

SPECIFIER'S NOTE: Edit bracketed options and project-specific criteria. Confirm the complete exterior wall assembly, including cladding, attachment system, insulation, air/water barrier, sheathing, backup wall, fire blocking, and opening details, complies with the National Building Code of Canada and the applicable provincial or territorial building code and is supported by applicable test reports, listings, or engineering evaluations.

1 GENERAL

1.1 SUMMARY

.1 Section Includes: Furnish labour, materials, engineering, fabrication, equipment, and installation necessary to provide a complete drained and back-ventilated or pressure-equalized metal composite material (MCM) wall-panel system.

- .1 Metal composite material wall panels.
- .2 Turtle Rib® dry-joint rainscreen support framing and stainless-steel attachment clips.
- .3 Thermally isolated exterior attachment clips and girts where indicated.
- .4 Subframing, fasteners, flashings, closures, trim, sealants, and accessories required for a complete system.
- .5 Applications include wall cladding, soffits, fascia, column covers, parapets, canopies, and entrance features.

1.2 RELATED REQUIREMENTS

- .1 Section 05 12 00 - Structural Steel Framing.
- .2 Section 05 40 00 - Cold-Formed Metal Framing.
- .3 Section 06 10 00 - Rough Carpentry.
- .4 Section 07 21 00 - Thermal Insulation.
- .5 Section 07 25 00 - Weather Barriers.
- .6 Section 07 27 00 - Air Barriers.
- .7 Section 07 62 00 - Sheet Metal Flashing and Trim.
- .8 Section 07 92 00 - Joint Sealants.

1.3 REFERENCES

- .1 AAMA 2605: Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
- .2 AAMA 508: Voluntary Test Method and Specification for Pressure Equalized Rain Screen Wall Cladding Systems.
- .3 AAMA 501.1: Standard Test Method for Water Penetration of Windows, Curtain Walls and Doors Using Dynamic Pressure.
- .4 ASTM B117: Standard Practice for Operating Salt Spray (Fog) Apparatus.
- .5 ASTM D1781: Standard Test Method for Climbing Drum Peel for Adhesives.
- .6 ASTM D2244: Standard Practice for Calculation of Colour Tolerances and Colour Differences from Instrumentally Measured Colour Coordinates.
- .7 ASTM D3359: Standard Test Methods for Rating Adhesion by Tape Test.
- .8 ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials.
- .9 ASTM E283: Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- .10 ASTM E330/E330M: Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
- .11 ASTM E331: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
- .12 ASTM E1233/E1233M: Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Cyclic Air Pressure Differential.
- .13 ASTM E2357: Standard Test Method for Determining Air Leakage Rate of Air Barrier Assemblies.
- .14 CAN/ULC-S134: Standard Method of Fire Test of Exterior Wall Assemblies.
- .15 CAN/ULC-S114: Standard Method of Test for Determination of Non-Combustibility in Building Materials.
- .16 National Building Code of Canada (NBC): Edition adopted by the authority having jurisdiction, including applicable provincial or territorial amendments.

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Preinstallation Conference: Conduct at Project site before installation. Include Architect, Contractor, installer, panel fabricator, air-barrier installer, insulation installer, and manufacturer's technical representative.
- .2 Coordination: Coordinate panel layout, penetrations, flashings, air/water-barrier transitions, thermal clips, and support framing with adjacent work before fabrication.

1.5 SUBMITTALS

- .1 Product Data: Submit manufacturer data for MCM sheets, Turtle Rib framing, stainless-steel clips, thermal isolation clips, girts, fasteners, finishes, and accessories.
- .2 Shop Drawings: Show panel elevations, joint layout, profiles, panel returns, attachment spacing, thermal clips, girts, penetrations, flashings, drainage paths, compartment seals, soffits, corners, parapets, and interfaces with adjacent construction.
 - .1 Shop Drawings and calculations shall be signed and sealed by a Professional Engineer licensed in the Province or Territory of the Work when required by the Contract Documents or authority having jurisdiction.
- .3 Engineering Calculations: Submit calculations verifying panels, clips, girts, fasteners, and connections resist specified wind, seismic, dead, and other applicable loads.

- .4 Samples: Submit representative panel finish samples, joint samples, and [300 by 300 mm] assembly sample showing panel, framing, stainless-steel clip, and thermal clip where applicable.
- .5 Test Reports: Submit independent laboratory reports demonstrating compliance with specified air, water, structural, pressure-equalization, coating, and fire-performance requirements.
- .6 CAN/ULC-S134 Performance Evaluation: Submit the complete CAN/ULC-S134 test report for the proposed exterior wall assembly for review by the Consultant and authority having jurisdiction.
 - .1 The full test report shall identify the MCM cladding and core, panel joint configuration, support framing, thermal clips or girts, cavity depth, insulation type and thickness, air/water barrier, sheathing, backup wall, fire blocking, and all other conditions affecting fire performance.
 - .2 Submit the complete test report, including drawings, photographs, observations, instrumentation results, and construction details at the test opening. Opening details shall include, as applicable, the head, jambs, sill, flashings, closures, membranes, insulation terminations, cavity closures, panel joints, framing, fire blocking, and interfaces with adjacent construction.
- .7 Closeout Submittals: Submit cleaning instructions, maintenance data, warranties, approved shop drawings, and final colour/finish schedule.

1.6 QUALITY ASSURANCE

- .1 Manufacturer Qualifications: Manufacturer shall have not less than five years of experience producing comparable exterior rainscreen support systems.
- .2 Fabricator Qualifications: Fabricator shall be approved by the system manufacturer and experienced in routing, folding, and fabricating MCM panels of similar complexity.
- .3 Installer Qualifications: Installer shall have not less than five years of documented experience installing comparable MCM rainscreen systems.
- .4 Single-Source Responsibility: Obtain Turtle Rib framing, stainless-steel panel clips, and related proprietary accessories from a single manufacturer.
- .5 Mockup: Construct [size] mockup incorporating typical panel joints, inside and outside corners, window interface, base flashing, soffit transition, thermal clips, insulation, and air/water barrier.

1.7 PERFORMANCE REQUIREMENTS

- .1 Delegated Design: Design panels, framing, clips, thermal attachment system, girts, fasteners, and connections for loads and conditions indicated, without permanent deformation, fastener failure, panel disengagement, or loss of weather resistance.
 - .1 Design wind pressures: As indicated on Structural Drawings and determined in accordance with the adopted National Building Code of Canada and applicable provincial or territorial building code.
 - .2 Seismic loads and interstorey drift: As required by the adopted building code.
 - .3 Thermal movement: Accommodate temperature-induced movement without buckling, opening of joints, overstressing components, or damaging finishes.
 - .4 Building movement: Accommodate live-load deflection, creep, shrinkage, and differential movement of supporting construction.
- .2 Structural Performance: No permanent deformation or failure when tested in accordance with ASTM E330/E330M at design pressure. [Provide proof-load testing to 1.5 times design pressure.]
- .3 Air Leakage: Maximum 0.12 cfm/sq. ft. at 1.57 psf when tested in accordance with ASTM E283, measured through the complete wall specimen or through the designated air-barrier plane as applicable to the tested assembly.
- .4 Static Water Penetration: No uncontrolled water penetration to the interior side of the air/water barrier when tested in accordance with ASTM E331 at 6.24 psf for 15 minutes.
 - .1 Where higher project pressures are indicated, test at the specified pressure.
- .5 Dynamic Water Penetration: No uncontrolled water penetration to the interior side of the air/water barrier when tested in accordance with AAMA 501.1 at 6.24 psf.
- .6 Pressure Equalization: Rainscreen assembly shall comply with AAMA 508 and incorporate drainage, ventilation, and compartmentalization necessary for pressure moderation.
 - .1 Provide independent test report for the specified exposed-fastener or concealed-fastener configuration.
 - .2 Cavity pressure response shall follow exterior cyclic pressure without excessive lag or differential, as demonstrated by the submitted AAMA 508 test report.
- .7 Fire Performance: Complete exterior wall assembly shall comply with the National Building Code of Canada and the applicable provincial or territorial building code.
 - .1 Where required by the applicable building code, provide an exterior wall assembly evaluated in accordance with CAN/ULC-S134 and accepted by the authority having jurisdiction.
 - .2 Substitutions or deviations affecting MCM core, panel thickness, attachment system, cavity depth, thermal clips, girts, insulation, air/water barrier, sheathing, backup wall, fire blocking, or opening details shall be reviewed for continued CAN/ULC-S134 compliance before acceptance.
 - .3 Material-level flame-spread, smoke-developed, or non-combustibility results do not replace CAN/ULC-S134 evaluation of the complete exterior wall assembly where CAN/ULC-S134 is required.
- .8 Thermal Performance: Exterior attachment system shall minimize thermal bridging and maintain continuity of exterior insulation.
 - .1 Thermal clip material shall have published thermal conductivity not greater than [0.30 W/m·K] [2.08 Btu-in./hr·sq. ft.·deg F], unless otherwise accepted based on project thermal modeling.
 - .2 Clip geometry, spacing, fasteners, and girts shall be included in project-specific effective R-value or U-factor calculations where required.
- .9 Corrosion Resistance: Separate dissimilar metals and protect metals in contact with concrete, masonry, pressure-treated wood, or cementitious materials.
- .10 Drainage: Provide clear drainage paths and flashing to direct incidental water to exterior. Do not block cavity drainage or ventilation with sealant, insulation, or closures except where specifically detailed.

1.8 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver products in manufacturer's original packaging, identified for installation location.
- .2 Store panels flat, dry, ventilated, and protected from staining, distortion, impact, and damage to protective film.
- .3 Store thermal clips, girts, fasteners, and accessories off ground and protected from moisture and contamination.

1.9 WARRANTY

- .1 Panel Finish Warranty: Manufacturer's standard written warranty against excessive fading, chalking, and loss of adhesion for not less than [20] [30] years, subject to finish selected and exposure conditions.
- .2 System Material Warranty: Manufacturer's standard written warranty against defects in proprietary framing and clip components for not less than five years.

2 PRODUCTS

2.1 MANUFACTURER

- .1 Basis-of-Design Rainscreen Support System: Turtle Rib® by Engineered Architecturals®, telephone 800-737-5811, www.turtlerib.com, info@turtlerib.com.
- .2 Substitutions: Comply with Division 01. Proposed substitutions shall demonstrate equivalent configuration, stainless-steel panel clips, structural performance, air/water performance, pressure equalization, durability, and compatibility with the specified CAN/ULC-S134 exterior wall assembly.

2.2 METAL COMPOSITE MATERIAL PANELS

- .1 MCM Sheet: ALPOLIC® by Mitsubishi Chemical America, Inc., or approved equal accepted by written addendum before tender closing.
 - .1 Overall thickness: 4 mm.
 - .2 Core: Fire-retardant core suitable for the proposed CAN/ULC-S134-compliant exterior wall assembly.
 - .3 Aluminum face thickness: Manufacturer's standard for exterior architectural panels, not less than [0.50 mm] unless otherwise approved.
 - .4 Panel fabrication: Rout-and-return construction with [single-return exposed-fastener] [double-return concealed-fastener] edges as indicated.
 - .5 Panel dimensions and joint widths: As indicated on approved Shop Drawings.
- .2 Finish: Factory-applied FEVE or 70-percent PVDF coating meeting AAMA 2605.
 - .1 Colour and pattern: [As indicated] [Selected by Consultant from manufacturer's standard range].
 - .2 Gloss and texture: Manufacturer's standard for selected finish.

2.3 TURTLE RIB RAINSCREEN SUPPORT SYSTEM

- .1 Framing: Extruded-aluminum dry-joint pressure-equalized rainscreen framing configured for panel application indicated.
- .2 Panel Clips: 18-gage stainless-steel full clips, half clips, parapet clips, and other proprietary clips required by the approved Shop Drawings.
 - .1 Aluminum panel attachment clips are not permitted.
- .3 Configurations: [Exposed-fastener single-return] [Concealed-fastener double-return] [Combination] system.
- .4 Accessories: Manufacturer's standard base, head, jamb, corner, parapet, soffit, transition, drainage, and compartment accessories.
- .5 Fasteners: Corrosion-resistant stainless steel or other fasteners approved by system manufacturer and Engineer for substrate and exposure.

2.4 THERMALLY ISOLATED ATTACHMENT SYSTEM

- .1 Thermal Clips: Proprietary structural thermal-isolation clips manufactured from high-strength, low-conductivity, UV-stable, noncorrosive, fiber-reinforced polymer or engineered composite material.
 - .1 Clip depth: Sized to accommodate continuous insulation thickness indicated.
 - .2 Configuration: Provide integral or separate features to receive exterior aluminum girts and maintain alignment during installation.
 - .3 Structural capacity: Published allowable loads shall be based on testing or engineering analysis for clip orientation and loading used.
 - .4 Long-term performance: Account for creep, temperature, moisture, and duration of load in allowable design values.
 - .5 Fire performance: Clip material and configuration shall be included within the proposed CAN/ULC-S134 exterior wall assembly or supported by a fire-performance evaluation accepted by the authority having jurisdiction.
 - .6 Thermal performance: Provide published thermal conductivity and project-specific thermal-bridging data when required.
 - .7 Compatibility: Compatible with insulation, air/water barrier, aluminum girts, fasteners, and substrate.
- .2 Exterior Girting: Extruded-aluminum or galvanized-steel vertical and/or horizontal girts, sized and spaced to support Turtle Rib framing and imposed loads.
- .3 Thermal-Clip Fasteners: Stainless steel or corrosion-resistant structural screws selected for substrate, embedment, edge distance, and design loads.
- .4 Thermal-Clip Layout: Spacing and orientation shall be determined by delegated-design Engineer. Do not exceed clip manufacturer's allowable loads or girt span limits.

2.5 ACCESSORIES

- .1 Flashings and Trim: Aluminum sheet compatible with panel finish and thickness suitable for profile and span.
- .2 Isolation Materials: Nonabsorptive tapes, coatings, shims, or membranes recommended for separating incompatible materials.
- .3 Sealants: As specified in Section 07 92 00 and compatible with panels, coatings, air/water barrier, and adjacent materials.

.4 Fire Blocking: Noncombustible safing, mineral wool, sheet-metal closures, and other materials required by the approved CAN/ULC-S134 exterior wall assembly, applicable building code, and Contract Documents.

2.6 FABRICATION

- .1 Fabricate panels accurately to profiles and dimensions indicated, allowing for installation tolerances and thermal movement.
- .2 Form bends and returns with uniform radii, without cracking face sheets or damaging finish.
- .3 Maintain consistent joint width and alignment. Fabricate corner panels where practical to minimize exposed seams.
- .4 Provide concealed reinforcement where required for structural performance and flatness.
- .5 Protect factory finish with removable film. Clearly identify film removal requirements and timing.

3 EXECUTION

3.1 EXAMINATION

- .1 Verify substrates, air/water barrier, flashings, openings, and support locations are complete, aligned, and within tolerances required for installation.
- .2 Verify air/water barrier is continuous and repaired at penetrations before concealment.
- .3 Do not begin installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- .1 Field verify dimensions before fabrication where required. Coordinate fabrication schedule with construction progress.
- .2 Provide separation between dissimilar metals and between metal and alkaline or preservative-treated materials.
- .3 Coordinate fastener penetrations through air/water barrier with approved sealing procedures.

3.3 INSTALLATION OF THERMAL CLIPS AND GIRTS

- .1 Install thermal clips plumb, aligned, and spaced in accordance with approved Shop Drawings and delegated-design calculations.
- .2 Use specified fasteners, embedment, edge distances, and installation torque. Do not substitute fasteners without Engineer review.
- .3 Install insulation continuously around clips and girts. Cut insulation neatly and close gaps to preserve thermal continuity.
- .4 Install girts straight and true. Shim only with approved noncompressible materials. Do not use wood shims.
- .5 Seal or flash penetrations through air/water barrier in accordance with air-barrier manufacturer's instructions.

3.4 INSTALLATION OF RAINSCREEN FRAMING AND PANELS

- .1 Install Turtle Rib framing and panels in accordance with manufacturer's written instructions, approved Shop Drawings, and engineering calculations.
- .2 Install framing plumb, level, and aligned. Maintain required drainage cavity, ventilation openings, and pressure-equalization compartments.
- .3 Install stainless-steel panel clips at spacing indicated. Engage clips fully and verify panels are secure without restricting designed movement.
- .4 Install flashings, closures, corners, soffits, parapets, and transitions to shed water and maintain continuity of the wall assembly.
- .5 Do not obstruct drainage paths with sealant. Use sealant only where indicated or required by approved details.
- .6 Remove protective film within manufacturer's recommended period and before prolonged UV exposure.

3.5 FIELD QUALITY CONTROL

- .1 Manufacturer's Field Services: Provide technical representative for preinstallation conference and periodic observations at commencement of thermal-clip installation, rainscreen-framing installation, panel installation, and at substantial completion.
- .2 Testing: Perform field air- and water-leakage testing where specified in Division 01 or shown on Drawings.
- .3 Correct deficiencies and retest until specified performance is achieved.

3.6 CLEANING AND PROTECTION

- .1 Clean exposed surfaces in accordance with panel manufacturer's written instructions. Do not use abrasive or incompatible cleaners.
- .2 Repair or replace damaged panels, framing, clips, coatings, and accessories to Consultant's acceptance.
- .3 Protect completed work from damage by subsequent construction activities.

END OF SECTION