

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1        Standard Non-rated, fire rated and thermally insulated steel frames.
- .2        Standard Non-rated, fire rated and thermally insulated steel doors.

**1.2                RELATED SECTIONS**

- .1        Section 08 71 00 - Door Hardware: Hardware and weather-stripping.
- .2        Section 08 80 00 - Glazing.
- .3        Section 09 90 00 - Painting: Field painting of frames.

**1.3                REFERENCES**

- .1        ANSI A117.1 - Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.
- .2        ASTM A653/A653M - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .3        ASTM E152 - Methods of Fire Tests of Door Assemblies.
- .4        CSDFMA (Canadian Steel Door and Frame Manufacturers Association).
- .5        DHI - Door Hardware Institute: The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.
- .6        NFPA 80 - Fire Doors and Windows.
- .7        NFPA 252 - Fire Tests for Door Assemblies.
- .8        SDI-100 - Standard Steel Doors and Frames.
- .9        UL 10B - Fire Tests of Door Assemblies.

**1.4                SUBMITTALS**

- .1        Section 01 33 00: Submission procedures.
- .2        Product Data: Indicate frame configuration and finishes. Indicate door configurations, location of cut-outs for hardware reinforcement.
- .3        Shop Drawings: Indicate frame elevations, reinforcement, anchor types and spacings, location of cut-outs for hardware, and finish. Indicate door elevations, internal reinforcement, closure method, and cut-outs for glazing, louvers, and finishes.

**1.5                QUALITY ASSURANCE**

- .1        Conform to requirements of CSDFMA and ANSI A117.1.

- .2 Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

## **1.6 REGULATORY REQUIREMENTS**

- .1 Fire Rated Frame Construction: Conform to UL 10B.
- .2 Installed Door and Frame Assembly: Conform to NFPA 80 for fire rated class as scheduled.

## **1.7 PROJECT CONDITIONS**

- .1 Coordinate the work with frame opening construction, door, and hardware installation.
- .2 Sequence installation to ensure wire connections are achieved in an orderly and expeditious manner.

## **Part 2 Products**

### **2.1 ACCEPTABLE MANUFACTURERS**

- .1 Fleming
- .2 Shanahans
- .3 Allmar

### **2.2 MATERILS**

- .1 Frames
  - .1 Frames: 16 ga. thick material, base metal thickness with ZF75 Colourbond coating.
  - .2 Anchors: purpose made to rigidly secure frames, 3 per jamb.
  - .3 Mortar Guard Boxes: 22 ga. welded in place.
  - .4 Bituminous Coating: Fibered asphalt emulsion.
  - .5 Primer: Zinc chromate type.
  - .6 Silencers: Resilient rubber set in steel fitted into drilled hole.
  - .7 Insulation: Fibreglass.
- .2 Doors
  - .1 Insulated Core Doors: minimum , 18 ga. surface sheets, and top and bottom end channels; cores filled with insulation.
  - .2 Honeycomb Core Doors: minimum , 18 ga. surface sheets and, top and bottom end channels; cores filled with honeycomb material laminated under pressure to surface sheets.
  - .3 Fire Rated Doors: Minimum, 18 ga. surface sheets and, top and bottom end channels, of ULC label requirements indicated on drawings.

- .4 Reinforcement for hardware:
  - .1 Locks: minimum 16 ga steel.
  - .2 Butts: minimum 10 ga. steel.
  - .3 Flush Bolts: minimum 10 ga. steel.
  - .4 Door Closures: minimum 14 ga. steel.
- .5 Glazing Stops: 20 ga. rolled steel channel shape, butted corners; 5/8" high profile; prepared for countersink screws.

## 2.3 FABRICATION

- .1 Frames:
  - .1 Fabricate frames as welded unit.
  - .2 Mullions for Double Doors: Fixed type, of same profiles as jambs.
  - .3 Transom Bars for Glazed Lights: Fixed type, of same profiles as jamb and head.
  - .4 Fabricate frames with hardware reinforcement plates welded in place. Provide mortar guard boxes.
  - .5 Reinforce frames wider than 48" with roll formed steel channels fitted tightly into frame head, flush with top.
  - .6 Prepare frames for silencers. Provide three single silencers for single doors and mullions of double doors on strike side. Provide two single silencers on frame head at double doors without mullions.
  - .7 Attach fire rated label to each fire rated door unit.
  - .8 Provide drywall returns on all frames.
  - .9 Attach channel spreaders at bottom of frames for shipping.
- .2 Doors
  - .1 Fabricate hollow metal doors and panels in accordance with requirements of "Canadian Manufacturing Standards for Steel Doors and Frames" produced by the Canadian Steel Door and Frame Manufacturer's Association and as indicated on Drawings. Fabricate doors with hardware reinforcement welded in place.
  - .2 Fabricate fire rated hollow metal doors in accordance with requirements of Underwriters Laboratories of Canada (ULC). Place ULC labels where visible when in installed position.
  - .3 Mechanically interlock longitudinal seams of honeycomb core type doors continuously welded, filled and sanded with no visible edge seams. Top and bottom of doors closed with end channels recessed and spot welded in place.
  - .4 Reinforce and prepare doors to receive hardware. Refer to Section 08 71 00 for hardware requirements.
  - .5 Each exterior hollow metal door to be supplied complete with a full minimum 10 ga. anti-intrusion plate welded to latch side of door.

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Verify that opening sizes and tolerances are acceptable.

**3.2 INSTALLATION**

- .1 Install frames in accordance with CSDFMA.
- .2 Coordinate with masonry, gypsum board, concrete wall construction for anchor placement.
- .3 Coordinate installation of glass and glazing.
- .4 Coordinate installation of doors and frames with installation of hardware specified in Section 08 71 00.
- .5 Install roll formed steel reinforcement channels between two abutting frames. Anchor to structure and floor.
- .6 After installation, touch up all scratched or damaged surface and prime.
- .7 Insulate all frames exposed to the exterior.
- .8 Install door louvers, plumb and level.

**3.3 ERECTION TOLERANCES**

- .1 Maximum Diagonal Distortion: 1/8" measured with straight edges, crossed corner to corner.
- .2 Clearance on steel doors at head and jambs shall be: 1/8" maximum, and 1/8" maximum between pairs of doors

**3.4 ADJUSTING**

- .1 Adjust door for smooth and balanced door movement.

END OF SECTION

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- .1 Flush wood doors; non-rated.
- .2 Shop finished.

**1.2 RELATED SECTIONS**

- .1 Section 08 11 00 - Metal Doors and Frames.
- .2 Section 08 71 00 - Door Hardware.
- .3 Section 08 80 00 - Glazing.

**1.3 REFERENCES**

- .1 ANSI A135.4 - Basic Hardboard.
- .2 ASTM E152 - Methods of Fire Tests of Door Assemblies.
- .3 AWI/AWMAC - Quality Standards Illustrated (QSI), current edition.
- .4 CSA O115, Hardwood and Decorative Plywood.
- .5 CAN/CSA O132.2 Series, Wood Flush Doors.

**1.4 SUBMITTALS FOR REVIEW**

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data: Indicate door core materials and construction; veneer species, type and characteristics.
- .3 Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, special beveling, special blocking for hardware, factory machining criteria, identify cutouts for glazing.
- .4 Samples: Submit two samples of plastic laminate faced door construction, 200x200 mm in size cut from top bottom corner of door.

**1.5 QUALITY ASSURANCE**

- .1 Perform work in accordance with AWI/AWMAC QSI, Premium Grade.
- .2 Finish doors in accordance with AWMAC Quality Standard QSI, Premium Grade.
- .3 Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

**1.6 DELIVERY, STORAGE, AND PROTECTION**

- .1 Package, deliver and store doors in accordance with AWI/AWMAC QSI.
- .2 Protect doors from dampness. Arrange for delivery after work causing abnormal humidity has been completed.
- .3 Store doors in well ventilated room, off floor, in accordance with manufacturer's recommendations.
- .4 Protect doors with resilient packaging. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges if stored more than one week.

**1.7 WARRANTY**

- .1 Provide 3 year warranty.
- .2 Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, telegraphing core construction.

**PART 2 PRODUCTS**

**2.1 DOOR CONSTRUCTION**

- .1 Core Solid, Non-Rated: solid core to CAN/CSA-O132.2.1; QSI section 1300; Solid particleboard core: stile and rail frame bonded to particleboard core with wood lock blocks 5-ply construction.

**2.2 FLUSH DOOR FACING**

- .1 Facing: Veneer facing; AWMAC premium quality species, elm; cut and grain matching as selected for transparent stain finish.

**2.3 ADHESIVE**

- .1 Facing Adhesive: Type I - water resistant.

**2.4 ACCESSORIES**

- .1 Glazing Stops: close grained wood of same species as door facing, mitered corners; lip moulding, prepared for countersink style screws.

**2.5 FABRICATION**

- .1 Fabricate non-rated doors in accordance with QSI Premium Grade Quality Standards requirements.
- .2 Provide lock blocks at lock edge and top of door for closer for hardware reinforcement.
- .3 Door Edge Detail to conform to QSI No. 2 Edge, hardwood vertical edges of species to match plastic laminate face.

- .4 Bond edge banding to cores.
- .5 Factory machine doors for finish hardware in accordance with hardware requirements and dimensions. Do not machine for surface hardware.
- .6 Factory fit doors for frame opening dimensions identified on shop drawings.
- .7 Provide edge clearances in accordance with AWMAC unless otherwise noted.

## **2.6 FINISH**

- .1 Factory finish doors in accordance with AWMAC Quality Standard and in accordance with reviewed sample and the following finish designation:
  - .1 Finish TR6 transparent catalyzed polyurethane, Premium quality, satin or semi gloss sheen.
  - .2 Seal door top edge with colour sealer to match door facing where tops of door edges are visible.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- .1 Verify that opening sizes and tolerances are acceptable.
- .2 Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

### **3.2 INSTALLATION**

- .1 Install doors in accordance with manufacturer's instructions.
- .2 Install doors in accordance with QSI Quality Standards requirements.
- .3 Coordinate installation of doors with installation of frames specified in Section 08 11 00 and hardware specified in Section 08 71 00.
- .4 Coordinate installation of glass and glazing.

### **3.3 INSTALLATION TOLERANCES**

- .1 Conform to QSI requirements for fit and clearance tolerances.
- .2 Maximum Distortion: ¼" measured with straight edge or taut string, corner to corner, over an imaginary 3' x 7' surface area.

### **3.4 ADJUSTING**

- .1 Adjust door for smooth and balanced door movement.

.2 Adjust closer for full closure.

END OF SECTION



**Part 1            General**

**1.1                SECTION INCLUDES**

- .1            Overhead coiling wood door, manual operation.

**1.2                RELATED SECTIONS**

- .1            Section 05 50 00 - Metal Fabrications: Support framing.
- .2            Section 09 21 16 - Gypsum Board Systems.

**1.3                SYSTEM DESCRIPTION**

- .1            Wood rolling service doors: manual operated, face of wall mount.

**1.4                SUBMITTALS FOR REVIEW**

- .1            Section 01 33 00: Submittal Procedures.
- .2            Product Data: Provide general construction, component connections and details,.
- .3            Shop Drawings: Indicate pertinent dimensioning, anchorage methods, hardware locations, and installation details.
- .4            Provide two samples 12" x 12" of custom stained wood panel, sample to match sample provided by Contract Administrator.

**1.5                SUBMITTALS FOR CLOSEOUT**

- .1            Section 01 78 10: Closeout Submittals.
- .2            Maintenance Data: Indicate lubrication requirements and frequency and periodic adjustments required.

**Part 2            Products**

**2.1                MANUFACTURERS**

- .1            Manufacturers: Woodfold Custom Roll-up Doors

**2.2                MATERIALS**

- .1            Curtain, hood, fascia and guide rails: Wood species to be select maple custom finished wood door to match sample.
  - .1            Slats: ½" x 1 ½" slats; 1 5/8" x 5" bottom bar.
- .2            Guides: wood guides to match curtain.

- .3 Manual push-up operation.
- .4 Face of wall mount.
- .5 Slide bolt locking.
- .6 Finish: custom stain finish to match sample.
- .7 Refer to drawings for size.

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Verify that opening sizes, tolerances and conditions are acceptable.

**3.2 INSTALLATION**

- .1 Install door unit assembly in accordance with manufacturer's instructions.
- .2 Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
- .3 Securely and rigidly brace components suspended from structure.
- .4 Fit and align assembly including hardware; level and plumb, to provide smooth operation.
- .5 Install perimeter trim and closures.

**3.3 ERECTION TOLERANCES**

- .1 Maintain dimensional tolerances and alignment with adjacent work.
- .2 Maximum Variation From Plumb: 1/8".
- .3 Maximum Variation From Level: 1/8".
- .4 Longitudinal or Diagonal Warp: Plus or minus 1/8" per 10' straight edge.

**3.4 ADJUSTING**

- .1 Adjust door, hardware and operating assemblies for smooth and noiseless operation.

**3.5 CLEANING**

- .1 Clean door and components.

- .2 Remove labels and visible markings.

**END OF SECTION**



**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- .1 Accordion Folding Wood Doors.
- .2 Track and hardware.

**1.2 RELATED SECTIONS**

- .1 Section 05 50 00 - Metal Fabrications: Overhead track support framing.
- .2 Section 08 71 00 - Door Hardware: Lock cylinders for grille.

**1.3 SUBMITTALS FOR REVIEW**

- .1 Shop Drawings: Indicate opening sizes, details of track and required supports, track loads, adjacent construction and finish trim, and stacking sizes.
- .2 Product Data: Provide data on door operation, hardware and accessories, colours and finishes available.
- .3 Samples: Submit two samples of surface finish. Finish to be custom colour to match sample supplied by Contract Administrator.

**1.4 MAINTENANCE DATA**

- .1 Describe cleaning materials detrimental to surfaces and hardware finish.
- .2 Include recommended cleaning methods, cleaning materials, and stain removal methods.

**1.5 QUALIFICATIONS**

- .1 Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

**1.6 FIELD MEASUREMENTS**

- .1 Verify that field measurements are as indicated.

**PART 2 PRODUCTS**

**2.1 ACCORDION FOLDING DOOR**

- .1 Accordion folding door: Woodfold Door Series 2100.
- .2 Components
  - .1 Door Construction: 4 1/4" wide by 1/4" thick hardwood veneer faced panels with custom finish.
  - .2 Track: Extruded aluminum; 2" x 1 1/8" size; aluminum, dark bronze.
  - .3 Carriers: Nylon, Ball bearing wheels on trolley carrier with threaded pendant bolt for vertical adjustment.

- .4 Hardware: Latching door handle; lock cylinder master keyed to building keying system. Key to be on room 102 side of door.
- .5 Accessories: wall jamb; lead posts; colour coordinated aluminum .
- .6 Sound seals: flexible vinyl sweep strips mounted on top and bottom of door, provide wood moulding on both sides of track finished to match door.

**PART 3 EXECUTION**

**3.1 INSTALLATION**

- .1 Install security grilles in accordance with manufacturer's instructions.
- .2 Fit and align door assembly level and plumb.

**3.2 ADJUSTING**

- .1 Adjust door assembly to provide smooth operation from stacked to full open position.

END OF SECTION

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1        Aluminum tube framing system with vision glass.
- .2        Insulated glass and metal infill panels.
- .3        Aluminum doors.
- .4        Anchors, brackets, and attachments.
- .5        Perimeter sealant.

**1.2                RELATED SECTIONS**

- .1        Section 05 12 00 - Structural Steel
- .2        Section 07 21 15 - insulation
- .3        Section 07 28 00 - Air & Vapour Barriers
- .4        Section 07 92 00 - Joint Sealers: System perimeter sealant and back-up materials.
- .5        Section 08 71 00 - Door Hardware
- .6        Section 08 80 00 - Glazing.

**1.3                REFERENCES**

- .1        AA (Aluminum Association) - Designation System for Aluminum Finishes.
- .2        AAMA (American Architectural Manufacturers' Association) - Metal Curtain Wall, Window, Store Front and Entrance - Guide Specifications Manual.
- .3        AAMA 501.2 - Methods of Test for Metal Curtain Walls.
- .4        AAMA 608.1 - Specification and Inspection Methods for Electrolytically Deposited Colour Anodic Finishes for Architectural Aluminum.
- .5        ASTM A123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- .6        ASTM A653/A653M - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .7        ASTM B209/B209M - Aluminum and Aluminum-Alloy Sheet and Plate.
- .8        ASTM B221/B221M - Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes.
- .9        ASTM E283 - Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors.

- .10 ASTM E331 - Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
- .11 ASTM E1105 - Test Method for Field Determination of Water Penetration of Installed

#### **1.4 SYSTEM DESCRIPTION**

- .1 Curtain Wall System: Tubular aluminum sections with self supporting framing, factory prefinished, vision glass, glass and metal insulated spandrel infill; related flashings, anchorage and attachment devices.

#### **1.5 PERFORMANCE REQUIREMENTS**

- .1 System Design: Design and size components to withstand dead loads and live loads caused by positive and negative wind loads acting normal to plane of wall as calculated in accordance with applicable building code and in accordance with ASTM E330. System to be designed to the NBC 2005 for a building importance category of post-disaster. Design shall be engineered by fabricator.
- .2 For mullion corner and special change of wall plane conditions, limit glazing sealant design movement to 20 percent maximum for elastomeric sealants or 5 percent for acrylic or butyl sealants.
- .3 Deflection: Limit mullion deflection to flexure limit of glass or L/175 whichever is less with full recovery of glazing materials.
- .4 System Assembly: Accommodate without damage to system, components or deterioration of seals, movement within system, movement between system and perimeter framing components, dynamic loading and release of loads, deflection of structural support framing, tolerance of supporting components, shortening of building concrete structural columns, creep of concrete structural members, and mid-span slab edge deflection.
- .5 Air Infiltration: Limit air infiltration through assembly to 0.03 cfm/min/sq ft of wall area, measured at a reference differential pressure across assembly of 1.57 psf as measured in accordance with ASTM E283.
- .6 Water Leakage: None, when measured in accordance with ASTM E331 at a differential pressure of 5.95psf.
- .7 Expansion / Contraction: System to provide for expansion and contraction within system components caused by a cycling temperature range of 95 degrees C over a 12 hour period without causing detrimental affect to system components.
- .8 System Internal Drainage: Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to the exterior by a weep drainage network.
- .9 Air and Vapour Seal: Maintain continuous air barrier and vapour barrier throughout assembly, primarily in line with inside pane of glass and heel bead of glazing compound.



- .10 Not Permitted: Vibration harmonics, wind whistles, noises caused by thermal movement, thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of system.

## **1.6 SUBMITTALS**

- .1 Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, internal drainage.
- .2 Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, anticipated deflection under load, affected related Work, weep drainage network, expansion and contraction joint location and details, and field welding required.
- .3 Shop drawings shall be sealed and signed by a Professional Structural Engineer experienced in design of this Work and licensed at the place where the Project is located.
- .4 Test Reports: If requested by Contract Administrator submit substantiating engineering data, test results of previous tests by independent laboratory which purport to meet performance criteria, and other supportive data.

## **1.7 QUALITY ASSURANCE**

- .1 Perform Work in accordance with AAMA - Metal Curtain Wall, Window, Store Front and Entrance - Guide Specifications Manual and manufacturers instructions.
- .2 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five years documented experience.
- .3 Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years documented experience and approved by manufacturer.
- .4 Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed at the place where the Project is located.

## **1.8 INSPECTION TESTING**

- .1 Coordinate inspection of vapour barrier to curtain wall elements prior to vapour barrier system being covered up by other trades.
- .2 Testing of air / vapour barrier materials and their connection to the curtain wall system will be performed by an independent inspection firm appointed and paid for by the cash allowance will be performed so as to least encumber the performance of the work.
- .3 The City will pay for the cost of one (1) series of tests only, on the areas being evaluated. Pay for costs of additional testing as required due to improper performance of work.
- .4 When work of this section or portions of work are completed to own satisfaction, notify the testing firm to perform tests. Do not proceed with additional portion of work until results have been verified and approved.

- .5 If, during progress of Work, tests indicate that materials do not meet specified requirements, remove defective work, replace and retest at own expense, as directed by the Contract Administrator.

## **1.9 STORAGE AND PROTECTION**

- .1 Protect prefinished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather. Puncture wrappings at ends for ventilation.

## **1.10 COORDINATION**

- .1 Coordinate the Work with installation of air barrier placement, vapour barrier placement.

## **1.11 WARRANTY**

- .1 Provide a five year warranty to include coverage for complete system for failure to meet specified requirements.

## **Part 2 PRODUCTS**

### **2.1 CURTAIN WALL SYSTEM**

- .1 Manufacturers:
  - .1 Kawneer; 1600 series.
  - .2 Alumicor; 2500 series.

### **2.2 Materials**

- .1 Extruded Aluminum: ASTM B221/B221M; 6063 alloy, T-5 temper.
- .2 Sheet Aluminum: ASTM B209/B209M; 3003 alloy, H-14 temper.
- .3 Sheet Steel: ASTM A653/A653M;
- .4 Steel Sections: ASTM A36/A36M weldable structural quality, shaped to suit mullion sections.
- .5 Fasteners: Stainless steel.

### **2.3 COMPONENTS**

- .1 Mullion Profile: 2 ½" wide profile, thermally broken with interior tubular section insulated from exterior pressure plate; matching stops and pressure plate of sufficient size and strength to provide bite on glass and infill panels; drainage holes, deflector plates and internal flashings to accommodate internal weep drainage system; internal mullion baffles to eliminate "stack effect" air movement within internal spaces.
- .2 Spandrel Panel: Internally reinforced, glazing edge sealed, outside air barrier:
  - .1 Outer face (glass spandrel panels): spandrel glass specified in Section 08 80 00.
  - .2 Core: mineral fiber insulation core.

- .3 Inner Face: 22 ga. galvanized sheet steel.
- .3 Entrance doors: Kawneer 500 wide stile doors; Alumicor Canadiana 600 series; with 8" centre mullion.
- .4 Flashings: 24 ga. thick aluminum, finish to match curtain wall mullion sections where exposed, secured with concealed fastening method.
- .5 Firestopping: Specified in Section 07 84 00.
- .6 Vapour Barrier and Air Barrier: Specified in Section 07 28 00.

## **2.4 GLASS AND GLAZING MATERIALS**

- .1 Glass Materials: As specified in Section 08 80 00.
- .2 Glazing Materials: Dry / Dry glazing system to suit application to achieve weather, moisture, and air infiltration requirements.

## **2.5 SEALANT MATERIALS**

- .1 Sealant and Backing Materials: As specified in Section 07 92 00.

## **2.6 HARDWARE**

- .1 Provide door hardware as specified in Section 08 71 00.

## **2.7 FABRICATION**

- .1 Fabricate system components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
- .2 Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.
- .3 Prepare components to receive anchor devices. Fabricate anchors.
- .4 Arrange fasteners and attachments to ensure concealment from view.
- .5 Reinforce framing members for external imposed loads.

## **2.8 FINISHES**

- .1 Finish Coatings: Conform to AAMA 608.1.
- .2 All Exposed Aluminum Surfaces: anodized to clear colour, 0.7 mills thickness.
- .3 Shop and Touch-Up Primer for Steel Components: SPCC Paint 25 red oxide.
- .4 Apply one coat of bituminous paint to concealed aluminum and steel surfaces in contact with cementitious or dissimilar materials.

**Part 3 EXECUTION**

**3.1 EXAMINATION**

- .1 Verify dimensions, tolerances, and method of attachment with other work.
- .2 Verify wall openings and adjoining air barrier and vapour retarder materials are ready to receive work of this section.

**3.2 INSTALLATION**

- .1 Install curtain wall system in accordance with manufacturer instructions.
- .2 Install curtain wall system prior to construction of adjacent exterior wall assemblies.
- .3 Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- .4 Provide alignment attachments and shims to permanently fasten system to building structure.
- .5 Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances and align with adjacent work.
- .6 Install air/vapour barrier transition membranes.
- .7 Provide thermal isolation where components penetrate or disrupt building insulation.
- .8 Install sill flashings.
- .9 Coordinate attachment and seal of perimeter air barrier and vapour retarder materials.
- .10 Pack insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- .11 Install glass and infill panels to glazing method required to achieve performance criteria. exterior wet/dry method of glazing.
- .12 Install perimeter sealant to method required to achieve performance criteria

**3.3 ERECTION TOLERANCES**

- .1 Maximum Variation from Plumb: 0.06 inches every 3' non-cumulative or 1/2" / 100', whichever is less.
- .2 Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32".
- .3 Sealant Space Between Curtain Wall Mullions and Adjacent Construction: Maximum of 3/4" and minimum of 1/4".

**3.4 MANUFACTURER'S FIELD SERVICES**

- .1 Curtain wall Glass product manufacturers to provide field surveillance of the installation of their Products.

- .2 Monitor and report installation procedures and unacceptable conditions .

### **3.5 CLEANING**

- .1 Remove protective material from prefinished aluminum surfaces.
- .2 Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.
- .3 Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.

### **3.6 PROTECTION OF FINISHED WORK**

- .1 Protect finished Work from damage.

END OF SECTION



## **Part 1 General**

### **1.1 SECTION INCLUDES**

- .1 Hardware for wood, hollow steel and aluminum doors.
- .2 Thresholds.
- .3 Weatherstripping, seals, and door gaskets.

### **1.2 RELATED SECTIONS**

- .1 Section 06 20 00 - Finish Carpentry: Cabinet hardware.
- .2 Section 08 11 00 - Metal Doors and Frames.
- .3 Section 08 14 16 - Flush Wood Doors.
- .4 Section 08 44 13 - Glazed Aluminum Curtain Walls.
- .5 Division 26 - Electrical.

### **1.3 REFERENCES**

- .1 AWMAC (Architectural Woodwork Manufacturers Association of Canada) - Quality Standards.
- .2 BHMA (Builders Hardware Manufacturers Association) - A156 series.
- .3 CSDFMA (Canadian Steel Door and Frame Manufacturers Association).

### **1.4 SUBMITTALS FOR REVIEW**

- .1 Section 01 33 00: Submittal procedures.
- .2 Shop Drawings:
  - .1 Indicate locations and mounting heights of each type of hardware, schedules, catalogue cuts, electrical characteristics and connection requirements.
  - .2 Submit manufacturer's parts lists, templates, and .

### **1.5 SUBMITTALS AT PROJECT CLOSEOUT**

- .1 Section 01 33 00: Submittal procedures.
- .2 Project Record Documents: Record actual locations of installed cylinders and their master key code.
- .3 Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

- .4 Keys: Deliver with identifying tags to City by security shipment direct from hardware supplier.
- .5 Warranty: Submit manufacturer warranty and ensure forms have been completed in City's name and registered with manufacturer.

## **1.6 QUALITY ASSURANCE**

- .1 Hardware Supplier Qualifications: Company specializing in supplying institutional door hardware with years documented experience. approved by manufacturers.

## **1.7 DELIVERY, STORAGE, AND PROTECTION**

- .1 Section 01 61 00 Product Requirements : Transport, handle, store, and protect products.
- .2 Package hardware items individually; label and identify each package with door opening code to match hardware schedule.

## **1.8 PROJECT CONDITIONS**

- .1 Section 01 31 00: Project Management and Coordination.
- .2 Coordinate the work with other directly affected sections involving manufacture or fabrication of internal reinforcement for door hardware and recessed items.
- .3 Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.
- .4 Coordinate City's keying requirements during the course of the Work.

## **1.9 MAINTENANCE PRODUCTS**

- .1 Section 01 7840 - Maintenance Requirements: Operation and maintenance data.
- .2 Provide special wrenches and tools applicable to each different or special hardware component.
- .3 Provide maintenance tools and accessories supplied by hardware component manufacturer.

## **Part 2 Products**

### **2.1 SUPPLIERS**

- .1 Refer to hardware Schedule listed at the end of this specification section.

### **2.2 DOOR HARDWARE**

- .1 Butts; Provide 1 - ½ pair for all doors, except doors over 900 m wide or over 2200 mm high are to have 2 pair.



### **2.3 KEYING**

- .1 Door Locks: Keyed differently.
- .2 Grand master keyed.
- .3 Supply keys in the following quantities:
  - .1 3 master keys.
  - .2 3 grand master keys.
- .4 Specified keying is included in the contract price. The City will upon occupancy of the building, supply and install new Abloy cylinders and keying system.

### **2.4 KEY CABINET**

- .1 Cabinet Construction: Sheet steel construction, piano hinged door with cylinder lock master keyed to building system.
- .2 Cabinet Size: Size for project keys plus 350 locker / cabinet and other miscellaneous keys and 10 percent growth.
- .3 Hooks for keys.
- .4 Horizontal plastic strips for key hook labelling with clear plastic strip cover over labels.
- .5 Finish: Baked enamel, finish, colour as selected.

### **2.5 FINISHES**

- .1 Finishes: Identified in Schedule at end of section.

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 Verify that doors and frames are ready to receive work and dimensions are as indicated on shop drawings.
- .2 Verify that electric power is available to power operated devices and is of the correct characteristics.

### **3.2 INSTALLATION**

- .1 Install hardware in accordance with manufacturer's instructions.
- .2 Use templates provided by hardware item manufacturer.
- .3 Mounting heights for hardware from finished floor to centre line of hardware item, refer to:
  - .1 CSDFMA.

**3.3 ADJUSTING**

.1 Adjust hardware for smooth operation.

**3.4 SCHEDULES**

.1 HW SET: 01

3	EA	HINGE	3CB1 4.5 X 4	652	IVE
1	EA	STOREROOM LOCK	ND80PD RHO	626	SCH
1	EA	SURFACE CLOSER	4011	689	LCN
1	EA	KICKPLATE	8400 12"	630	IVE
1	EA	WALL STOP	WS406CVX/CCV	626	IVE

.2 HW SET: 02

3	EA	HINGE	3CB1 4.5 X 4 NRP	652	IVE
1	EA	STOREROOM LOCK	ND80PD RHO	626	SCH
1	EA	SURFACE CLOSER	1461 CUSH	689	LCN
1	EA	KICKPLATE	8400 12"	630	IVE

.3 HW SET: 03

3	EA	HINGE	3CB1 4.5 X 4	652	IVE
1	EA	STOREROOM LOCK	ND80PD RHO	626	SCH
1	EA	SURFACE CLOSER	1461	689	LCN
1	EA	KICKPLATE	8400 12"	630	IVE
1	EA	FLOOR STOP	FS436/FS438	626	IVE

.4 HW SET: 04

4	EA	HINGE	3CB1 4.5 X 4	652	IVE
1	EA	PRIVACY LOCK	L9496P 06A L583-363	626	SCH
1	EA	AUTO-EQUALIZER	4642 REG	689	LCN
1	EA	KICKPLATE	8400 12"	630	IVE
1	EA	WALL STOP	WS406CVX/CCV	626	IVE
1	EA	LATCH MONITOR	LML-2		SEC
4	EA	ACTUATOR, WALL MOUNT	8310-856		LCN
4	EA	ESCUTCHEON	8310-874	630	LCN

NOTE: ACTUATORS WIRED THROUGH THE LML SWITCH. ACTUATORS TO BE DISABLED WHEN DEADBOLT IS THROWN.

.5 HW SET: 05

3	EA	HINGE	3CB1 4.5 X 4 NRP	652	IVE
1	EA	STOREROOM LOCK	ND80PD RHO	626	SCH
1	EA	SURFACE CLOSER	1461 CUSH	689	LCN
1	EA	KICKPLATE	8400 12"	630	IVE

.6 HW SET: 06

NOT USED

.7 HW SET: 07

1	EA	CONTINUOUS HINGE 700		630	IVE
1	EA	PULL/PUSHBAR	9190-2	630	IVE
1	EA	AUTO-EQUALIZER	4642 REG	689	LCN
1	EA	FLOOR STOP	FS436/FS438	626	IVE
4	EA	ACTUATOR, WALL MOUNT	8310-856		LCN
4	EA	ESCUTCHEON	8310-874	630	LCN

.8 HW SET: 08

1	EA	CONTINUOUS HINGE 700		630	IVE
1	EA	PANIC HARDWARE	35A-NL-OP	626	VON
1	EA	RIM CYLINDER	20-021	626	SCH
1	EA	OFFSET DOOR PULL	8190-2	630	IVE
1	EA	AUTO-EQUALIZER	4642 REG	689	LCN
1	EA	OVERHEAD STOP	100S	630	GLY
1	EA	DOOR SWEEP	W-13S	628	KNC
1	EA	THRESHOLD	CT-11	627	KNC
			WEATHERSTRIP BY DOOR SUPPLIER		
4	EA	ACTUATOR, WALL MOUNT	8310-856		LCN
4	EA	ESCUTCHEON	8310-874	630	LCN

.9 HW SET: 09

3	EA	HINGE	3CB1 4.5 X 4 NRP	630	IVE
1	EA	STOREROOM LOCK	ND96PD RHO	626	SCH
1	EA	SURFACE CLOSER	4111 EDA	689	LCN
1	EA	OVERHEAD HOLDER	100H	630	GLY
1	SET	WEATHERSTRIP	W-50	628	KNC
1	EA	DOOR SWEEP	W-13S	628	KNC
1	EA	THRESHOLD	CT-11	627	KNC
1	EA	STOP STRIP	CT-40N	AL	KNC

.10 HW SET: 10

3	EA	HINGE	3CB1 4.5 X 4 NRP	652	IVE
1	EA	STOREROOM LOCK	ND80PD RHO	626	SCH
1	EA	SURFACE CLOSER	1461	689	LCN
1	EA	KICKPLATE	8400 12"	630	IVE
1	EA	WALL STOP	WS406CVX/CCV	626	IVE

.11 HW SET: 11

4	EA	HINGE	3CB1 4.5 X 4 NRP	652	IVE
1	EA	DEADBOLT	B660P	626	SCH
1	EA	PUSH PLATE	8200 6" X 16"	630	IVE
1	EA	PULL PLATE	8302-0 6" X 16"	630	IVE
1	EA	SURFACE CLOSER	4111 EDA	689	LCN
1	EA	OVERHEAD STOP	100S	630	GLY
1	EA	KICKPLATE	8400 12"	630	IVE

.12 HW SET: 12

8	EA	HINGE	3CB1 4.5 X 4 NRP	652	IVE
2	EA	MANUAL FLUSH BOLT	FB458	626	IVE
1	EA	DEADBOLT	B660P	626	SCH
2	EA	PUSH PLATE	8200 6" X 16"	630	IVE
1	EA	SURFACE CLOSER	4011	689	LCN
1	EA	SURFACE CLOSER	4111 EDA	689	LCN
1	EA	OVERHEAD STOP	100S	630	GLY
1	EA	OVERHEAD STOP	900S	630	GLY
2	EA	KICKPLATE	8400 12"	630	IVE

NOTE: CLOSERS TO BE MOUNTED ON KITCHEN SIDE OF DOORS. 100S STOP TO BE USED WITH 4111 EDA CLOSER. 900S STOP TO BE USED WITH 4011 CLOSER.

.13 HW SET: 13

2	EA	PANIC HARDWARE	9827L 996L	626	VON
2	EA	RIM CYLINDER	20-021	626	SCH
BALANCE OF HARDWARE EXISTING					

NOTE: CONFIRM STILE WIDTH ON SITE WILL ACCOMODATE THE SPECIFIED EXIT DEVICE PRIOR TO ORDERING.

.14 HW SET: 14

4	EA	HINGE	3CB1 4.5 X 4	652	IVE
1	EA	PUSH PLATE	8200 6" X 16"	630	IVE
1	EA	PULL PLATE	8302-0 6" X 16"	630	IVE
1	EA	AUTO-EQUALIZER	4642 REG	689	LCN
1	EA	KICKPLATE	8400 12"	630	IVE
1	EA	WALL STOP	WS406CVX/CCV	626	IVE
4	EA	ACTUATOR, WALL MOUNT	8310-856		LCN
4	EA	ESCUTCHEON	8310-874	630	LCN

.15 HW SET: 15

4	EA	HINGE	3CB1 4.5 X 4	652	IVE
1	EA	PUSH PLATE	8200 6" X 16"	630	IVE
1	EA	PULL PLATE	8302-0 6" X 16"	630	IVE
1	EA	AUTO-EQUALIZER	4631 REG	689	LCN
1	EA	KICKPLATE	8400 12"	630	IVE
1	EA	WALL STOP	WS406CVX/CCV	626	IVE
4	EA	ACTUATOR, WALL MOUNT	8310-856		LCN
4	EA	ESCUTCHEON	8310-874	630	LCN

**END OF SECTION**



**Part 1            General**

**1.1                SECTION INCLUDES**

- .1        Glass and glazing for hollow metal frames and screens, hollow metal doors, wood doors, aluminum doors, sidelights, aluminum glazed screens, entrances, curtainwall.
- .2        Mirrors.

**1.2                RELATED SECTIONS**

- .1        Section 08 06 00 - Door Schedule
- .2        Section 08 11 00 - Metal Doors and Frames.
- .3        Section 08 14 16 - Flush Wood Doors
- .4        Section 08 44 13 - Glazed Aluminum Curtain Wall System.
- .5        Section 10 28 14 - Washroom Accessories: Mirrors.

**1.3                REFERENCES**

- .1        CAN/CGSB-12.1M - "Glass, Safety, Tempered or Laminated"
- .2        CAN/CGSB-12.3M - "Glass, Polished Plate or Float, Flat, Clear"
- .3        CAN/CGSB-12.8M – "Insulating Glass Units".

**1.4                PERFORMANCE REQUIREMENTS**

- .1        Size glass to withstand dead loads and positive and negative live loads acting normal to plane of glass as calculated in accordance with applicable code.
- .2        System to be designed to the NBC 2005 for a building importance category of post-disaster.
- .3        Limit glass deflection to 1/200 or flexure limit of glass with full recovery of glazing materials, whichever is less.

**1.5                SUBMITTALS**

- .1        Samples: Submit two samples 12" x 12" in size, exemplifying each type of glass specified.

**1.6                QUALITY ASSURANCE**

- .1        Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years documented experience.

**1.7                WARRANTY**

- .1        Provide a ten (10) year warranty to include coverage for sealed glass units from seal failure, interpane dusting or misting, and replacement of same.

- .2 Provide a ten (10) year warranty to include coverage for delamination of laminated glass and replacement of same.

## **Part 2 Products**

### **2.1 GLASS MATERIALS**

- .1 Insulated Glass (Type G1): CAN2-12.8M double pane; 1/4" outer pane of clear tempered glass; 1/4" inner pane of clear tempered glass with AFGD Comfort E2 Low E argon filled cavities. Total unit thickness 1".
- .2 Insulating Glass (type G2): CAN2-12.8M double pane; 1/4" outer pane of clear glass; 1/4" inner pane of clear glass with AFGD Comfort-Ti-AC40 Low E argon filled cavities. Total unit thickness 1".
- .3 Safety Glass (Type G3): CAN/CGSB-12.1M; Clear, Type 2 fully tempered; 1/4" minimum thick.
- .4 Flat Glass (Type G4): CGSB 12-GP-3M, transparent flat, 1/4" minimum thick.
- .5 Safety Glass (Type G5- guardrail): Clear conforming to CAN/CGSB-12.1M Type 2 tempered, clear; minimum, single panel tempered glass, edges flat polished; 5/8 inch minimum thick.
- .6 Spandrel Glass (Type S1): Heat strengthened clear]glass with opacifier of colour to be selected by Contract Administrator.
- .7 Silvered mirror glass: to CAN/CGSB-12.5, 1/4" thick. Type 1A-Float glass for normal use.
- .8 Insulating Glass Edge Seal Construction: silicone spacer; Architectural S class Superspacer manufactured by Edgetech, colour to be black.

### **2.2 GLAZING ACCESSORIES**

- .1 Setting Blocks: Neoprene, 80 to 90 Shore A durometer hardness, length of 1" for each square meter of glazing or minimum 100 mm x width of glazing rabbet space minus 1/16" x height to suit glazing method and pane weight and area.
- .2 Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness, minimum 3" long x one half the height of the glazing stop x thickness to suit.
- .3 Glazing Tape: Preformed butyl compound with integral resilient tube spacing device; 10 to 15 Shore A durometer hardness; coiled on release paper; Tremco polyshim II; black colour.
- .4 Glazing Splines, Gaskets: Window manufacturers standard.

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 Verify that openings for glazing are correctly sized and within tolerance.



- .2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and ready to receive glazing.

### **3.2 PREPARATION**

- .1 Clean contact surfaces with solvent and wipe dry.
- .2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- .3 Prime surfaces scheduled to receive sealant.
- .4 Select either or both of the following two paragraphs as appropriate.
- .5 Install sealant in accordance with manufacturer's instructions.

### **3.3 INSTALLATION - INTERIOR DRY METHOD (TAPE AND TAPE)**

- .1 Cut glazing tape to length and set against permanent stops, projecting 1/16" above sight line.
- .2 Place setting blocks at 1/4 points with edge block no more than 6" from corners.
- .3 Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.
- .4 Place glazing tape on free perimeter of glazing in same manner described above.
- .5 Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
- .6 Knife trim protruding tape.

### **3.4 INSTALLATION – MIRRORS**

- .1 Install mirrors using glazing tape strips vertically at 400 mm o.c.
- .2 Apply bead of silicone caulking 50 mm from edge around perimeter of mirror and vertically between glazing tape strips prior to setting mirror in place.
- .3 Butt sides tight to adjacent mirrors and walls.

### **3.5 EXTERIOR GLAZING**

- .1 To be installed to curtain wall manufactures recommendations.

### **3.6 CLEANING**

- .1 Remove glazing materials from finish surfaces.
- .2 Remove labels after Work is complete.
- .3 Clean glass and adjacent surfaces.

**3.7 PROTECTION OF FINISHED WORK**

- .1 After installation, mark pane with an 'X' by using removable plastic tape or paste. Do not mark heat absorbing or reflective glass units.

**3.8 SCHEDULE**

- .1 Refer to A8.1 for glass types and locations.
- .2 Type G5 located at guardrail at new stair.

END OF SECTION