



AXIOMPlus

“Wet Joint” Modular Plate System Specification 07410

1.0 GENERAL

1.1 RELATED WORK

- 1.1.1 Section 03300 Cast-in Place Concrete.
- 1.1.2 Section 04200 Unit Masonry.
- 1.1.3 Section 05100 Structural Metal Framing.
- 1.1.4 Section 05500 Metal Fabrications.
- 1.1.5 Section 07195 Air Barriers.
- 1.1.6 Section 07200 Insulation.
- 1.1.7 Section 07513 Membrane Roofing.
- 1.1.8 Section 07600 Flashing and Sheet Metal.
- 1.1.9 Section 07920 Sealants and Caulking

1.2 SYSTEM DESCRIPTION

- 1.2.1 Custom made, performed, post painted, metal pan type, wet joint, modular wall cladding and soffit system.

1.3 PERFORMANCE REQUIREMENTS (DESIGN CRITERIA)

- 1.3.1 Panel: Metal panel system, including its support and attachments, shall be designed to resist positive and negative wind loads as calculated in the latest edition of the National Building Code of Canada and its supplement, using a 1/30 return period. Adequate stiffening shall be provided to prevent wind induced vibrations and fatigue problems.
- 1.3.2 Deflection Movement: Maximum deflection not to exceed L/180. The panel shall exhibit no permanent deformation when subject to these loads. Allowance shall be made in the panel design for movement within the system caused by deflection in the building structure.
- 1.3.3 Thermal Movement: Allowance shall be made for expansion and contraction of all parts of the metal panel assembly caused by surface temperatures varying from minus 40 degrees Celsius to plus 40 degrees Celsius. Such variation in temperature shall not cause buckling, stress on enclosed or adjoining materials or fasteners, or in any way impair the performance or appearance of the system. Sub system design to incorporate a gridlock to eliminate rocking of the Z-bars on drywall or other support sub-wall systems.
- 1.3.4 Weep Drainage: system shall provide clear, internal paths of drainage that weep any trapped moisture to the exterior. Weep water shall discharge in a manner that avoids staining of architectural finishes, collecting in puddles or the formation of icicles.
- 1.3.5 Fastening: Panel assembly shall be fastened to the building structure in a manner, which transmits all loads to the main structure without exceeding the capacity of any fastener.

1.4 FIELD QUALITY CONTROL

- 1.4.1 Inspection: the manufacturer's representative prior to the enclosure and concealment of these products shall carry out intermediate inspections of air barriers and insulation in the system.
- 1.4.2 All walls and openings are to within $\pm 3\text{mm}$ ($\pm 1/8"$) of location shown on architectural drawings. Also, structure is to be plumb within 1:1000 of overall height.
- 1.4.3 Final inspection and approval of completed work shall be carried out by the manufacturer's representative and the contractor.

1.5 REFERENCES

- 1.5.1 ASTM A653 “Standard Specification for Sheet Steel, Zinc Coated (Galvanized) by the Hot Dip Process”.

- 1.5.2 ASTM B209 Aluminum Sheet and Plate
- 1.5.3 ASTM B221 Extruded Aluminum Shapes

1.6 SUBMITTALS (SHOP DRAWINGS)

- 1.6.1 Drawings: Contractor's drawings shall clearly indicate by reflected ceiling plans, wall elevations and/or section details all material thickness', finishes connections, inserts, joint conditions, method of anchorage, number of anchors, supports, fastenings reinforcements, method of supporting and integrating mechanical and electrical fixtures, trim and accessories.
- 1.6.2 Design: Calculations shall be signed and sealed by a Professional Engineer, attesting to the ability of the metal panel assembly to withstand the specified loads, including inward and outward loads and loads under fastenings to the structure.
- 1.6.3 Identification: Panels shall be identified on shop drawings as to building location to facilitate panel removal and replacement due to construction and/or occupant damage.

1.7 DELIVERY, STORAGE AND HANDLING

- 1.7.1 Package, crate and cover components to protect surfaces from damage and deterioration.
- 1.7.2 Store components off ground to prevent twisting, bending and defacement. Slope to shed moisture.

1.8 MOCK UP

- 1.6.1 To be part of the finished wall system, installed at a location which will display typical connections of the project.

2.0 PRODUCTS

2.1 CLADDING TYPE

- 2.1.1 Form modular panels from minimum 3mm (1/8"), 3003 or 5052 alloy solid aluminum sheet. Acceptable products are **AXIOMPlus** "wet joint" by Flynn Canada Ltd. or equal approved by the Architect 7 days prior to tender.

2.2 FABRICATION:

- 2.2.1 All work to be fabricated with straight lines, square corners or smooth bends, free from twists or warps, kinks, dents and other imperfections which may affect appearance or serviceability.
- 2.2.2 Panel flatness in all directions across the surface to be a maximum of 0.2%
- 2.2.3 System shall have a flush appearance from the exterior with no surface fixings or other irregularities and with no reveal other than the module joint width.
- 2.2.4 Panels shall be aligned with no lap or reveal other than joint width to permit expansion and contraction.
- 2.2.5 Thickness of metal and details of assembly and support shall provide sufficient strength and stiffness to resist distortion of finished surface.
- 2.2.6 Exposed edges and ends of metal shall be dressed smooth, free from sharp edges. Connections and joints exposed to the weather shall be constructed to exclude water.
- 2.2.7 Panels to be constructed with flanges on all sides with aluminum extrusion clips. Provisions shall be made for individual panel drainage at panel base.
- 2.2.8 Panels to have uniform radiused corners to 1.5T material thickness.
- 2.2.9 **OPTIONAL "AXIOMPlus TR** system to have routed edges for tight radius panel edges.
- 2.2.10 Panels to have notched and folded corners. (Factory-welded corners are not required.)

2.3 SUB GIRT SYSTEM

- 2.3.1 Panel load transfer grids shall be formed from minimum 1.2mm (18 gauge) full-galvanized steel conforming to ASTM A653 Grade A Zinc coating to Z275 designation.
- 2.3.2 Transfer grid to be hat bars, Z-bars, adjustable Z-bars or combination clip and Z-bar.
- 2.3.3 Structural Members and panels shall be fastened together with interlocking clips as indicated.

2.4 FASTENING

- 2.4.1 Fasteners to be stainless steel and concealed at all locations. Sufficient quantities of fasteners of the proper size for fastening of the work shall be provided.

2.5 OPENINGS

- 2.5.1 Openings shall be provided and coordinated with the work of other installers. Holes to accommodate the work of other sections to be provided in the panel prior to finishing whenever possible. The perimeter of holes greater than 300mm x 300mm shall be reinforced to details shown on drawings or the manufacturers standard.

2.6 FLASHINGS

- 2.6.1 Wherever practical at corners, jambs and abutments, no flashings will be permitted. Panel design to include for these connections. Where flashings are unavoidable, use post-painted material to match aluminum panel.
- 2.6.2. Exposed surfaces of aluminum extrusions to be painted to match the finish of the panels. Colour(s) _____.

2.7 PANEL FINISHES

- 2.7.1 Post painted fluorocarbon base with 70% Kynar Resins, Colour(s) _____.
Aluminum substrate to be alloy 3003 or 5052 conforming to ASTM B209

3.0 EXECUTION

3.1 PREPARATION

- 3.1.1 Develop all dimensions from the architectural drawings and where possible coordinate with field dimensions to obtain final panel layout.

3.2 INSTALLATION

- 3.2.1 Prior to installation, inspect structural to ensure all walls and openings are within $\pm 3\text{mm}$ ($\pm 1/8''$) of location shown on architectural drawings. Also, structure is to be plumb within 1:1000 of overall height. Installation is not to proceed until the building is within these tolerances.
- 3.2.2 Support system shall be attached to the structure as required to transmit design loads.
- 3.2.3 Framing and other components shall be straight to match plane of panel as required to meet the installed panel tolerances with straight, sharply formed edges. Radiused formed components shall be bent to a true circular curve.
- 3.2.4 After their correct position has been determined and allowances for expansion, building movement, uniform joint width and alignment of all parts has been determined, the components shall be permanently fastened.
- 3.2.5 Installed panels shall not deviate from overall plane or alignment by more than 1:1000. Joints shall be not less than their dimensioned width, or more than five percent greater than their dimensioned width at any location along their full length, and shall not be wavy, out of line or of different width from panel to panel.
- 3.2.6 All panel joints to have backer rod installed prior to caulking with the specified sealant.
- 3.2.7 Install flashings to divert all moisture to the exterior.
- 3.2.8 Install exterior metal cladding to structural supports by hidden mechanical fasteners, clips and perimeter framing extrusions.
- 3.2.9 Remove all excess materials, debris and equipment at completion.
- 3.2.10 Clean all panels free of grim and dirt at time of installation.



AXIOMPlus

“Dry Joint” Modular Plate System Specification 07410

1.0 GENERAL

1.1 RELATED WORK

- 1.1.1 Section 03300 Cast-in Place Concrete
- 1.1.2 Section 04200 Unit Masonry
- 1.1.3 Section 05100 Structural Metal Framing
- 1.1.4 Section 05500 Metal Fabrications
- 1.1.5 Section 07195 Air Barriers
- 1.1.6 Section 07200 Insulation
- 1.1.7 Section 07513 Membrane Roofing
- 1.1.8 Section 07600 Flashing and Sheet Metal

1.2 SYSTEM DESCRIPTION

- 1.2.1 Custom made, preformed, post painted, metal pan type, dry joint, modular wall cladding and soffit system.

1.3 PERFORMANCE REQUIREMENTS (DESIGN CRITERIA)

- 1.3.1 Panel: Metal panel system, including its support and attachments, shall be designed to resist positive and negative wind loads as calculated in the latest edition of the National Building Code of Canada and its supplement, using a 1/30 return period. Adequate stiffening shall be provided to prevent wind induced vibrations and fatigue problems.
- 1.3.2 Deflection Movement: Maximum deflection not to exceed L/180. The panel shall exhibit no permanent deformation when subject to these loads. Allowance shall be made in the panel design for movement within the system caused by deflection in the building structure.
- 1.3.3 Thermal Movement: Allowance shall be made for expansion and contraction of all parts of the metal panel assembly caused by surface temperatures varying from minus 40 degrees Celsius to plus 40 degrees Celsius. Such variation in temperature shall not cause buckling, stress on enclosed or adjoining materials or fasteners, or in any way impair the performance or appearance of the system.
- 1.3.4 Sub system design to incorporate a gridlock to eliminate rocking of the Z-bars on drywall or other support sub-wall systems.
- 1.3.5 Weep Drainage: system shall provide clear, internal paths of drainage that weep any trapped moisture to the exterior. Weep water shall discharge in a manner that avoids staining of architectural finishes, collecting in puddles or the formation of icicles.
- 1.3.6 Water Tightness: Exterior fascia and wall panels shall be designed to the rain screen principles as published by the National Research Council and prevent water infiltration into the interior systems.
- 1.3.7 System must have been successfully tested by an accredited testing facility to the ASTM E283 standard test method for air infiltration.
- 1.3.8 System must have been successfully tested by an accredited testing facility to the ASTM E331 standard test method for water infiltration.
- 1.3.9 No panel joint caulking will be permitted.
- 1.3.10 Fastening: Panel assembly shall be fastened to the building structure in a manner, which transmits all loads to the main structure without exceeding the capacity of any fastener.

1.4 FIELD QUALITY CONTROL

- 1.4.1 Inspection: the manufacturer's representative prior to the enclosure and concealment of these products shall carry out thorough inspections of air barriers and insulation in the system.
- 1.4.2 All walls and openings are to within $\pm 3\text{mm}$ ($\pm 1/8''$) of location shown on architectural drawings. Also, structure is to be plumb within 1:1000 of overall height.
- 1.4.3 Final inspection and approval of completed work shall be carried out by the manufacturer's representative and the contractor.

1.5 REFERENCES

- 1.5.1 ASTM A653 "Standard Specification for Sheet Steel, Zinc Coated (Galvanized) by the Hot Dip Process".
- 1.5.2 ASTM B209 Aluminum Sheet and Plate.
- 1.5.3 ASTM B221 Extruded Aluminum Shapes.
- 1.5.4 ASTM E283-99 Air Infiltration and Exfiltration.
- 1.5.5 ASTM E331-00 Water Infiltration.
- 1.5.6 ASTM E330-02 Wind Load Resistance.

1.6 SUBMITTALS (SHOP DRAWINGS)

- 1.6.1 Drawings: Contractor's drawings shall clearly indicate by reflected ceiling plans, wall elevations and/or section details all material thickness', finishes connections, inserts, joint conditions, method of anchorage, number of anchors, supports, fastenings reinforcements, method of supporting and integrating mechanical and electrical fixtures, trim and accessories.
- 1.6.2 Design: Calculations shall be signed and sealed by a Professional Engineer, attesting to the ability of the metal panel assembly to withstand the specified loads, including inward and outward loads and loads under fastenings to the structure.
- 1.6.3 Identification: Panels shall be identified on shop drawings as to building location to facilitate panel removal and replacement due to construction and/or occupant damage.

1.7 DELIVERY, STORAGE AND HANDLING

- 1.7.1 Package, crate and cover components to protect surfaces from damage and deterioration.
- 1.7.2 Store components off ground to prevent twisting, bending and defacement. Slope to shed moisture.

1.8 MOCK UP

- 1.8.1 To be part of the finished wall system installed at a location, which will display typical connections of the project.

2.0 PRODUCTS

2.1 CLADDING TYPE

- 2.1.1 Form modular panels from minimum 3mm (1/8"), 3003 or 5052 alloy solid aluminum sheet. Acceptable products are **AXIOMPlus** "dry joint" by Flynn Canada Ltd. or equal approved by the Architect 7 days prior to tender.

2.2 FABRICATION:

- 2.2.1 All work to be fabricated with straight lines, square corners or smooth bends, free from twists or warps, kinks, dents and other imperfections, which may affect appearance or serviceability.
- 2.2.2 Panel flatness in all directions across the surface to be a maximum of 0.2%.
- 2.2.3 System shall have a flush appearance from the exterior with no surface fixings or other irregularities and with no reveal other than the module joint width.
- 2.2.4 Panels shall be aligned with no lap or reveal other than joint width to permit expansion and contraction.
- 2.2.5 Fasteners used to fix the aluminum sheet to the extruded frames within panel joint lines to be countersunk.
- 2.2.6 Thickness of metal and details of assembly and support shall provide sufficient strength and stiffness to resist distortion of finished surface.
- 2.2.7 Exposed edges and ends of metal shall be dressed smooth, free from sharp edges. Connections and joints exposed to the weather shall be constructed to exclude water.
- 2.2.8 Panels to be constructed with flanges on all sides and framed with aluminum extrusions. Provisions shall be made for individual panel drainage at panel base.
- 2.2.9 Panels to have uniform radiused corners to 1.5T material thickness.
- 2.2.10 **OPTIONAL "AXIOMPlus TR** system to have routed edges for tight radius panel edges.
- 2.2.11 Panels to have notched and folded corners. (Factory-welded corners, ground smooth are optional.)

2.3 SUB GIRT SYSTEM

- 2.3.1 Panel load transfer grids shall be formed from minimum 1.2mm (18 gauge) full-galvanized steel conforming to ASTM A653 Grade A Zinc coating to Z275 designation.
- 2.3.2 Transfer grid to be hat bars, Z-bars, adjustable Z-bars or combination clip and Z-bar.
- 2.3.3 Structural Members and panels shall be fastened together with interlocking clips as indicated.

2.4 FASTENING

- 2.4.1 Fasteners to be stainless steel and concealed at all locations. Sufficient quantities of fasteners of the proper size for fastening of the work shall be provided.

2.5 OPENINGS

- 2.5.1 Openings shall be provided and coordinated with the work of other installers. Holes to accommodate the work of other sections to be provided in the panel prior to finishing whenever possible. The perimeter of holes greater than 300mm x 300mm shall be reinforced to details shown on drawings or the manufacturer's standard.

2.6 FLASHINGS

- 2.6.1 Wherever practical at corners, jambs and abutments, no flashings will be permitted. Panel design to include for these connections. Where flashings are unavoidable, use post-painted material to match aluminum panel.
- 2.6.2. Exposed surfaces of aluminum extrusions to be painted to match the finish of the panels. Colour(s) _____.

2.7 PANEL FINISHES

- 2.7.1 Post painted fluorocarbon base with 70% Kynar Resins, Colour(s) _____.
Aluminum substrate to be alloy 3003 or 5052 conforming to ASTM B209

3.0 EXECUTION

3.1 PREPARATION

- 3.1.1 Develop all dimensions from the architectural drawings and where possible coordinate with field dimensions to obtain final panel layout.

3.2 INSTALLATION

- 3.2.1 Prior to installation, inspect structural to ensure all walls and openings are within $\pm 3\text{mm}$ ($\pm 1/8''$) of location shown on architectural drawings. Also, structure is to be plumb within 1:1000 of overall height. Installation is not to proceed until the building is within these tolerances.
- 3.2.2 Support system shall be attached to the structure as required to transmit design loads.
- 3.2.3 Framing and other components shall be straight to match plane of panel as required to meet the installed panel tolerances with straight, sharply formed edges. Radiused formed components shall be bent to a true circular curve.
- 3.2.4 After their correct position has been determined and allowances for expansion, building movement, uniform joint width and alignment of all parts has been determined, the components shall be permanently fastened.
- 3.2.5 Installed panels shall not deviate from overall plane or alignment by more than 1:1000. Joints shall be not less than their dimensioned width, or more than five percent greater than their dimensioned width at any location along their full length, and shall not be wavy, out of line or of different width from panel to panel.
- 3.2.6 Install flashings to divert all moisture to the exterior.
- 3.2.7 Install exterior metal cladding to structural supports by hidden mechanical fasteners, clips and perimeter framing extrusions.
- 3.2.8 Remove all excess materials, debris and equipment at completion.
- 3.2.9 Clean all panels free of grim and dirt at time of installation.