion Resistant System: 3.0 mil primer with 1.5 mil urethane color coat.
				1. Interior Finish: 3.0 mil primer and wash coat topcoat.
				2. Interior Finish: 3.0 mil primer and polyester topcoat.
				3. Interior Finish: 3.0 mil primer and urethane topcoat.
				4. Basis of Design: CENTRIA Versacor Ultra TF.
			3. Urethane Two-Coat Plus Corrosion and Abrasion Resistant System: 3.0 mil primer with 3.0 mil urethane color coat.
				1. Interior Finish: 3.0 mil primer and wash coat topcoat.
				2. Interior Finish: 3.0 mil primer and polyester topcoat.
				3. Interior Finish: 3.0 mil primer and urethane topcoat.
				4. Basis of Design: CENTRIA Versacor Ultra HF.
			4. Fluoropolymer Three Coat System: 0.2 mil primer with a 0.5 mil polyester base coat and a 0.8 mil nominal PVDF fluoropolymer top coat providing an iridescent finish.
				1. Basis of Design: CENTRIA KolorShift.
			5. Color: As indicated.
			6. Color: As selected by Architect from manufacturer's standard colors.
			7. Color: Match Architect's custom color.

\*\* NOTE TO SPECIFIER \*\* Select liner sheet thickness option in paragraph below; aluminum-faced panel requires 0.030-inch-thick liner panel.

* + 1. Metallic-Coated Steel Liner Sheet: Coil-coated, ASTM A 755/A 755M.
			1. Thickness: 0.019 inch/26 gage (0.48 mm) thick.
			2. Thickness: 0.024 inch/24 gage (0.60 mm) thick.
			3. Thickness: 0.030 inch/22 gage (0.76 mm) thick.
			4. Thickness: 0.036 inch/20 gage (0.91 mm) thick.
			5. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90, structural quality.

\*\* NOTE TO SPECIFIER \*\* Confirm that selected finish option below is available in desired metal thickness above.

* + - 1. Surface: Smooth planked.
			2. Surface: Embossed planked.
			3. Surface: Embossed flat.
			4. Interior Liner Panel Finish: 0.2 mil primer with 0.6 mil acrylic color coat.
		1. Exposed Trim and Fasteners: Match panel finish.
	1. METAL WALL PANEL FABRICATION
		1. Foamed-Insulation-Core Metal Wall Panels: Factory-foamed-in-place horizontal and vertical wall panel system consisting of an exterior metal face sheet with interior metal liner panel, bonded to factory foamed-in-place core in thermally-separated profile, with no glues or adhesives, and with factory-sealed tongue-and-groove and rainscreen-designed pressure-equalized horizontal joint, configured with weep-hole-vented chamber to maintain equalized atmospheric pressure reducing potential for moisture drive into wall assembly, attached to supports using concealed fasteners.
			1. Exclusions: The following panel types do not meet the requirements of this Section:
				1. Laminated panels.
				2. Barrier wall-designed systems.
				3. Systems relying upon field-installed gaskets or wet seals to meet performance requirements.
			2. Horizontal Joints: Horizontal joints with positive drip edge, sloped drain shelf and integral venting to the exterior along the panel length to permit moisture drainage and to allow air to enter the pressure equalization chamber. Joint shall have a 2-3/8 inches (60 mm) baffle interlock to provide effective rain screen and pressure equalized performance.
			3. Vertical Joint: Vertical joints for insulated metal panels shall be gasketed, exposed wet seals are not permitted. Outer wings of gasket shall compress against the metal return flange (trimless end) of the panel face. A continuous back-up flash behind the vertical joint is required with two beads of field applied non-curing butyl sealant between the panel and back up flashing for each panel. The vertical joint shall be designed to allow moisture to be drained from the panel's horizontal joint. No sealant is to be applied to the ends of the horizontal joint at the vertical joint location.
			4. Panel Ends: Factory formed trimless ends, tabbed under panel horizontal shelf.
	2. METAL WALL PANEL ACCESSORIES
		1. Metal Wall Panel Accessories, General: Provide complete metal wall panel assembly incorporating trim, copings, fasciae, parapet caps, soffits, sills, inside and outside corners, and miscellaneous flashings. Provide manufacturer's factory-formed clips, shims, flashings, gaskets, lap tapes, closure strips, and caps for a complete installation. Fabricate accessories in accordance with SMACNA Manual.
		2. Formed Flashing and Trim: Match material, thickness, and color of metal wall panel face sheets.
		3. Extrusion Trim: Provide manufacturer-provided extruded trim for the following locations and as indicated on Drawings:
			1. Base trim.
			2. Coping.
			3. Panel installation perimeter.
			4. Opening perimeters.

\*\* NOTE TO SPECIFIER \*\* Retain paragraph below when specifying CENTRIA Formawall PE system with pressure equalization. Below provides a second line of defense against water intrusion.

* + 1. Vertical Joint Seal Plate: Extruded aluminum seal plate with combination neoprene gasket and non-curing butyl dual seal forming pressure-equalized vented chamber permitting moisture to drain to exterior. Seal plate capable of transferring panel loads to vertical supports. Resultant vertical panel joint shall meet performance requirements.
			1. Performance: Vertical joint design shall effectively demonstrate pressure equalization and be evaluated in accordance with ASTM E 283-04 and ASTM E 331-00. A third party test indicating the successful passing of these tests and noting effective pressure equalization shall be submitted prior to award.
		2. Sealants: Type recommended by metal wall panel system manufacturer for application, meeting requirements of Section Joint Sealants.
		3. Flashing Tape: 4 inches (102 mm) wide self-adhering butyl flashing tape.
		4. Panel Attachment Clips: Concealed G-90 galvanized steel clip configured to prevent overdriving of fastener and crushing of foam core, with panel fasteners engaging both face and liner elements and mechanically attaching to panel supports.
		5. Fasteners: Self-tapping screws, bolts, nuts, and other acceptable fasteners recommended by panel manufacturer. Where exposed fasteners cannot be avoided, supply corrosion-resistant fasteners with heads matching color of metal wall panels by means factory-applied coating.
	1. SECONDARY METAL FRAMING
		1. Miscellaneous Framing Components, General: Cold-formed metallic-coated steel sheet, ASTM C 645, Grade 50, with ASTM A 653/A 653M, G90 (Z180) hot-dip galvanized zinc coating.
		2. Subgirts: C- or Z- shaped sections, 0.064-inch (1.63-mm) minimum.
		3. Sill Channels: 0.064-inch (1.63-mm) minimum.
		4. Hat Channels: 0.040 inch (1.02 mm) minimum.
1. EXECUTION
	1. EXAMINATION
		1. Examine metal wall panel supports, substrates, and conditions for compliance with requirements for installation tolerances and other conditions affecting work.
			1. Verify that structural panel support members and anchorage have been installed within the following tolerances:
				1. Plus or minus 1/4 inch (6.35 mm) in 20 feet (6096 mm).
				2. Plus or minus 1/2 inch (12.7 mm) across building elevation.
				3. Plus or minus 1/8 inch (3.17 mm) within 5 feet (1524 mm) of any change in plane.
		2. Correct out of tolerance work and deficient conditions prior to proceeding with metal wall panel installation.
	2. PREPARATION
		1. Install miscellaneous framing and anchorage according to ASTM C 754, metal wall panel manufacturer's written recommendations, and approved shop drawings.
	3. METAL WALL PANEL INSTALLATION
		1. Install metal wall panels and accessories in accordance with manufacturer's recommendations and approved shop drawings.
		2. General: Install metal wall panels in orientation, sizes, and locations indicated. Anchor metal wall panels and other components securely in place. Provide for thermal and structural movement.
			1. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as indicated or, if not indicated, as approved by manufacturer.
			2. Field cutting of metal wall panels is not permitted.
			3. Fasten metal wall panels to supports with concealed clips at each joint at location, spacing, and with fasteners recommended by manufacturer. Install clips to supports with self-tapping fasteners.
			4. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.
		3. Fasteners for Steel Wall Panels:
			1. Exterior: Stainless-steel.
			2. Interior: Carbon steel.
		4. Metal Protection: Provide metal wall panel manufacturer's recommended permanent separation material where dissimilar metals will contact each other or corrosive substrates.
		5. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal wall panel assemblies.
			1. Seal metal wall panel end laps to supports or back-up flashing sealant, full width of panel. Seal side joints where recommended by metal wall panel manufacturer. Do not install sealant in locations that will interfere with drainage of pressure-equalized panel chambers.
			2. Prepare joints and apply sealants per requirements of Section Joint Sealants.
	4. ACCESSORY INSTALLATION
		1. General: Install metal wall panel accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.
			1. Install related flashings and sheet metal trim per requirements of Section Sheet Metal Flashing and Trim.
			2. Install components required for a complete metal wall panel assembly, including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
			3. Comply with performance requirements and manufacturer's written installation instructions.
			4. Provide concealed fasteners except where noted on approved shop drawings.
			5. Set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
	5. FIELD QUALITY CONTROL
		1. Testing Agency: An independent testing and inspecting agency acceptable to Architect to perform field tests and inspections and to prepare test reports.
		2. Water-Spray Test: After completing portion of metal wall panel assembly including accessories and trim, test 2-bay area selected by Architect for water penetration, according to AAMA 501.2. Wall areas should be tested as a routine QA procedure. Areas erected by each crew should be checked at various stages of erection.
		3. Manufacturer's Field Service: Engage a service representative authorized by metal wall panel manufacturer to inspect completed installation. Submit written report. Correct deficiencies noted in report.
	6. CLEANING AND PROTECTION
		1. Remove temporary protective films. Clean finished surfaces as recommended by metal wall panel manufacturer. Clear weep holes and drainage channels of obstructions, dirt, and sealant. Maintain in a clean condition during construction.
		2. Replace damaged panels and accessories that cannot be repaired by finish touch-up or minor repair.

END OF SECTION