

Part 1 - General

1.1 General

- .1 All conditions of the Contract and Division 1, General Requirements apply to this section.
- .2 All work shall meet the requirements of the Ontario Building Code, including all amendments up to project date.

1.2 Coordination

- .1 Co-ordinate work under this section with work of related sections.

1.3 Related Work Specified Elsewhere

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| .1 | Selective Demolition and Removal: | Section 02 41 00 |
| .2 | EPDM Membrane Roofing | Section 07 53 23 |
| .3 | Sealants: | Section 07 92 00 |

1.4 Scope of Work

- .1 Supply all labour, materials, plant and equipment necessary to perform curtain wall restoration work to the full extent of the Specifications and Drawings.

1.5 Shop Drawings

- .1 Submit shop drawings to the Consultant showing all components of the curtain wall backpan and aluminum panel at the ground floor.
- .2 Show details of connecting work of this Section with the existing building. Provide specific details of head, sill and jamb configurations. Drawings must also indicate without being limited to the following:
 - .1 Type and properties of metal alloy used for all extrusions.
 - .2 Vertical and horizontal sections through mullions and frames.
 - .3 Thicknesses, profiles, etc., of all extrusions and members.
 - .4 Schedule and layout dimensioned to indicate the number and spacing of anchors.
 - .5 Location of setting blocks and edge blocks should be clearly indicated.

1.6 Mock-Up

- .1 Provide mock-ups at the ground floor curtain wall and 2nd floor curtain wall above canopy. Mock-up to be one curtain wall module. Location shown on Drawings.
- .2 Perform curtain wall rehabilitation at the mock-up locations.
- .3 Mock-ups are to be approved by Consultant prior to proceeding with work.
- .4 Mock-up will serve for initial review purposes by the Consultant and, when accepted, shall represent the minimum standard for work and may remain in place.
- .5 All materials used for mock-up must be in complete accordance with this Specification.

1.7 Field Quality Control

- .1 The Consultant will perform field reviews during the construction work.
- .2 The mock-ups shall be tested to verify water and/or air tightness performance levels.
- .3 Other locations may be randomly tested to ensure the work meets the same performance level as the mock-up.
- .4 The cost of this testing shall be paid under testing cash allowance.
- .5 The following field tests be performed:
 - .1 Water Resistance: ASTM E1105 Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Curtain Walls and Doors by Uniform or Cyclic Static Air pressure Difference.
 - .2 Air Leakage: ASTM E783 Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors

1.8 Warranty

- .1 Submit a written warranty Consultant for the work specified in this Section covering for a period of Two (2) years from date of the Certificate for Substantial Performance.
- .2 Repair leaks into building within 24 hours of notification. All repairs required shall be carried out in accordance with the recommendations of the Consultant.
- .3 Inspect work of this section 30 days before expiry of warranty period and the Contractor shall correct defects within 15 days of inspection.
- .4 The cost of all warranties shall be included in the Contract price.

1.9 References

- .1 ASTM E1105, Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Curtain Walls and Doors by Uniform or Cyclic Static Air Pressure Difference.

- .2 ASTM E783 Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors
- .3 AAMA/WDMA/CSA 101 / I.S.2/A440-11 North American Fenestration Standard / Specification for Windows, Doors, and Skylights.
- .4 A440S1-17, Canadian Supplement to AAMA/WDMA/CSA 101 / I.S.2/A440-17, North American Fenestration Standard / Specification for Windows, Doors, and Skylights.
- .5 CGSB Specification 1-GP-108M, Paint, Acid and Alkali Resistant, Black.

Part 2 - Products

2.1 Materials

- .1 Materials: to AAMA/WDMA/CSA 101 / I.S.2/A440-11 and as specified herein. All materials shall be compatible.
- .2 Aluminum (if required and approved by Consultant):
 - .1 Extrusions: AA6063-T5, alloy and temper for framing, and where not exposed to suit specified and fabricator's requirements.
 - .2 Exposed Sheet and Plate: AA1100-H14, alloy and temper. Minimum thickness to be 1.5 mm or as otherwise indicated on Drawings.
 - .3 Exposed surfaces of aluminum shall be free of die marks, scratches, blisters, "leave-off" marks, or other blemishes, whether left unfinished or finished.
- .3 Aluminum Finish on exposed aluminum components:
 - .1 Anodized finish. Anodized coatings on aluminum shall be certified in accordance with Section 11.8 of the AAMA/WDMA/CSA 101 / I.S.2/A440-11. Colour to match existing.
- .4 Pressure plate (bottom horizontal pressure plates): extruded aluminum pressure plate of size and profile to match existing. Extrusion to be AA6063-T5 alloy.
- .5 Pressure plates (remaining horizontal and vertical pressure plates): salvage existing pressure plates and re-install. Re-locate weep slots at existing pressure plates.
 - .1 Provide new weep slots by machine drilling in factory. Site drilling is not permitted.
 - .2 Provide minimum three weep slots per IGU or spandrel.
 - .3 Place weep slots at drainage channel, clear of setting blocks and glazing. Do not block weep slots.
- .6 Snap covers: salvage existing snap covers and re-install.

- .7 Snap covers (if required and approved by Consultant): extruded aluminum snap cover of size and profile to match existing. Extrusion to be AA6063-T5 alloy. Finish to be clear anodized, to match existing.
- .8 Thermal breaks: extruded, low conductive rigid vinyl or polyvinyl chloride, size and shape as indicated on Drawings and to match existing.
- .9 Fasteners: Type 304 stainless steel. Samples to be approved by Consultant.
- .10 Pocket filler (at base of curtain wall): Continuous extruded PVC pocket filler. Size to suit existing curtain wall assembly.

2.2 Glazing Accessories

- .1 Ensure that glazing tapes, glazing splines, sealants and setting blocks are compatible with existing curtain wall components.
- .2 Setting Blocks: salvage existing, maintain in place and clean of debris.
- .2 Setting Blocks (if required): Neoprene, EPDM or Silicone with durometer hardness of Shore "A" 80 to 90. Thickness to be 6 mm. Width of setting blocks to slightly exceed width of sealed insulating glass unit. Length of setting blocks to be 25 mm for every 1 square metre of glass with a minimum length of 50 mm. Setting blocks shall be compatible with all adjacent components, including edge seal.
- .3 Glazing Splines: neoprene, silicone or polyvinyl chloride standard glazing spline to suit pressure plates. Spline to be designed to provide 4 to 5 lb(f) per lineal foot force on the exterior face of the existing sealed insulating glass units, spandrel glass and aluminum flashings.
- .4 Corner blocks: neoprene rubber. Bedding sealant as recommended by manufacturer.
- .5 Sealant: in accordance with Specification Section 07 92 00.

2.3 Spandrel Backpan

- .1 Sheet metal back pans: 0.91 mm (0.036") (20 gauge) thickness, galvanized sheet steel in accordance with ASTM A653/A653M-13, Designation G90/Z275.
- .2 Fasteners: Corrosion resistant, zinc plated, covered and sealed to sheet metal with silicone sealant.
- .3 Sealant (exterior joints of backpan): One-part, neutral cure, medium modulus silicone sealant. Acceptable product Dow 795 or approved equivalent.
- .4 Insulation (backpan): in accordance with ASTM C612-14, Type IVA or IVB, non-combustible in accordance with CAN/ULC-S114-05.
 - .1 Acceptable Products: Rockwool 'CurtainRock' or approved equivalent.

- .5 Insulation attachment: Galvanized stick-pins, welded to sheet metal backpans, located at maximum spacing of 300 mm (12") o/c and within 150 mm (6") from edge of insulation boards. Seal welds with 1 coat zinc-rich coating.

2.4 Aluminum Panel

- .1 Aluminum Panel: 3mm thickness minimum, aluminum alloys 5005-H34 or 3003-H14. Provide weep slots along the base of panels.
- .2 Anodized: Architectural Class 1, 20 um (.0008") or Class 2, 10 um (.0004") in solid colours.
- .3 Acceptable manufacturers: Alumtech or approved equivalent.

2.5 Fabrication

- .1 Check on site dimensions prior to fabrication of curtain wall components such as glazing splines, clamping bars, pressure plates, and snap covers.
- .2 Fabricate curtain wall components, such as glazing splines, clamping bars, pressure plates, as indicated on Drawings and to suit on site conditions. Mock-up to be utilized to verify components.

Part 3 - Execution

3.1 Removals – Ground Floor Curtain Wall

- .1 Remove and store for reuse the existing snap covers and pressure plates (one pressure plate per glazing light at a time or provide temporary support).
- .2 Remove all sealants, glazing splines, and debris from the existing pressure plates and snap covers. Remove all stains and other contaminants from the snap covers which may impair performance or appearance.
- .3 Store the existing snap covers and pressure plates on site at a location approved by the Consultant. Provide suitable protection for the existing snap covers and pressure plates to prevent damage. Damaged units are to be replaced at no additional cost to the Owner.
- .4 Remove and dispose of the existing thermal break material.
- .5 Remove and dispose of the existing corner blocks, and bedding sealant.
- .6 Remove and dispose of the metal panel closure at the base of the curtain wall, and associated materials such as sealants and fasteners.
- .7 Remove and dispose of the extruded aluminum cap along the base of the curtain wall, and associated mineral wool insulation, and fasteners.

- .8 Remove, store, and re-install the existing concrete-faced insulation board.
- .9 Inform Consultant of any damage to the existing curtain wall components and surrounding construction which is to remain prior to commencing repair work.
- .10 Remove debris such as staining, efflorescence, and previous sealants to prepare surfaces for new materials. Cleaning drainage channels including weep slots and glazing pockets.

3.2 Removals and Re-Installation – 2nd Floor Curtain Wall / Canopy

- .1 Remove the curtain wall panels directly above the canopy and associated sealant and flashing. Store on-site for re-installation.
- .2 Take note and label if required, the location of the panels, to re-install the panels in the pre-existing locations.
- .3 Take care not to damage existing panels and protect from damage during storage and re-installation.
- .4 Provide tie-ins between the canopy roofing assembly and curtain wall.
- .5 Re-instate existing extruded aluminum flashings and install new sealant.

3.2 Examination

- .1 Examine glazing clearances with the Consultant.
- .2 Check on-site dimensions prior to fabricating aluminum metal panel, spandrel backpan, glazing splines, pressure plates and if required, snap covers
- .3 Examine existing conditions directly above the canopy, including curtain wall joinery and tie-ins.
- .4 Inform Consultant of any unusual or deteriorated construction revealed during removal. Allow Consultant to review conditions prior to proceeding with specified repairs.

3.3 Installation

- .1 Install new corner blocks including bedding sealant. Size to match pre-existing, suit conditions and provide clear drainage.
- .2 Install new thermal break material at screw port locations and where otherwise indicated on Drawings.
- .3 Cut glazing splines accurately to length of the pressure plate. Install glazing splines onto pressure plates.
- .4 Apply structural silicone sealant to the glazing spline if required by the spline design.
- .5 Press the pressure plates into place. Fasten the pressure plate with the specified and approved fasteners using sufficient torque to provide the specified exterior spline pressure.

A 4 to 5 lb(f) per lineal foot force on the exterior face of the existing sealed insulating glass unit is required.

- .6 Clean and reinstall the existing snap covers.
- .7 If required, provide new snap covers where existing snap covers were damaged, as approved by the Consultant.
- .8 If required, replace setting blocks, where approved by the Consultant, to ensure proper glazing clearances and drainage are provided.
- .9 Install all components in their correct location, set level, square, plumb and at the proper elevations and alignment with other work.
- .10 Install components with consideration for finish variations. Abrupt variations of appearance or colour in adjacent components will not be acceptable without approval before installation.

3.3 Installation- Back-Pan and Aluminum Panels

- .1 Install new back-pan complete with insulation, fastened to the curtain wall shoulder and concrete at grade.
- .2 Embed fasteners in sealant prior to fastening.
- .3 Install continuous sealant along termination edges of spandrel backpan.
- .4 Install pocket filler to facilitate aluminum panel installation.
- .5 Install aluminum closure panel as indicated on Drawings and reviewed shop drawings.

3.4 Cleaning

- .1 Remove as work progresses all corrosive and foreign materials which may set or become difficult to remove at time of final cleaning or which may damage components of the glazing system. Examine all surfaces as often as required to ensure cleanliness.
- .2 Wash exposed surfaces with a cleaning solution approved by manufacturers of the glass and aluminum finishes.
- .3 Remove protective coating, excess sealants, stains, deposits, marks or blemishes from work of this section and all adjacent surfaces, by methods not harmful to the surfaces. Replace or make good all defective, scratched or damaged materials.
- .4 Cleaning on completion of installation to include:
 - .1 Remove deposits which affect appearance or function of system.
 - .2 Clean and restore surfaces stained by the Work in accordance with manufacturer's recommendations. Replace if cleaning is impossible or unsatisfactory to the Owner.
 - .3 Final cleaning is specified in Section 01 11 15.

End of Section 08 99 00