Part 1 General

1.1 GENERAL REQUIREMENTS

.1 General Conditions, Supplementary Conditions and Division 01 apply to this section.

1.2 SUMMARY

.1 This Section includes requirements for supply and installation of the following:

- .1 Exterior and Interior Steel Doors
- .2 Exterior and Interior Steel Door Frames
- .3 Sidelight Frames
- .4 Fire rated door and frame assemblies
- .5 Fire rated window frames

1.3 RELATED REQUIREMENTS

.1 Section 07 92 00: Sealants

.2 Section 08 71 00: Door Hardware

.3 Section 08 81 00: Glass and Glazing

.4 Section 09 90 00: Painting and Finishing

1.4 DEFINITIONS

.1 Base Metal Thickness: Thickness dimensions are minimums as defined in referenced ASTM standards for both uncoated steel sheet and the uncoated base metal of metallic coated steel sheets.

.2 Opening Sizes: Standard metric imperial door sizes indicated in on Drawings are considered nominal dimensions, measured from frame rabbet width and height, with allowances for nominal clearances between head, jamb and door bottom in accordance with CSDMA Recommended Dimensional Standards for Commercial Steel Doors and Frames.

1.5 REFERENCES

.1 American National Standards Institute (ANSI):

- .1 ANSI/SDI A250.7-1997 (R2002), Nomenclature for Standard Steel Doors and Steel Frames
- .2 ANSI/SDI A250.11-2001, Recommended Erection Instructions for Steel Frames.

.2 American Society for Testing and Materials (ASTM):

- .1 ASTM A653/A653M-11, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- .2 ASTM A879/A879M-12, Standard Specification for Steel Sheet, Zinc Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface

.3 ASTM A924/A924M-10a, Standard Specification for General Requirements for Sheet Steel, Metallic-Coated by the Hot-Dip Process.

.3 Canadian General Standards Board (CGSB):

.1 CAN/CGSB 1.132-M90, Primer, Zinc Chromate, Low Moisture Sensitivity

.2 CAN/CGSB 41-GP-19Ma-78(1984), Rigid Vinyl Extrusions for Windows and Doors

.3 CAN/CGSB 82.5-M88, Insulated Steel Doors

.4 Canadian Standards Association (CSA):

.1 CSA W59-03 (R2008), Welded Steel Construction (Metal Arc Welding)

.5 Canadian Steel Door Manufacturers Association (CSDMA):

.1 Recommended Dimensional Standards for Commercial Steel Doors and Frames, 2007

.2 Fire Labelling Guide, 2009

.6 National Fire Protection Association (NFPA):

.1 NFPA 80-2010, Fire Doors and Windows

.2 NFPA 252-2012, Fire Tests of Door Assemblies

.7 Underwriters Laboratories Canada (ULC):

.1 CAN4 S104-M80 (R1985), Fire Tests of Door Assemblies

.2 CAN/ULC S105-09, Standard Specification for Fire Door Frames Meeting the Performance Required by CAN/ULC S104

.3 CAN4 S106-1980 (R1985), Standard Method for Fire Tests of Window and Glass Block Assemblies

1.6 SUBMITTALS

.1 Provide requested information in accordance with Section 01 33 00 - Submittals.

.2 Action Submittals: Provide the following submittals before starting any work of this Section:

.1 Product Data:

.1 Submit product data for each type of door and frame indicated, include door designation, type, level and model, material description, core description, construction details, label compliance, fire resistance ratings, and finishes.

.2 Shop Drawings:

.1 Show each type of frame, door, hardware blanking, reinforcing, tapping and drilling arrangements, metal gauges, thicknesses and finishes.

.2 Show details of doors including vertical and horizontal edge details.

.3 Submit door and frame schedule identifying each unit. Each unit shall bear a legible identifying mark corresponding to that listed in the door and frame schedule.

.3 Samples:

.1 Supply for Departmental Representative review, if requested, sample of frame corner showing construction, workmanship and finish.

.4 Informational Submittals: Provide the following submittals when requested by the Departmental Representative:

.1 Source Quality Control Submittals: Submit information on zinc coating treatment and primer spot treatment, including instructions for surface treatment before site painting and any restrictions or special coating requirements.

.5 Certificates: Submit the following certificates or letters of compliance:

.1 Oversize Compliance: Submit oversize construction evidence indicating compliance with fire labelling for door and frame assemblies required to be fire protection rated and exceeding size limitations of labelled assemblies.

1.7 QUALITY ASSURANCE

.1 Manufacturer: Obtain hollow metal doors and frames from single source of supply and from a single manufacturer, and as follows:

.1 Fabricate work of this Section to meet the requirements of the Canadian Steel Door and Frame Manufacturer's Association, Manufacturing Specification for Doors and Frames as a minimum, and as further modified in this section.

.2 Fabricator shall be a member in good standing of the Canadian Steel Door and Frame Manufacturer's Association.

.2 Supplier: Obtain hollow metal doors and frames from single source of supply and from a single manufacturer.

.3 Installer: Use installers who are experienced with the installation of hollow metal doors and frames of similar complexity and extent to that required for the Project.

.4 Testing Agencies: Provide doors produced under label service program of a testing agency acceptable to Authorities Having Jurisdiction, and as follows:

.1 Steel Fire Rated Doors and Frames: Labelled and listed by an organization accredited by Standards Council of Canada for ratings specified or indicated.

.2 Provide fire labelled frame products for those openings requiring fire protection ratings, as scheduled:

.1 List by nationally recognized agency having factory inspection service and construct as detailed in Follow-up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

.2 Fabricate all rated doors, frames and screens to labelling authority standard.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Coordinate deliveries to comply with construction schedule and arrange ahead for off-the-ground, under cover storage location. Do not load any area beyond the design limits.

.2 Adequately protect units against rust and damage during manufacture, delivery and storage.

.3 Store materials on planks in a dry area and cover to protect from damage. Make good immediately any damage done. Clean scratches and touch-up with rust-inhibitive primer.

1.9 SITE CONDITIONS

.1 Site Measurements: Verify actual dimensions of openings by site measurements before fabrication and indicate measurements on shop drawings; coordinate fabrication schedule with construction progress to avoid delaying the Work.

.2 Established Measurements: Establish dimensions and proceed with fabricating doors and frames without site measurements where site measurements cannot be made without delaying the Work; coordinate construction to ensure that actual site dimensions correspond to established dimensions.

Part 2 Products

2.1 MATERIALS

.1 Sheet Steel:

.1 Exterior Doors and Frames: Galvanized, AS120, steel sheets in accordance with ASTM A924/M924-14; coated to meet requirements of ASTM A653/A653M, Commercial Steel (CS), Type B; stretcher levelled standard of flatness where used for face sheets.

.2 Interior Doors and Frames (Normal Humidity): Electrolytic zinc coated steel sheets in accordance with ASTM A879/A879M-12, Commercial Steel (CS), Class B coating; mill phosphatized; suitable for unexposed applications; stretcher levelled standard of flatness.

.2 Gauges:

.1 Door and Screen Frames:

.1 Gauge: 16 msg

.2 Doors (Honeycomb or Polystyrene Core):

.1 Door Faces:

.1 Gauge: 18 msg.

.3 Top and Bottom End Channels:

.1 Gauge: 18 msg.

.4 Reinforcements:

.1 Lock and Strike Reinforcements:

.1 Gauge: 16 msg.

.2 Hinge Reinforcements:

.1 Gauge: 10 msg.

.3 Flush Bolt Reinforcements:

.1 Gauge: 16 msg.

.4 Door Closer or Holder Reinforcements:

.1 Gauge: 12 msg.

.3 Anchors:

.1 As required to suit condition.

.4 Rubber Bumpers:

.1 3 per door.

.5 Weatherstrip:

.1 Extruded aluminum with vinyl insert #W13 for head and jambs and #W5 for pairs of doors without mullions, manufactured by Crowdertrack Limited.

.6 Door Cores:

.1 Interior doors, except fire rated doors: Structural small cell; 1" maximum, kraft paper honeycomb; minimum weight 36 kg/ream; minimum density 16.5 kg/m^3; sanded to required thickness.

.2 Exterior doors: Rigid extruded, closed cell insulation, fire retardant treated meeting the requirements of ULC S701-11, Type 4, minimum thermal resistance R-Value 4.5/1" thickness.

.7 Adhesives:

.1 Core Adhesive: Heat resistant, single component adhesive recommended by manufacturer.

.8 Touch-Up Primer: Rust inhibitive primer meeting CAN/CGSB 1.132, touch up zinc coatings using shop applied primer; grey or red coloured primer, clear primer not acceptable; provide additional primer for site touch-up to repair damaged zinc and shop applied coatings.

.9 Accessories:

.1 Sealant: As specified in Section 07 92 00.

.2 Door Silencers (Bumpers or Mutes): Manufacturer's standard black or grey neoprene silencers; three silencers on strike jambs of single door frames; two silencers on heads of double-door frames; stick on bumpers are not acceptable.

.10 Materials for fire rated doors shall conform to ULC or ULI requirements.

2.2 FABRICATION AND MANUFACTURE

.1 Gauges of metal shall be as specified. No deviations or substitutions will be accepted

.2 Reinforcing specified is the minimum acceptable. Provide additional reinforcement where required to ensure a permanent, rigid, trouble free installation able to withstand the stresses of heavy commercial usage.

.3 Cut, shear, straighten and work the steel in manner to prevent disfigurement of the finished work.

.4 Punch frames for rubber door bumpers.

.5 Fill seams, joints and weld depressions with epoxy metal filler, disc sand to a smooth, flat, uniform scratch-free surface, with all arrises sharp and true to line. Drilled and punches holes shall be reamed and have all burrs removed.

.6 Finished work shall be free of warp, open seams, buckles, weld and grind marks and other surface defects detrimental to the production of a good paint finish.

.7 Fastenings shall be concealed except those required for loose glazing stops.

.8 Welding shall conform to CSA W59-03 (R2008).

.9 Hardware Requirements:

.1 Blank, mortise, reinforce, drill and tap doors and frames to receive templated hinges and other hardware as required. Check hardware lists for requirements.

.10 Frames:

.1 Fabricate frames to profiles shown. Frames shall be fabricated to suite the header conditions of masonry work. Mitre corners of frames. Cut frame mitres accurately and weld continuously on inside of frame. Fabricate header frame to suit. Where site welding or splicing is required due to size of unit, the location of field joints shall be shown on the shop drawings and strictly adhered to.

.2 Protect strike and hinge reinforcements and other openings with mortar guard boxes welded to frame.

.3 Cutouts in doors for mortise lock sets shall be fitted with leaf spring clips and back limit stop to facilitate easy positioning and setting of locksets.

.4 Weld floor clip angles to inside of each jamb profile, two holes in each for anchorage to floor. Where required provide adjustable type floor clip angles.

.5 Fit frames with channel or angle spreaders, two per frame, to ensure proper frame alignment. Install stiffener plates or spreaders between frame trim where required, to prevent bending of trim and to maintain alignment when setting and during construction.

.6 Where frames occur in masonry provide and adjustable T-strap type or wire type anchor for every 2'-0" of jamb length. Special anchors for frames to be set in concrete shall be as detailed.

.7 Construct door frames of labelled fire doors as approved by ULC or ULI. Ratings for frames shall match doors. Locate label on the frame jamb midway between the top hinge and the head of door frame so that it is concealed when the door is closed.

.8 Provide continuous weatherstripping at head and jambs of exterior door frames. Properly secure in place with screws and adjust as required.

.9 Insulate exterior frames to provide continuous thermal barrier in exterior frames.

.11 Doors:

.1 Fabricate doors to present one continuous face free from joints, tool markings and abrasions.

.2 Reinforce, stiffen honeycomb doors with small cell honeycomb core laminated to the inside faces of panels. The core shall completely fill the inside hollow of the door.

.3 Reinforce around frame openings required for glazing or louvers. Provide glazing stops with countersunk oval head screws.

.4 Exterior doors shall be completely filled with polystyrene foam core.

.5 Reinforce door edges with channel reinforcing. Bevel stiles 1/8". Assemble by tack welding and fill.

.6 Provide flush top edge on exterior doors.

.7 Fabricate fire rated door assemblies in accordance with ULC or ULI requirements. Provide labels for all fire rated doors. Locate label on the door midway between the top hinge and the head of the door so that it is concealed when the door is closed.

.8 Provide cutouts in doors for glazed lites as indicated on drawings and schedules. Glazing stops shall be square formed steel in single piece lengths sized to suit. Accurately mitre corners and finish in proper plane. Secure stops in place with flush, countersunk screws.

.12 Finishing

.1 Shop apply zinc rich primer to repair damaged zinc coatings arising from fabrication; cure primer fully before shipping to site; include compatible primer for site finishing and correction of surface abrasions to zinc coatings and factory applied primer.

.2 Remove weld slag and splatter from exposed surfaces.

.3 Fill and sand smooth tool marks, abrasions and surface blemishes to present smooth uniform surfaces.

Part 3 Execution

3.1 EXAMINATION

.1 Examine substrates, door swing arcs, areas of installation and conditions affecting installation for compliance with requirements for manufacturer’s installation tolerances and other conditions affecting performance of work of this Section.

.2 Verify roughing-in for embedded and built-in anchor locations before installing frames.

.3 Verify door and frame size, door swing and ratings with door opening number before installing frames.

.4 Installation of hollow metal doors and frames will denote acceptance of site conditions.

3.2 INSTALLATION

.1 Install steel doors, frames, and accessories in accordance with reviewed shop drawings, ANSI A250.11, CSDMA Installation Guide, manufacturer's data, and as specified in this Section.

.2 Door Frames:

.1 Remove temporary spreaders before installing door frames, leaving exposed surfaces smooth and undamaged.

.2 Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set; limit of acceptable frame distortion 1/16” out of plumb measured on face of frame, maximum twist corner to corner of 1/8”; align horizontal lines in final assembly.

.3 Brace frames rigidly in position until adjacent construction is complete; install wooden spreaders at third points of frame rebate to maintain frame width, install centre brace to support head of frames 4’ and wider in accordance with ANSI A250.1; do not use temporary metal spreaders for bracing of frames.

.4 For frames over 1220mm (4') in width, provide vertical support at the centre of head.

.3 Frame Tolerances: Install frames to tolerances listed in ANSI A250.11, and as follows:

.1 Squareness: Maximum 0.8mm (1/32") measured across opening between hinge jam and strike jamb.

.2 Plumbness: Maximum 0.8mm (1/32") measured from bottom of frame to head level.

.3 Alignment: Maximum 0.8mm (1/32") measured offset between face of hinge jamb and strike jamb relative to wall construction.

.4 Twist: Maximum 0.8mm (1/32") measured from leading edge of outside frame rabbet to leading edge of inside frame rabbet.

.4 Doors:

.1 Fit hollow metal doors accurately in frames within clearances required for proper operation; shim as necessary for proper operation.

.2 Install hardware in accordance with manufacturers' templates and instructions.

.3 Adjust operable parts for correct clearances and function.

.4 Install fire rated doors within clearances specified in NFPA 80-2010.

.5 Install louvers and vents.

.5 Adjusting and Cleaning

.1 Immediately after installation, sand smooth any rusted or damaged areas of prime coat and apply touch up of air-drying primer compatible with factory applied primer, and as follows:

.1 Clean exposed surfaces with soap and water to remove foreign matter before site touch-up.

.2 Finish exposed site welds to a smooth uniform surface and touch-up with site applied rust inhibitive primer.

.3 Site apply touch-up primer on exposed surfaces where zinc coating or factory applied primer has been damaged during installation or handling.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Section Includes

.1 Prefabricated steel floor access hatches, with integral support curbs, safety railings, operable hardware, and counter flashings.

1.2 RELATED REQUIREMENTS

.1 Section 05 50 00: Metal Fabrication

.2 Section 06 10 00: Rough Carpentry

.3 Section 07 62 00: Prefinished Metal Flashing and Trim

.4 Section 08 71 01: Hardware Schedule

.5 Section 09 90 00: Painting

1.3 SUBMITTALS

.1 Section 01 33 00 - Submittals: Procedures for submittals.

.2 Shop Drawings:

.1 Submit shop drawings showing construction and anchorage of floor access doors and accessories including, details of all elements of assembly and construction.

.2 Related items shown on shop drawings which are not intended to be supplied as part of the work of this Section, shall be so identified. All dimensions shall be clearly noted and methods of fastening and anchoring detailed. Show accurately and identify all adjacent materials.

.3 Maintenance:

.1 On completion of work of this Section, supply maintenance instructions for insertion into Operating and Maintenance Manual.

1.4 QUALITY ASSURANCE

.1 Manufacturer Qualifications: Use a manufacturer that has completed floor access door assemblies having similar extent and complexity as required for the Work of this Contract.

.2 Installers Qualifications: Use experienced installers having experience with floor access door assemblies similar in material, design and extent as required for Work of this Contract with a record of successful in-service performance.

1.5 WARRANTY

.1 Warrant the work of this section in accordance with General Conditions but for a period of twenty five (25) years and agree to repair or replace faulty materials or work which becomes evident during the warranty period without cost to the Owner and at the Owner's convenience.

Part 2 Products

2.1 MANUFACTURERS

.1 Basis of Design Products: Products named in this Section were used as the basis of design for the project; additional manufacturers offering similar products may be incorporated into the work of this Section.

.2 Acceptable Materials Manufacturers: Subject to compliance with requirements specified in this Section, manufacturers offering products that may be incorporated into the Work include; but are not limited to, the following:

.1 Bilco Canada

.2 Lexcor

.3 Acudor

2.2 FLOOR ACCESS DOORS

.1 Performance Characteristics:

.1 Cover: Reinforced to support a minimum live load of 300 psf (1464 kg/m^2) with a maximum deflection of 1/150th of the span.

.2 Operation of the cover shall be smooth and easy with controlled operation throughout the entire arc of opening and closing.

.3 Operation of the cover shall not be affected by temperature.

.4 Entire door, including all hardware components, shall be highly corrosion resistant.

.2 Manufactured Units:

.1 The floor access door shall be single leaf and pre-assembled from the manufacturer.

.2 Size: As indicated on drawings.

.3 Cover: 6mm aluminum diamond pattern.

.4 Frame: Channel frame shall be extruded aluminum with bend down anchor tabs around the perimeter.

.5 Hinges: Specifically designed for horizontal installation and shall be through bolted to covers with tamperproof Type 316 stainless steel lock bolts and shall be through bolted to the frame with Type 316 stainless steel bolts and locknuts.

.6 Drain Coupling: Provide a 38mm drain coupling located in the right front corner of the channel frame.

.7 Lifting mechanisms: Manufacturer shall provide the required number and size of compression spring operators enclosed in telescopic tubes to provide, smooth, easy, and controlled cover operation throughout the entire arc of opening and to act as a check in retarding downward motion of the covers when closing.

.1 The upper tube shall be the outer tube to prevent accumulation of moisture, grit, and debris inside the lower tube assembly.

.2 The lower tube shall interlock with a flanged support shoe fastened to a formed 6mm gusset support plate.

.8 A removable exterior turn/lift handle with a spring loaded ball detent shall be provided to open the cover and the latch release shall be protected by a flush, gasketed, removable screw plug.

.9 Hardware:

.1 Hinges: Heavy forged Type 316 stainless steel hinges, each having a minimum 6mm diameter Type 316 stainless steel pin, shall be provided and shall pivot so the covers do not protrude into the channel frame.

.2 Cover shall be equipped with a hold open arm which automatically locks each cover in the open position.

.3 Cover shall be fitted with the required number and size of compression spring operators. Springs and spring tubes shall be Type 316 stainless steel.

.4 A Type 316 stainless steel snap lock with fixed handle shall be mounted on the underside of one cover.

.5 Hardware: Shall be Type 316 stainless steel throughout.

.6 Provide Sargent full mortise cylinder lock with keyway protected by threaded cover plug. See Hardware Group 09 in Specification Section 08 71 01.

.7 Provide Sargent LA keyway “0” bitted.

.8 Provide panic hardware for emergency egress.

.9 Provide turn knob interior access.

.10 Finishes:

.1 Interior hatches: Factory applied powder coat paint finish with bituminous coating applied to the exterior of the frame.

.2 Exterior hatches: Factory applied powder coat paint finish with bituminous coating applied to the exterior of the frame.

.3 Colour: From manufacturer’s standard range as selected by Departmental Representative.

.3 Basis of Design Material:

.1 Type J-AL Aluminum Single Leaf Floor Access Door by Bilco Canada.

2.3 SAFETY POST

.1 Telescoping safety post complete with adjustable mounting hardware for securing to any ladder rung size. Unit to be complete with safety bar handle and stainless-steel fasteners.

.2 Basis of Design Material: Ladderup Safety Post, Model LU-1 by Bilco Canada.

2.4 FABRICATION

.1 Fabricate free of visual distortions and defects. Weld corners and joints.

.2 Fabricate units weather tight with integral cap flashing, providing for removal of condensation.

.3 Prime paint; one coat.

.4 Spot weld hasp, latch and hinges to prevent removal from interior.

Part 3 Execution

3.1 INSTALLATION

.1 Install in accordance with manufacturer's instructions. Co-ordinate with installation of related flashings. Provide weather tight installation.

.2 Apply bituminous paint on metal surfaces of units in contact with cementitious materials and dissimilar metals.

.3 Safety Bar: Install in strict accordance with manufacturer's published instructions.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Section Includes

.1 Prefabricated steel floor access hatches, with integral support curbs, safety railings, operable hardware, and counter flashings.

1.2 RELATED REQUIREMENTS

.1 Section 05 50 00: Metal Fabrication

.2 Section 06 10 00: Rough Carpentry

.3 Section 07 62 00: Prefinished Metal Flashing and Trim

.4 Section 08 71 01: Hardware Schedule

.5 Section 09 90 00: Painting

1.3 SUBMITTALS

.1 Section 01 33 00 - Submittals: Procedures for submittals.

.2 Shop Drawings:

.1 Submit shop drawings showing construction and anchorage of floor access doors and accessories including, details of all elements of assembly and construction.

.2 Related items shown on shop drawings which are not intended to be supplied as part of the work of this Section, shall be so identified. All dimensions shall be clearly noted and methods of fastening and anchoring detailed. Show accurately and identify all adjacent materials.

.3 Maintenance:

.1 On completion of work of this Section, supply maintenance instructions for insertion into Operating and Maintenance Manual.

1.4 QUALITY ASSURANCE

.1 Manufacturer Qualifications: Use a manufacturer that has completed floor access door assemblies having similar extent and complexity as required for the Work of this Contract.

.2 Installers Qualifications: Use experienced installers having experience with floor access door assemblies similar in material, design and extent as required for Work of this Contract with a record of successful in-service performance.

1.5 WARRANTY

.1 Warrant the work of this section in accordance with General Conditions but for a period of five (5) years and agree to repair or replace faulty materials or work which becomes evident during the warranty period without cost to the Owner and at the Owner's convenience.

Part 2 Products

2.1 MANUFACTURERS

.1 Basis of Design Products: Products named in this Section were used as the basis of design for the project; additional manufacturers offering similar products may be incorporated into the work of this Section.

.2 Acceptable Materials Manufacturers: Subject to compliance with requirements specified in this Section, manufacturers offering products that may be incorporated into the Work include; but are not limited to, the following:

.1 Bilco Canada

.2 Lexcor

.3 Acudor

.4 Nystrom

2.2 FLOOR ACCESS DOORS

.1 Performance Characteristics:

.1 Cover: Reinforced to support a minimum live load of 150 psf (732 kg/m^2) with a maximum deflection of 1/150th of the span.

.2 Operation of the cover shall be smooth and easy with controlled operation throughout the entire arc of opening and closing.

.3 Operation of the cover shall not be affected by temperature.

.4 Entire door, including all hardware components, shall be highly corrosion resistant.

.5 Minimum fire rating as indicated on drawings.

.2 Manufactured Units:

.1 The floor access door shall be single leaf and pre-assembled from the manufacturer.

.2 Size: As indicated on drawings.

.3 Cover: 6mm aluminum diamond pattern or concrete pan.

.4 Frame: Channel frame shall be extruded aluminum with bend down anchor tabs around the perimeter.

.5 Hinges: Specifically designed for horizontal installation and shall be through bolted to covers with tamperproof Type 316 stainless steel lock bolts and shall be through bolted to the frame with Type 316 stainless steel bolts and locknuts.

.6 Lifting mechanisms: Manufacturer shall provide the required number and size of compression spring operators enclosed in telescopic tubes to provide, smooth, easy, and controlled cover operation throughout the entire arc of opening and to act as a check in retarding downward motion of the covers when closing.

.1 The upper tube shall be the outer tube to prevent accumulation of moisture, grit, and debris inside the lower tube assembly.

.2 The lower tube shall interlock with a flanged support shoe fastened to a formed 6mm gusset support plate.

.7 A removable exterior turn/lift handle with a spring loaded ball detent shall be provided to open the cover and the latch release shall be protected by a flush, gasketed, removable screw plug.

.8 Hardware:

.1 Hinges: Heavy forged Type 316 stainless steel hinges, each having a minimum 6mm diameter Type 316 stainless steel pin, shall be provided and shall pivot so the covers do not protrude into the channel frame.

.2 Cover shall be equipped with a hold open arm which automatically locks each cover in the open position.

.3 Cover shall be fitted with the required number and size of compression spring operators. Springs and spring tubes shall be Type 316 stainless steel.

.4 A Type 316 stainless steel snap lock with fixed handle shall be mounted on the underside of one cover.

.5 Hardware: Shall be Type 316 stainless steel throughout.

.6 Provide Sargent full mortise cylinder lock with keyway protected by threaded cover plug. See Hardware Group 09 in Specification Section 08 71 01.

.7 Provide Sargent LA keyway “0” bitted.

.8 Provide panic hardware for emergency egress.

.9 Provide turn knob interior access.

.9 Finishes:

.1 Interior hatches: Factory applied powder coat paint finish with bituminous coating applied to the exterior of the frame.

.2 Colour: From manufacturer’s standard range as selected by Departmental Representative.

.3 Basis of Design Material:

.1 Type FR Fire Rated Floor Door by Bilco Canada.

2.3 SAFETY POST

.1 Telescoping safety post complete with adjustable mounting hardware for securing to any ladder rung size. Unit to be complete with safety bar handle and stainless-steel fasteners.

.2 Basis of Design Material: Ladderup Safety Post, Model LU-1 by Bilco Canada.

2.4 FABRICATION

.1 Fabricate free of visual distortions and defects. Weld corners and joints.

.2 Fabricate units weather tight with integral cap flashing, providing for removal of condensation.

.3 Prime paint; one coat.

.4 Spot weld hasp, latch and hinges to prevent removal from interior.

Part 3 Execution

3.1 INSTALLATION

.1 Install in accordance with manufacturer's instructions. Co-ordinate with installation of related flashings. Provide weather tight installation.

.2 Apply bituminous paint on metal surfaces of units in contact with cementitious materials and dissimilar metals.

.3 Safety Bar: Install in strict accordance with manufacturer's published instructions.

END OF SECTION

Approved: 2010-06-30

Part 1 General

1.1 REFERENCE STANDARDS

.1 American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA)

- .1 ANSI/BHMA A156.1, American National Standard for Butts and Hinges.
- .2 ANSI/BHMA A156.4, Door Controls - Closers.
- .3 ANSI/BHMA A156.5, Auxiliary Locks and Associated Products.
- .4 ANSI/BHMA A156.6, Architectural Door Trim.
- .5 ANSI/BHMA A156.8 , Door Controls - Overhead Stops and Holders.
- .6 ANSI/BHMA A156.13, Mortise Locks and Latches Series 1000.
- .7 ANSI/BHMA A156.16 , Auxiliary Hardware.
- .8 ANSI/BHMA A156.18, Materials and Finishes.

.2 Canadian Steel Door and Frame Manufacturers' Association (CSDMA)

- .1 CSDMA Recommended Dimensional Standards for Commercial Steel Doors and Frames - 2009.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00- Submittal Procedures.

.2 Product Data:

- .1 Submit manufacturer's instructions, printed product literature and data sheets for door hardware and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Samples:

- .1 Submit for review and acceptance of each unit.
- .2 Samples will be returned for inclusion into work.
- .3 Identify each sample by label indicating applicable specification paragraph number, brand name and number, finish and hardware package number.
- .4 After approval samples will be returned for incorporation in Work.

.4 Hardware List:

- .1 Submit contract hardware list.
- .2 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.

.5 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

.6 Manufacturer's Instructions: submit manufacturer's installation instructions.

1.3 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00- Closeout Submittals.

.2 Operation and Maintenance Data: submit operation and maintenance data for door hardware for incorporation into manual.

1.4 MAINTENANCE MATERIAL SUBMITTALS

.1 Extra Stock Materials:

.1 Supply maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

.2 Tools:

.1 Supply 2 sets of wrenches for fire exit hardware and door closers.

1.5 QUALITY ASSURANCE

.1 Regulatory Requirements:

.1 Hardware for doors in fire separations and exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada.

.2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Package items of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.

.4 Storage and Handling Requirements:

.1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect door hardware from nicks, scratches, and blemishes.

.3 Protect prefinished surfaces with strippable coating.

.4 Replace defective or damaged materials with new.

Part 2 Products

2.1 HARDWARE ITEMS

.1 Use one manufacturer's products only for similar items.

2.2 DOOR HARDWARE

.1 Locks and latches:

.1 Mortise locks and latches: to ANSI/BHMA A156.13, Sargent 8200 series mortise lock, grade 1, designed for function and keyed as stated in Hardware Schedule.

.2 Lever handles: plain design.

Escutcheons: round.

.3 Normal strikes: box type, lip projection not beyond jamb.

.2 Butts and hinges:

.1 Butts and hinges: to ANSI/BHMA A156.1, designated by letter A and numeral identifiers, followed by size and finish, listed in Hardware Schedule.

.3 Door Closers and Accessories:

.1 Door controls (closers): to ANSI/BHMA A156.4, designated by letter C and numeral identifiers listed in Hardware Schedule, size in accordance with ANSI/BHMA A156.4, table A1.

.2 Door controls - overhead holders: to ANSI/BHMA A156.8, designated by letter C and numeral identifiers listed in Hardware Schedule.

.4 Architectural door trim: to ANSI/BHMA A156.6, designated by letter J and numeral identifiers as listed in Hardware Schedule

.1 Door protection plates: kick plate 1.27 mm thick stainless steel.

.2 Push plates: 1.27 mm thick stainless steel

.3 Push/Pull units: type.

.5 Auxiliary hardware: to ANSI/BHMA A156.16, as listed in Hardware Schedule.

.1 Surface bolts:

.6 Thresholds: Serrated Mill Finish Aluminum.

.7 Weatherstripping:

.1 Head and jamb seal:

.1 Extruded aluminum frame and solid closed cell neoprene insert, clear anodized finish.

.2 Adhesive backed neoprene material.

.2 Door bottom seal:

.1 Extruded aluminum frame and solid closed cell neoprene insert, clear anodized finish.

.8 Astragal: overlapping, extruded aluminum frame with pile insert, finished to match doors. Fasteners to not interfere with the function of or damage weathering stripping.

2.3 FASTENINGS

.1 Use only fasteners provided by manufacturer. Failure to comply may void warranties and applicable licensed labels.

.2 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.

.3 Exposed fastening devices to match finish of hardware.

.4 Where pull is scheduled on one side of door and push plate on other side, supply fastening devices, and install so pull can be secured through door from reverse side. Install push plate to cover fasteners.

.5 Use fasteners compatible with material through which they pass.

2.4 KEYING

.1 Supply Cylinders “0” Bitted for Keying By Owner.

.2 Construction cylinders shall be keyed to existing Sargent LA keyway “0” bitted.

Part 3 Execution

3.1 INSTALLATION

.1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

.2 Supply metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.

.3 Supply manufacturers' instructions for proper installation of each hardware component.

.4 Install hardware to standard hardware location dimensions in accordance with CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction).

.5 Where door stop contacts door pulls, mount stop to strike bottom of pull.

.6 Use only manufacturer's supplied fasteners.

.1 Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.

3.2 ADJUSTING

.1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.

.2 Lubricate hardware, operating equipment and other moving parts.

.3 Adjust door hardware to ensure tight fit at contact points with frames.

3.3 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11- Cleaning.

.1 Leave Work area clean at end of each day.

.2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturer's instructions.

.3 Remove protective material from hardware items where present.

.4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11- Cleaning.

.2 Waste Management: separate waste materials for recycling in accordance with Section 01 74 19- Waste Management and Disposal.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.4 DEMONSTRATION

.1 Maintenance Staff Briefing:

.1 Brief maintenance staff regarding:

.1 Proper care, cleaning, and general maintenance of projects complete hardware.

.2 Use, application and storage of wrenches for door closers and fire exit hardware locksets.

.2 Demonstrate operation, operating components, adjustment features, and lubrication requirements.

3.5 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by door hardware installation.

3.6 SCHEDULE

.1 See Section 08 71 01 - Hardware Schedule.

END OF SECTION

Heading 01

1 PR DOOR(S) D1 EXTERIOR PAIR
HMD X PSF

Each Assembly to have:

6	EA	HINGE	3CB1 114 X 114 NRP	626	IVE
2	EA	SURFACE BOLT	SB453-8	643	IVE
1	EA	STOREROOM LOCK	8251 LE1L (F15)	626	SAR
1	EA	ELECTRIC STRIKE	1600 CS	630	HES
2	EA	OH STOP	90S	630	GLY
1	EA	SURFACE CLOSER	4040XP EDA ST-2731	689	LCN
2	EA	KICK PLATE	8400 255MM X 25MM LDW B-CS	630	IVE
1	EA	WEATHERSTRIP HEAD	W-20S TO SUIT DOOR WIDTH	628	KNC
2	EA	WEATHERSTRIP JAMB	W-50S TO SUIT DOOR HEIGHT	628	KNC
1	EA	ASTRAGAL	W-8P TO SUIT DOOR HEIGHT	628	KNC
2	EA	DOOR SWEEP	W-13S TO SUIT DOOR WIDTH	628	KNC
1	EA	THRESHOLD	CT-10 TO SUIT OPENING WIDTH	627	KNC
1	EA	DOOR CONTACT	BY OWNER		

Revise to L9080, El Strike - EAC, Door Contact By Owner

Heading 02

1 PR DOOR(S) D48 EXTERIOR PAIR RHRA
HMD X PSF

Each Assembly to have:

6	EA	HINGE	3CB1 114 X 114 NRP	626	IVE
2	EA	SURFACE BOLT	SB453-8	643	IVE
1	EA	STOREROOM LOCK	8204 LE1L (F07)	626	SAR
1	EA	ELECTRIC STRIKE	1600 CS	630	VON
2	EA	OH STOP	90S	630	GLY
1	EA	SURFACE CLOSER	4040XP EDA ST-2731	689	LCN
2	EA	KICK PLATE	8400 255MM X 25MM LDW B-CS	630	IVE
1	EA	gasket	W-20S TO SUIT DOOR WIDTH	628	KNC
1	EA	ASTRAGAL	W-8P TO SUIT DOOR HEIGHT	628	KNC

1	EA	DOOR CONTACT	BY OWNER		

Heading 04

1 SGL DOOR(S) D14 EXTERIOR SINGLE RHR
HMD X PSF

Each Assembly to have:

3	EA	HINGE	3CB1 114 X 114 NRP	626	IVE
1	EA	STOREROOM LOCK	8251 LE1L (F15)	626	SCH
1	EA	ELECTRIC STRIKE	1600 CS	630	HES
1	EA	OH STOP	90S	630	GLY
1	EA	SURFACE CLOSER	4040XP EDA ST-2731	689	LCN
1	EA	KICK PLATE	8400 255MM X 40MM LDW B-CS	630	IVE
1	EA	WEATHERSTRIP HEAD	W-20S TO SUIT DOOR WIDTH	628	KNC
2	EA	WEATHERSTRIP JAMB	W-50S TO SUIT DOOR HEIGHT	628	KNC
1	EA	DOOR SWEEP	W-13S TO SUIT DOOR WIDTH	628	KNC
1	EA	THRESHOLD	CT-10 TO SUIT OPENING WIDTH	627	KNC
1	EA	LATCH GUARD	LG1	630	IVE
1	EA	DOOR CONTACT	BY OWNER		

Heading 05

1 SGL DOOR(S) D49 INTERIOR SINGLE RHR
HMD X PSF X 45MIN

Each Assembly to have:

3	EA	HINGE	3CB1 114 X 114 NRP	652	IVE
1	EA	STOREROOM LOCK	8204 LE1L (F07)	626	SAR
1	EA	ELECTRIC STRIKE	6211FSE	630	VON
1	EA	SURFACE CLOSER	4040XP CUSH	689	LCN
1	EA	KICK PLATE	8400 255MM X 40MM LDW B-CS	630	IVE

1	SET	SMOKE SEAL	W-22 TO SUIT OPENING	BLK	KNC
1	EA	DOOR BOTTOM	CT-50	628	KNC
1	EA	DOOR CONTACT	BY OWNER		

Heading 06

2 SGL DOOR(S) D50,52 INTERIOR SINGLE LHR
HMD X PSF X 45MIN

1 SGL DOOR(S) D17 INTERIOR SINGLE RH
HMD X PSF X 45MIN

2 SGL DOOR(S) D47,51 INTERIOR SINGLE RHR
HMD X PSF X 45MIN

1 SGL DOOR(S) D18 INTERIOR SINGLE RHR
HMD X PSF X 45MIN

Each Assembly to have:

3	EA	HINGE	3CB1 114 X 114 NRP	652	IVE
1	EA	STOREROOM LOCK	8204 LE1L (F07)	626	SAR
1	EA	ELECTRIC STRIKE	6211 FSE	630	VON
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	KICK PLATE	8400 255MM X 40MM LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407 CVX	630	IVE
1	SET	SMOKE SEAL	W-22 TO SUIT OPENING	BLK	KNC
1	EA	DOOR BOTTOM	CT-50	628	KNC
1	EA	DOOR CONTACT	BY OWNER		

Heading 08

1 SGL DOOR(S) D6 INTERIOR SINGLE RH
HMD X PSF X 45MIN

Each Assembly to have:

3	EA	HINGE	3CB1 114 X 114 NRP	652	IVE
1	EA	STOREROOM LOCK	8204 LE1L (F07)	626	SAR
1	EA	ELECTRIC STRIKE	6211FSE	630	VON
1	EA	SURFACE CLOSER	4040XP CUSH	689	LCN
1	EA	KICK PLATE	8400 255MM X 40MM LDW B-CS	630	IVE
1	SET	SMOKE SEAL	W-22 TO SUIT OPENING	BLK	KNC
1	EA	DOOR BOTTOM	CT-50	628	KNC
1	EA	DOOR CONTACT	BY OWNER		

Heading 09

4 SGL DOOR(S) D2,7,8,10,46,
ROOF HATCH - LOCKING

Each Assembly to have:

1	EA	STOREROOM LOCK	8204 LE1L (F07)	626	SAR
1	EA	MORTISE CYLINDER	#41 (Confirm Required Cylinder Cam)	626	SAR
		BALANCE OF HARDWARE BY DOOR MANUFACTURER			

Heading 11

3 SGL DOOR(S) D3,15,20 INTERIOR SINGLE LHR
HMD X PSF X 45MIN

1 SGL DOOR(S) D19,28,29 INTERIOR SINGLE LHR
HMD X PSF X 45MIN

1 SGL DOOR(S) D11 INTERIOR SINGLE RH
HMD X PSF X 45MIN

Each Assembly to have:

3	EA	HINGE	3CB1 114 X 114	652	IVE
1	EA	PASSAGE SET	8215 LNL (F01)	626	SAR
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	WALL STOP	WS406/407 CVX	630	IVE

1	SET	SMOKE SEAL	W-22 TO SUIT OPENING (4 SIDES)	BLK	KNC

Heading 12

2 SGL DOOR(S) D9,16 INTERIOR SINGLE RH
HMD X PSF X 45MIN

1 SGL DOOR(S) D13 INTERIOR SINGLE RHR
HMD X PSF X 45MIN

2 SGL DOOR(S) D4,12 INTERIOR SINGLE LHR
HMD X PSF X 45MIN

Each Assembly to have:

3	EA	HINGE	3CB1 114 X 114 NRP	652	IVE
1	EA	PASSAGE SET	8215 LNL (F01)	626	SAR
1	EA	SURFACE CLOSER	4040XP CUSH	689	LCN
1	SET	SMOKE SEAL	W-22 TO SUIT OPENING (4 SIDES)	BLK	KNC

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 This Section includes requirements for supply and installation of fixed louvers, bird screens, blank-off panels and attachment brackets as shown on drawings, as specified and as required for complete and proper installation.

.2 Fixed louvers to be furnished include the following:

.1 Drainable Louver

1.2 RELATED REQUIREMENTS

.1 Section 04 21 13 Brick Masonry

.2 Section 04 22 00: Concrete Unit Masonry

.3 Section 05 50 00: Metal Fabrication

.4 Section 06 10 00: Rough Carpentry

.5 Section 07 92 00: Sealants

.6 Section 08 11 13: Steel Doors and Frames

.7 Section 09 90 00: Painting

1.3 REFERENCES

.1 American Society for Testing and Materials (ASTM):

.1 ASTM B209-10, Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate

.2 ASTM B211-12e1, Standard Specification for Aluminum and Aluminum Alloy Rolled or Cold Finished Bar, Rod, and Wire

.3 ASTM B221-12, Standard Specification for Aluminum and Aluminum Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes

.4 ASTM E90-09, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

.2 Canadian Standards Association (CSA):

.1 CAN/CSA-S157-05/S157.1-05 (R2010), Strength Design in Aluminum / Commentary on CSA S157-05, Strength Design in Aluminum

.2 CAN/CSA-S136-07, North American Specification for the Design of Cold-Formed Steel Structural Members

.3 Architectural Aluminum Manufacturers Association (AAMA):

.1 AAMA 605.2-95, Voluntary Specification for High Performance Organic Coatings on Aluminum Extrusions and Panels

.2 AAMA 800-10, Voluntary Specifications and Test Methods for Sealants

.3 AAMA 2605-11 Superior Performing Organic Coatings on Aluminum Extrusions and Panels

.4 AAMA TIR Metal Curtain Wall Fasteners (2000 Addendum)

.4 Air Movement and Control Association International Inc. (AMCA):

.1 AMCA Standard 500-L-12, Laboratory Methods of Testing Louvers for Rating

.2 AMCA Publication 501-09, Application Manual for Louvers

.3 AMCA Publication 511-10 (Rev. 8/12), Certified Ratings Program - Product Rating Manual for Air Control Devices

1.4 ADMINISTRATIVE REQUIREMENTS

.1 Coordination: Coordinate the Work of this Section with the installation of ductwork; Sequence work so that installation of louvers coincides with installation of HVAC materials without causing delay to the Work.

.2 Pre-Construction Conference: Arrange a site meeting attended by the Contractor, the Subcontractor, the Departmental Representative, materials supplier(s), and other relevant personal before commencement of work for this Section; as indicated in Section 01 31 19 Project Meetings.

.1 Review methods and procedures related to installation, including manufacturer's written instructions;

.2 Examine substrate conditions for compliance with manufacturers installation requirements;

.3 Review temporary protection measures required during and after installation.

1.5 SUBMITTALS

.1 Provide requested information in accordance with Section 01 33 00 Submittals.

.2 Action Submittals: Provide the following submittals before starting any work of this Section:

.1 Product Data:

.1 Air flow and water entrainment performance test results

.2 Material types and thickness

.2 Shop Drawings: Submit shop drawings showing the location, finished appearance and dimensions of each type of louver. Show all material, thicknesses, connections, fastenings, shapes and finishes.

.3 Coating Samples: Submit samples of factory applied coatings and finishes for Departmental Representative’s initial selection.

.4 Samples: Submit for approval 305mm (12") long sample lengths of each type of louver blade and frame extrusion prior to full scale production, showing finish colour.

.3 Information Submittals:

.1 Certification: Submit product test reports based on evaluation of comprehensive tests performed by a qualified testing agency for each type of louver required for this project.

.2 Performance Requirements: Provide AMCA test data as required to confirm that the louvers have the specified air and water performance characteristics.

.3 Acoustical Performance: Where applicable, submit test reports to confirm that the louvers meet the specified STC and Noise Reduction requirements.

.4 Structural Requirements: Design all materials to withstand wind load of 20 psf (955 Pa) and snow loads as required by the applicable building code and recommended by the louver manufacturer.

.1 Ensure louver members deflect no more than L/180 of span between supports when subjected to wind load applied horizontally to louver face.

.5 Delegated Design Submittals: Furnish complete design calculations and details, fabrication and erection shop drawings and site review for fixed louvers, bearing the seal of a Professional Engineer registered in the Province of the Work, in accordance with applicable Building Code and Contract Documents.

1.6 CLOSEOUT SUBMITTALS

.1 Operation and Maintenance Data: Submit manufacturer's written instructions for cleaning solutions, materials and procedures, include name of original installer and contact information in accordance with Section 01 78 00 Closeout Submittals.

.1 Provide specific warning of any maintenance practice or materials that may damage or disfigure the finished Work.

1.7 QUALITY ASSURANCE

.1 Qualifications: Provide proof of qualifications when requested by Departmental Represenative:

.1 Manufacturer / Supplier: Obtain materials from one source with resources to provide products from the same production run for each contiguous area of consistent quality in appearance and physical properties.

.2 Installers: Execute Work of this Section using qualified personnel skilled in installation of work of this Section, having a minimum of three (3) years proven experience of installations similar in material, design, and extent to that indicated for this Project.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Delivery: At the time of delivery, visually inspect all materials for damage. Note any damaged boxes, crates, or louver sections on the receiving ticket and immediately report to the shipping company and the material manufacturer.

.2 Storage: Store louver raised off the ground and cover with a weather proof flame resistant sheeting or tarpaulin.

.3 Handling:

.1 Material shall be handled in accordance with sound material handling practices and in such a way as to minimize racking.

.2 Louver sections may be hoisted by attaching straps to the jambs and lifting the section while it is in a vertical position.

.3 Louver sections should only be lifted and carried by the jambs. Heads, sills and blades are not to be used for lifting or hoisting louver sections.

1.9 SITE CONDITIONS

.1 Verify dimensions of actual opening by field measurements before fabrication and indicate measurements on Shop Drawings where fixed louvers are indicated to fit walls and other construction.

.2 Establish dimensions and proceed with fabricating fixed louvers where field measurements cannot be made without delaying the work; allow for trimming and fitting.

1.10 WARRANTY

.1 Warrant the work of this section in accordance with General Conditions but for a period of one (1) year and agree to repair or replace faulty materials or work which becomes evident during the warranty period without cost to the Owner and at the Owner's convenience.

.2 Special Finish Warranty: Submit a written warranty, signed by manufacturer, covering failure of the factory-applied exterior finish on aluminum louvers within the specified warranty period and agreeing to repair finish or replace louvers that show evidence of finish deterioration. Deterioration of finish includes, but is not limited to, colour fade, chalking, cracking, peeling, and loss of film integrity for a period of ten (10) years from date of Substantial Performance.

Part 2 Products

2.1 MANUFACTURER

.1 Basis-of-Design products are named in this Section; additional manufacturers offering similar fixed metal louvers may be incorporated into the work provided they meet the performance requirements established by the named products.

.2 Standard of Acceptable Materials Manufacturers: Subject to compliance with requirements specified in this Section and as established by the Basis-of-Design Materials, manufacturers offering products that may be incorporated into the Work include; but are not limited to, the following:

.1 McGill Architectural Products

.2 TenPlus Architectural Products Ltd.

.3 Construction Specialties

2.2 MATERIALS

.1 Aluminum Extrusions: ASTM B211, Aluminum Alloy 6063-T52.

.2 Aluminum Sheet: ASTM B209, Aluminum Alloy 6063-T52.

.3 Fastenings: Provide zinc plated steel or AISI Type 304 stainless steel for screws and fasteners.

.4 Structural Support: Designed and furnished by louver manufacturer to support wind load of 955 Pa (20 psf), unless otherwise specified.

2.3 FIXED LOUVER SYSTEMS

.1 Drainable Louvers:

.1 152mm (6") deep fixed type, drainable aluminum louver, with 6063-T52 aluminum alloy extrusion, and as described in the following performance criteria:

.1 Performance Rating Standard: AMCA Standard 500L

.2 Certification: Louver AMCA tested, certified and licensed to bear the AMCA seal for the following:

.1 Air performance

.2 Water penetration

.3 Extrusion Thickness:

.1 Head, Sill, Jambs and Mullions: Minimum 2mm (0.080") thick.

.2 Blades: Minimum 2.3mm (0.090") thick.

.4 Louver Type: Mullion or continuous line construction

.5 Blade Angle: 40º

.6 Free Area - 1220mm x 1220mm (4' x 4') unit: 0.81m² (8.72 sq.ft.)

.7 Percentage of Free Area: 54.5%

.8 Basis of Design Product: Model D6403 Drainable Louver by TenPlus Architectural Products Ltd.

2.4 ACCESSORIES

.1 Sill Flashing: Provide sill flashing of same material and finish as adjacent louver, as approved by the Departmental Representative.

.2 Structural Support:

.1 Louver Support: Designed and furnished by louver manufacturer to support wind load of 955 Pa (20 psf), unless others specified.

.2 Support Angle: Louvers openings greater then 3m (10') high require horizontal girt at mid span, as indicated in Section 05 50 00 Metal Fabrications.

.3 Bird Screens:

.1 20mm (3/4") opening, 1.13mm (0.044") re-galvanized steel wire mesh, in an extruded aluminum frame. Removable screen frame to be independent to louver assembly, attaching to the interior face of the louver, providing continuous coverage.

.4 Security Bars:

.1 Supply manufacturer’s standard security bars providing continuous coverage.

.5 Blank-Off Panels:

.1 Insulated Blank-off Panels:

.1 Aluminum faced prefinished insulated blank-off panels, consisting of 51mm (2") thick semi rigid, mineral wool core insulation, having an R value of R-4.2/1". Ensure insulation is continuous and applied around all penetrations and building elements including structural supports.

.2 Facing Panels: 1mm (0.040") thick aluminum sheets, formed and mitered at the corners, with edges overlapped. Seal all perimeters and joints between insulated panels with a neoprene gasket or caulked with an approved material to prevent air infiltration.

.3 Finish:

.1 Exterior face sheet: Finished to match adjacent louver.

.2 Interior face sheet: Mill finish.

.2 Non-Insulated Blank-off Panels:

.1 Facing Panels: 1mm (0.040") thick aluminum sheet blank-off panel.

.2 Finish:

.1 Exterior face sheet: Finished to match adjacent louver.

.2 Interior face sheet: Mill finish.

2.5 FABRICATION

.1 Fabricate as required for optimum performance with respect to water penetration, strength, durability and uniform appearance.

.2 Fabricate louvers to outside dimensions indicated, with allowance of 10mm (3/8”) on each side for sealant joints. Coordinate size, location and placement of units, with installer, prior to fabrication.

.3 Fabricate louvers to minimize field adjustments, splicing, mechanical joints and field assembly of units. Assemble units in shop to greatest extent possible and disassemble as necessary for shipping and handling.

.4 Clearly mark units for assembly and coordinated installation. Include vertical structural supports, where required.

.5 Provide vertical mullions of type and spacing indicated but not greater than 1524mm (5') o/c. Mechanically assemble louvers using stainless steel or zinc plated steel fasteners recommended by manufacturer.

.6 Provide supports, anchors and accessories required for a complete assembly.

2.6 FINISHES

.1 High Performance Organic Finish:

.1 3 Coat PVDF Coating: AA-C12 Chemical Finish, cleaned with inhibited chemicals; C40 Chemical Finish, conversion coating; R1x Organic Coating, manufacturer's standard 3 coat, thermo-cured system consisting of specially formulated inhibitive primer, fluoropolymer colour coat, and clear fluoropolymer topcoat, with both colour coat and clear topcoat containing not less than 70% PVDF resin by weight; prepare, pre-treat, and apply coating to exposed metal surfaces in accordance with AAMA 2605 and with coating and resin manufacturers' written instructions.

.1 Colour: As selected by the Departmental Representative from the manufacturer’s standard colour offering.

.2 Basis of Design Material: PPG Duranar XL by PPG Industries.

.2 Exposed Steel Finishing:

.1 Shop Primer for Ferrous Metal: Organic zinc rich primer, ready for finish painting by Section 09 90 00.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions:

.1 Examine openings to receive work and surrounding adjacent surfaces for conditions affecting installation. Coordinate with related sections providing openings to ensure proper dimensions are maintained.

.2 Verify dimensions of supporting structure by accurate field measurements so that work will be accurately designed, fabricated and fitted to the structure.

.2 Notify Contractor in writing of any conditions that are not acceptable.

.3 Proceed with installation after verification and correction of surface conditions acceptable to manufacturer.

3.2 INSTALLATION

.1 Comply with manufacturer's instructions and recommendations for installation of the work, as shown on approved Shop Drawings.

.2 Anchor louvers to the building substructure as indicated on Shop Drawings and architectural drawings.

.3 Erection Tolerances:

.1 Maximum variation from plane or location shown on the approved shop drawings 3mm in 3048mm (1/8" in 10').

.2 Maximum offset from true alignment between two members abutting end to end, edge-to-edge in line: 1.6mm (1/16").

.3 Erection tolerances shall prevail under both load and no load conditions.

.4 Cut and trim component parts during erection only with the approval of the manufacturer, and in accordance with the manufacturer' recommendations. Restore finish completely.

.5 Remove and replace members where cutting and trimming has impaired the strength or appearance of the assembly.

.6 Set units level, plumb and true to line, with uniform, tight joints to adjacent work.

.7 Provide necessary fastenings, anchors, clip angles, sills and sill flashings required to complete the installation.

3.3 PROTECTION

.1 Protect installed materials to prevent damage by other trades. Use materials that may be easily removed without leaving residue or permanent stains.

3.4 CLEANING

.1 Progress Cleaning: Leave work area clean at the end of each work day, ensuring safe movement of passing pedestrians.

.2 Final Cleaning: At completion of installation, clean all surfaces so they are free of foreign matter using cleaners recommended by material manufacturer.

.3 Restore louvers and accessory components damaged during installation and construction so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by the Departmental Representative, remove and replace damaged systems with new at no additional cost to the Owner.

.4 Waste Management: Co-ordinate recycling of waste materials and packaging at appropriate facility, diverting waste from landfill. Certified installer shall be responsible for ensuring waste management efforts are practiced.

END OF SECTION