1 GENERAL

1.01 REFERENCE STANDARDS

.1 American Society for Testing and Materials International (ASTM)
- .1 ASTM A 653/A 653M-06a, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 ASTM A 1008 / A 1008M-03, Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability
- .3 ASTM B 29-03, Standard Specification for Refined Lead.
- .4 ASTM B 749-03, Standard Specification for Lead and Lead Alloy Strip, Sheet and Plate Products.

.2 CSA Group (CSA)
- .1 CSA-G40.20-04/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
- .2 CSA W59-03, Welded Steel Construction (Metal Arc Welding).

.3 Canadian Steel Door Manufacturers' Association (CSDMA)
- .1 CSDMA, Recommended Specifications for Commercial Steel Doors and Frames, 2000.
- .2 CSDMA, Selection and Usage Guide for Commercial Steel Doors, 1990.

.4 National Fire Protection Association (NFPA)
- .1 NFPA 80-99, Standard for Fire Doors and Fire Windows.
- .2 NFPA 252-03, Standard Methods of Fire Tests of Door Assemblies.

.5 Underwriters' Laboratories of Canada (ULC)
- .1 CAN/ULC-S701-01, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.
- .2 CAN/ULC-S702-97, Standard for Thermal Insulation, Mineral Fibre, for Buildings.
- .3 CAN/ULC-S704-03, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.
- .4 CAN4-S104-M80, Standard Method for Fire Tests of Door Assemblies.
- .5 CAN4-S105-M85, Standard Specification for Fire Door Frames Meeting the Performance Required by CAN4-S104.

1.02 SYSTEM DESCRIPTION

.1 Design Requirements:
- .1 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35 degrees C to 35 degrees C.
- .2 Maximum deflection for exterior steel entrance screens under wind load of 1.2 kPa not to exceed 1/175th of span.
- .3 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-

S104 NFPA 252 for ratings specified or indicated.

.4 Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with CAN4-S104, ASTM E 152 or NFPA 252 and listed by nationally recognized agency having factory inspection services.

.5 Provide Detention security metal doors and frames with specified fire rating and/or bullet resistance rating as indicated and as specified herein

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Provide product data: in accordance with Section 01 33 00 - Submittal Procedures.

.3 Provide shop drawings: in accordance with Section 01 33 00 - Submittal Procedures.

.1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Saskatchewan, Canada.

.2 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed louvred, arrangement of hardware and fire rating and finishes.

.3 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and reinforcing fire rating finishes.

.4 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

1.04 DELIVERY, STORAGE AND HANDLING

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

.2 Waste Management and Disposal:

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

2 PRODUCTS

2.01 MATERIALS

.1 Hot dipped galvanized steel sheet: to ASTM A 653M, ZF75, minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.

.2 Commercial quality, level, cold-rolled steel conforming to ASTM A 1008 / A1008M CS type B.

.3 Reinforcement channel: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A 653M, ZF75.

2.02 DOOR CORE MATERIALS

.1 Honeycomb construction:
  .1 Structural small cell, 24.5 mm maximum kraft paper 'honeycomb', weight: 36.3 kg per ream minimum, density: 16.5 kg/m³ minimum sanded to required thickness.

.2 Stiffened: face sheets, honeycomb uninsulated core.

.3 Temperature rise rated (TRR): core composition to limit temperature rise on unexposed side of door to 250 degrees C at 30 60 minutes. Core to be tested as part of a complete door assembly, in accordance with CAN4-S104, ASTM E 152 or NFPA 252, covering Standard Method of Tests of Door Assemblies and listed by nationally recognized testing agency having factory inspection service.

2.03 ADHESIVES

.1 Honeycomb cores and steel components: heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.

.2 Polystyrene and polyurethane cores: heat resistant, epoxy resin based, low viscosity, contact cement.

.3 Lock-seam doors: fire resistant, resin reinforced polychloroprene, high viscosity, sealant/adhesive.

2.04 ACCESSORIES

.1 Door silencers: single stud rubber/neoprene type.

.2 Exterior and interior top caps: rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19Ma steel.

.3 Fabricate glazing stops as formed channel, minimum 16 mm height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.

.4 Metallic paste filler: to manufacturer's standard.

.5 Fire labels: metal rivited.

2.05 FRAMES FABRICATION GENERAL

.1 Fabricate frames in accordance with CSDMA specifications.

.2 Fabricate frames to profiles and maximum face sizes as indicated.

.3 Interior frames: 1.2 mm welded type construction.

.4 Blank, reinforce, drill and tap frames for mortised, templated hardware, and electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.

.5 Protect mortised cutouts with steel guard boxes.

.6 Prepare frame for door silencers, 3 for single door, 2 at head for double door.

.7 Manufacturer's nameplates on frames and screens are not permitted.

.8 Conceal fastenings except where exposed fastenings are indicated.

.9 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.

2.06 FRAME ANCHORAGE

.1 Provide appropriate anchorage to floor and wall construction.

.2 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.

.3 Provide 2 anchors for rebate opening heights up to 1520 mm and 1 additional anchor for each additional 760 mm of height or fraction thereof.

.4 Locate anchors for frames in existing openings not more than 150 mm from top and bottom of each jambs and intermediate at 660 mm on centre maximum.

2.07 FRAMES: WELDED TYPE

.1 Welding in accordance with CSA W59.

.2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile.

.3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.

.4 Grind welded joints and corners to a flat plane, fill with metallic paste and sand to uniform smooth finish.

.5 Securely attach floor anchors to inside of each jamb profile.

.6 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.

.7 Fabricate frame products for openings in sections, x mm, splice joints for field assembly.

.8 Securely attach lead to inside of frame profile from return to jamb soffit (inclusive) on door side of frame only.

2.08 DOOR FABRICATION GENERAL

.1 Doors: swing type, flush, with provision for glass and/or louvre openings as indicated.

.2 Fabricate doors with longitudinal edges locked seam locked seamed, adhesive assisted welded. Seams: visible grind welded joints to a flat plane, fill with metallic paste filler and sand to a uniform smooth finish.

.3 Doors: manufacturers' proprietary construction, tested and/or engineered as part of a fully operable assembly, including door, frame, gasketting and hardware in accordance with ASTM E 330 to provide blast resistance of .

.4 Blank, reinforce, drill doors and tap for mortised, templated hardware and electronic hardware.

.5 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.

.6 Reinforce doors where required, for surface mounted hardware. Provide flush PVC steel top caps to exterior doors. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.

.7 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.

.8 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in conformance with CAN4-S104 ASTM E 152 NFPA 252 and 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.

.9 Manufacturer's nameplates on doors are not permitted.

2.09 DOORS: HONEYCOMB CORE CONSTRUCTION

.1 Form face sheets for exterior doors from 1.6 1.2 1.0 mm sheet steel with honeycomb polystyrene polyurethane core laminated under pressure to face sheets.

.2 Form face sheets for interior doors from 1.6 1.2 1.0 mm sheet steel with honeycomb temperature rise rated core laminated under pressure to face sheets.

2.10 THERMALLY BROKEN DOORS AND FRAMES

.1 Fabricate thermally broken doors by using insulated core and separating exterior parts from interior parts with continuous interlocking thermal break.

.2 Thermal break: rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19Ma.

.3 Fabricate thermally broken frames separating exterior parts form interior parts with continuous interlocking thermal break.

.4 Apply insulation.

2.11 DETENTION GRADE DOORS AND FRAMES

.1 Doors and frames shall be manufactured of commercial quality, level, cold-rolled steel conforming to ASTM A 1008 / A1008M CS type B.

.2 Detention security doors and frames steel shall be for Grades 3 and 4, 0.067 in. (1.7 mm), for Grades 1 and 2, 0.093 in. (2.3 mm)] minimum thickness.

3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.02 INSTALLATION GENERAL

.1 Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.

.2 Install doors and frames to CSDMA Installation Guide.

3.03 FRAME INSTALLATION

.1 Set frames plumb, square, level and at correct elevation.

.2 Secure anchorages and connections to adjacent construction.

.3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.

.4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

.5 Caulk perimeter of frames between frame and adjacent material.

.6 Maintain continuity of air barrier and vapour retarder.

3.04 DOOR INSTALLATION

.1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 00 - Door Hardware.

.2 Provide even margins between doors and jambs and doors and finished floorand thresholds as follows.
- .1 Hinge side: 1.0 mm.
- .2 Latchside and head: 1.5 mm.
- .3 Finished floor, top of carpet noncombustible sill and thresholds: 13 mm.

.3 Adjust operable parts for correct function.

.4 Install louvres.

3.05 FINISH REPAIRS

.1 Touch up with primer finishes damaged during installation.

.2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

END OF SECTION

1. General

1.01 DESCRIPTION OF WORK

.1 Work consists of furnishing “Detention” grade hollow metal doors, pressed steel frames, screens, and windows noted on the door schedule and as specified herein.

1.02 REFERENCES

.1	ASTM A366M	Specification for Steel Sheet, Carbon, Cold-Rolled, Commercial Quality
.2	ASTM A370	Test Methods and Definition for Mechanical Testing of Steel Products
.3	ASTM A653M	Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanized) by the Hot-Dip Process
.4	ASTM A569	Specification for Steel, Carbon (0.15 Maximum Percent), Hot Rolled Sheet and Strip, Commercial Quality
.5	ASTM A653	Specifications for Steel Sheet, Zinc-Coated (Galvanized) by Hot-Dipped Process, Commercial Quality
.6	ASTM E 152	Method of Fire Tests of Door Assemblies
.7	ASTM F 1233	Standard Test Method for Security Glazing Materials and Systems
.8	ASTM F-1450	Standard Test Methods for Hollow Metal Swing Door Assemblies for Detention Centre
.9	CAN/CSA-G40,20-M	General Requirements for Rolled or Welded Structural Quality Steel
.10	CAN/CSA-G40.21-M	Structural Quality Steels
.11	CSA W59-M	Welded Steel Construction (Metal Arc Welding)
.12	CAN4-S104-M	Standard Method for Fire Tests of Door Assemblies
.13	NFPA 80	Fire Doors and Windows
.14	NFPA 252	Standard Methods of Fire Tests of Door Assemblies

1.03 SUBMITTALS

.1 Product Data: Submit manufacturer's material and fabrication specification and installation instructions modified to reflect project requirements and job conditions. Include instructions for handling, storage, and protection of each product. Provide specific instructions for installation in precast and cast-in-place concrete, including bracing of frames and frame tolerances that must be maintained.

.2 Shop Drawings: Submit shop drawings before fabrication showing erection, construction, and requirements not fully described by manufacturer's data. Include plan (horizontal) section through all frames and elevations drawn to scale, not less than or 1:40. Include details not less than or 1:10. Indicate required anchorage and accessory items, field dimensions, and finishes. Shop drawings shall include a transverse and longitudinal section through the door showing reinforcing, etc. Provide a schedule listing the location in the building of each door and frame using indicated reference numbers for details and openings shown in the contract documents. The shop drawings shall also contain "labeling" and "equivalent construction" data and show proposed locations for Grout and Anchor Access Holes.

.3 Tests: Submit certified engineering reports by independent testing laboratories performed within the last two years Reports shall certify that the results of these tests meet or exceed minimum performance requirements described. All door and frame tests shall be video taped and these tapes shall be available to MBS Designee. Tested doors, frames, and other material shall be retained at the manufacturer's facility for possible future inspection. The test reports shall contain specifications and details of the construction of the tested assemblies.

.1 Door Static Load Test: NAAMM 863-04

.2 Door Rack Test: NAAMM 863-04

.3 Removable Glazing Stop Test: NAAMM 863-04 (paragraphs 1.06, D and F). The removable glazing stop test report shall include specification and samples of security screws. The manufacturer shall submit a letter certifying that screws used on this project match the screws tested.

.4 Door Assembly Impact Test: ASTM F 1450 (05) or NAAMM 863-04 Test Methods for Hollow Metal Swinging Door Assemblies for Detention Facilities. The manufacturer shall submit a letter certifying that door assemblies used on this project match the assemblies tested in all respects.

.4 Mill Certification: Submit mill certification on all materials used to fabricate items specified.

.5 Quality Control Certification: During construction, for each SHM door, maintain Frame Tolerance Verification Form available for review at the job site. At any SHM door prior to hardware installation, submit certified copy with Contractor and Security Hardware Installer signatures.

1.04 QUALITY ASSURANCE

.1 Security Hollow Metal (SHM) Standard: Comply with ANSI/NAAMM HMMA 863-04 "Guide Specifications for Detention Security Hollow Metal Doors and Frames," except as otherwise indicated.

.2 Provide security hollow metal work manufactured by a single firm specializing in the production of this type of work. Provide doors and frames from the same manufacturer.

.3 Welders shall be currently qualified under AWS B2.1 or certified under CSA W47.1-92 Classification 2.1 to perform the type of work required.

.4 All welding requires complete penetration and fusion. Welds must remove parent metal when tested to failure. Refer to welding standards as define in AWS D1.1 and D1.3, CSA W47.1-92 and RWMA, Resistance Welding Manual.

.5 Fire-Rated Door Assemblies: Where fire-rated door assemblies are indicated or required, provide fire-rated door and frame assemblies that comply with NFPA 80 and have been tested, listed, and labeled in accordance with NFPA 252-95 or CAN4-S104-M80 (R1985) by a recognized independent testing and inspection agency acceptable to authorities having jurisdiction. Where fire-rated door or frame assemblies are indicated or required by essential detention features such as security glazing or accessories do not meet the criteria for labeling, manufacturer shall provide equivalent construction and "Certificate of Equivalence" along with specific documentation in the shop drawing submittal of why each door or frame assembly does not meet labeling criteria.

.6 Quality Control Procedures: The Contractor shall appoint, in writing, a Quality Control Representative for installation of all frames. The Contractor's quality control organization will be reviewed at the Security Coordination Meeting. The Quality Control Representative shall personally check and verify each frame opening for tolerances specified using attached Frame Tolerance Verification Form for each door. For masonry installation check at initial setting, masonry half up and masonry completed around frame. Check concrete installations including precast at initial setting and upon completion of concrete pour. Additionally, check precast concrete after site installation. If the last check indicated above shows deviation from specified tolerances, undertake remedial corrections, subject to MBS Designee approval, as required to show final post-correction tolerances within specified range. Certify tolerance compliance by signature of Contractor and Security Hardware Installer at

each door's Frame Tolerance Verification Form. Accuracy of frame installation tolerances will be reviewed by the MBS Designee using a Bi-Directional Level, Model No. 79 manufactured by the Bi-Directional Level Co., Tacoma, Washington.

.7 Manufacturer shall provide documentation of labeling ability as required on specified assemblies.

.8 If requested, manufacturers shall provide evidence of having personnel and plant and equipment capable of fabricating hollow metal security door and frame assemblies of type specified. Manufacturers shall have a minimum of 5 (three) years of experience of regularly and successfully providing types of security doors and frames required for the Project. Substantiate with list of representative projects where security door and frames were installed including dates of Projection completion.

1.05 DELIVERY, STORAGE, AND HANDLING

.1 Protect security hollow metal doors, frames, and other items during shipment to assure delivery in factory condition. Contractor shall verify doors are delivered as specified.

.2 Promptly clean and touch up with rust inhibitive primer or galvanizing repair paint as applicable, any scratches or minor disfigurement caused in shipping or handling. Touch-up shall be continuous during construction.

.3 Remove wrappings or coverings from doors and frames immediately upon delivery to the project site.

.4 Store all materials in a dry covered area. Place all materials on planking or blocking, at least 100mm off of the ground, 50 mm (2") off of a paved area or floor slab. Do not store flat. Store doors and frames in an upright position with heads upper most. Place no more than 5 single opening frames or 3 multi-opening frames in a group. Provide, by means of wood strips, a space of at least 6 mm (1/4") between all units to permit air circulation.

1.06 COORDINATION SEQUENCING AND SCHEDULING

.1 Jamb face dimensions on details are nominal. Coordinate to provide jamb capacity required to accommodate hardware. Coordinate incorporation of modified frame dimensions into wall construction.

.2 Coordinate installation with SECURITY GLAZING, SECURITY HARDWARE, SECURITY ACCESSORIES, and Division 13 sections.

2. Products

2.01 MATERIALS

.1 Galvanized Steel Sheets: (G90) Mill phosphatize in addition to coating specified at referenced SHM standard. Provide at shower doors and frames and other doors and frames where indicated as well as at exterior doors and frames. Sheet steel: commercial grade to ASTM A568/A568M, Class 1, hot-dip galvanized to ASTM A653/A653M, coating designation to ASTM A653/A653M, A25 (ZF75), known commercially as 'Colourbond', 'Satincoat', or 'Galvanneal'. Minimum base steel thickness as specified below.

.2 Supports and Anchors: Same material as frame including gage and galvanizing where indicated.

.3 Inserts, Bolts, and Fasteners: Manufacturer's standard units. Hot-dip galvanize in compliance with ASTM A 153, Class C or D as applicable at exterior walls and where opening is indicated to be galvanized.

2.02 FABRICATION

.1 Doors:

.1 Fabricate door with face sheets both sides to overall thickness of 50.8 mm (2"). Each face sheet shall be 1 piece construction formed to corner and meet at middle of door thickness with continuous weld on edges.

.1 Interior Doors: Secondary Security Doors. Provide minimum 1.91 mm (14 gauge) sheet steel faces.

.2 Exterior Doors: Primary Security Doors. Provide minimum 1.91 mm (14 gauge) galvanized steel faces.

.2 Stiffeners: Extend full height top to bottom and maximum 75 mm(3") from door sides. Where stiffeners are not continuous between face sheets, weld internal joints 100 mm (4") o.c. max. Cope at hardware preparations only. Provide one of the following stiffener types:

.3 Truss type – 0.38 mm minimum steel continuous truss design (in horizontal section) with truncated panel points welded to face sheets at 75 mm(3") o.c. maximum (horizontal and vertical).

.4 Edge Channels: **Continuously** welded to both face sheets.

.5 Flush Closing Channels: Provide at door bottom and top welded in place at corners and at 150 mm(6") o.c. max.

.6 Insulation: Core mineral fiber 48 kg/cubic meters density minimum.

.7 Food Pass: Provide where indicated on drawings.

.8 Hardware Reinforcements and Preparations: Comply with referenced SHM standard and the following:

1. Strike Plate: Do not cut edge channel to receive entire strike or keeper. Provide punched opening to engage bolt in edge channel matching cut-out in strike plate.

2. Drilling and tapping for surface applied hardware may be done at project site.

.2 Frames:

.1 Interior Frames and Windows: Provide minimum 2.7 mm (12 gauge) steel.

.2 Exterior Frames: Provide minimum 2.7 mm (12 gauge) galvanized steel.

.3 Frame Fill: Prepare heads, jambs, and sills abutting structure, walls, or floors for solid anchorage with full grout fill. Exclude grout from mullions except where otherwise indicated.

1. Grout Guards: At frames to be grouted, tightly weld 0.45 mm(0.018”) minimum steel grout guards at screw holes, cut outs, and hardware preparations including those for silencers, removable glazing stops, locksets, pushbuttons, strike plates, hinges, etc. Additionally at hinge preparations Contractor to provide polyurethane or polystyrene foam fill or otherwise tightly seal grout guards to keep screw holes grout free.

2. Grout and Anchor Access Holes: When required-See drawing detail. Provide access holes in frames for anchoring frames in completed concrete or masonry openings and where, due to sequence of construction, frames cannot be grout filled from above. Provide access holes in frames with backup plates and closer plates as detailed. After frame anchorage and grouting, continuously weld closer plate in the field, grind smooth, and touch up prime coat or galvanizing as applicable so that access hole is not apparent. Indicate proposed access hole locations on shop drawing submittal for review.

.4 Hardware Reinforcements and Preparation: Comply with referenced SHM standard.

.1 Hinges: Weld 2.7 mm(0.106") minimum steel angle(s) at back of frame face and hinge reinforcement to resist deformation under swinging door load.

.2 Strike Plate: Weld 25 mm(1") long at each of four sides to frame. Provide punched openings to engage bolt in reinforcing matching cut-out in strike plate.

.3 Concealed Hardware: Provide grout boxes to enclose item. Provide welded in mounting tabs to suit.

.4 Surface Applied Hardware: Drilling and tapping may be done at project site.

.5 Fabricate any frames requiring concealed and/or electronic or pneumatic hardware with welded on junction boxes of a sufficient size to properly encapsulate and protect the wiring connections and hardware from damage of concrete or drywall, and supply and install to these junction boxes, sufficiently sized conduit which is to vertically terminate 300 mm(12") above the frame header.

.6 Frame Anchors (Masonry):

.1 Floor Anchors: Secure door jambs at floor line in accordance with referenced SHM standard. To be the same gage as the frame material (12ga)

.2 Sill Anchors: Where indicated on drawings, provide 3.4 mm (1/8") continuous bent plate channel set in sealant, as specified in Division 7 SEALANTS AND CAULKING section, with 10 mm (0.0394") diameter x 75 mm(3") expansion bolt anchors at 400 mm(16") o.c.

.3 Jamb Anchors: Comply with referenced SHM standard except space at 406 mm (16") o.c. maximum in masonry.

.4 Head Anchors: Provide loose "T" anchors spaced 400 mm(16") o.c. at heads of frames in masonry openings more than 1.2 m (0.047")wide. Fabricate head anchors of same gauge as frame, 50 mm (2")wide, with 255 mm(10") long leg of "T" punched to engage lintel reinforcement.

.7 Completed Opening Frame Anchors: Provide expansion anchor detail as indicated on the drawing for frame installation in completed concrete and masonry openings and where indicated on the drawings. Space anchors at same interval as specified for masonry frame anchors above unless otherwise indicated. Provide Grout and Anchor Access Hole in frame as specified above. Provide 2.7 mm(0.106") x 50 mm (2") minimum plate across frame throat welded both sides and 10 mm (.46") diameter center hole aligned to access hole. Anchor plate to wall with 10 mm (0.46") diameter x 75 mm (3") minimum one-piece sleeve type anchor bolt.

.3 Removable Glazing Stops

.1 Provide 25.4 x 25.4 x 3.4 mm (1"x1"x 1/8") angle fastened to opening frame at 150 mm (6")on center and 75 mm (3") maximum from corners. Provide Torx Security Plus, round, pan, or oval head ¼-20 or ¼-28, machine screw security fasteners.

.2 All exterior or shower area removable glass stop screws to be stainless steel Torx Security Plus security screws as above listed.

.4 Electrical and Security Systems Items:

.1 Provide conduit in doors and frames at time of fabrication interconnecting electric locksets, door position switches, callbuttons, key switches, electric hinges, keeper switches, etc., indicated in SECURITY HARDWARE sets.

3. Execution

3.01 INSTALLATION

.1 Precise written records shall be prepared and maintained by the frame installer documenting that they have been instructed as to the proper installation procedures and tolerances acceptable to this project and that the installation of all frames, screens, and windows comply. The General Contractor shall periodically review all frame, screen, and window installations and sign-off as accepted in conjunction with the Section Sub-Contractor prior to the installation of any doors or hardware.

.2 Submit written verification that frames are set plumb and true with Security Hardware Installer certifying that frames are in tolerance prior to installation of hardware. Frames and doors will not be accepted until verifications and certifications have been submitted and reviewed by MBS Designee. Install frames in strict accordance with maximum 1.5 mm tolerance (+ or -) for plumbness, squareness, alignment, and twist defined in referenced SHM standard.

.2 Locate hardware on doors and frames as follows:

.1 Frame Mounted Lock or Latchsets: From floor line locate lock or latch bolt centerline up 1024 mm (40.313") except at exit doors with auxiliary latchset locate frame mounted lock or latch bold centerline up 1270 mm(50") with auxiliary latchset knob or lever rose up 815 mm (32").

.3 Provide door edge clearances as follows:

.1 Provide no less that 1.5 mm (1/16") clearance and no more that 1/8" or as per hardware manufacturer clearance requirements, at door heads, jambs, and pair meeting edges.

.2 Where carpet is greater than 13 mm (1/2") thick increase undercut to maintain 6 mm (1/4") clearance.

.4 Provide full metal hinge shims and make adjustments necessary to provide clearances required. Use methods of adjustment recommended and defined in referenced SHM standard.

.5 Firmly secure and fully grout frame jambs, head, and sill to walls.

.6 Coordinate with SECURITY HARDWARE manufacturer to insure proper operation of door, frame, and hardware.

3.02 CLEAN AND ADJUST

.1 Cleaning: Clean frames of mortar, concrete, or any other substances.

.2 Immediately, upon delivery at job site and continuously during construction, sand and clean any rust, abrasions, scratches, or field fabrication and welding damage to galvanized and shop painted surfaces. At affected areas apply 0.05 mm (.001") minimum of galvanizing repair paint or same material used for shop coat primer as applicable.

.2 Apply complete Division 9 finish paint coatings to contact surfaces of removable glazing stops and corresponding door and frame contact surfaces as well as glazing channels prior to glazing.

.3 Final Adjustments: Check and readjust operating security hardware items, leaving security hollow metal doors and frames undamaged and in complete and proper operating condition with tolerances as required by Hardware Manufacturers and as specified.

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

.1 Aluminum Association (AA)
- .1 AA DAF 45OL-03(R2009), Designation System for Aluminum Finishes.

.2 ASTM International (ASTM)
- .1 ASTM A 123/A 123M-15, Standard Specification for Zinc (Hot-Dip galvanized) Coatings on Iron and Steel Products.
- .2 ASTM E 1748-95(2009), Standard Test Method for Evaluating the Engagement Between Windows and Insect Screens as an Integral System.

.3 CSA Group (CSA)
- .1 AAMA/WDMA/CSA 101/I.S.2/A440-11(R2016), NAFS - North American Fenestration Standard for Windows, Doors, and Skylights.
- .2 CSA A440S1-09, Canadian Supplement to AAMA/WDMA/CSA 101/1.S.2/A440, NAFS - North American Fenestration Standard for Windows, Doors, and Skylights.
- .3 CAN/CSA-A440.2-14/A440.3-14, Fenestration energy performance/User guide to CSA A440.2, Fenestration energy performance.
- .4 CAN/CSA-A440.4-07(R2016), Window, Door, and Skylight Installation
- .5 CAN/CSA-Z91-02(R2013), Health and Safety Code for Suspended Equipment Operations.

1.02 ADMINISTRATIVE REQUIREMENTS

.1 Pre-Installation Meetings:
- .1 Convene pre-installation meeting 1 week prior to beginning work of this Section and on-site installation, with Contractor's Representative and Departmental Representative in accordance with Section 01 31 19 - Project Meetings to:
  - .1 Verify project requirements.
  - .2 Review installation and substrate conditions.
  - .3 Co-ordination with other construction subtrades.
  - .4 Review manufacturer's written installation instructions and warranty requirements.

1.03 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 windows and include product characteristics, performance criteria, physical size, finish and limitations.
- .2 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.

.3 Shop Drawings:
- .1 Indicate materials and details in full size scale for head, jamb and sill, profiles of components, interior and exterior trim junction between combination units elevations of unit, anchorage details, location of isolation coating, description of related components and exposed finishes fasteners, and caulking. Indicate location of manufacturer's nameplates.
- .2 Indicate locations, dimensions, openings and requirements of related work.

.4 Samples:
- .1 Submit for review and acceptance of each unit.
- .2 Samples returned for inclusion into work.
- .3 Submit one representative model complete full size window sample of each type window.
- .4 Include frame, sash, sill, glazing and weatherproofing method, insect screens, surface finish and hardware. Show location of manufacturer's nameplates.
- .5 Include 150 mm long samples of head, jamb, sill, meeting rail mullions to indicate profile.

.5 Test and Evaluation Reports:
- .1 Submit test reports from approved independent testing laboratories, certifying compliance with specifications.
- .2 All test reports that reference the NAFS must include, on the first page, a summary of the results including, at minimum:
  - .1 The product manufacturer.
  - .2 The type of product.
  - .3 The model number/series number.
  - .4 The primary product designation.
  - .5 The secondary product designation.
    - .1 Positive design pressure.
    - .2 Negative design pressure.
    - .3 Water penetration resistance test pressure.
    - .4 Canadian air infiltration and exfiltration levels.
  - .6 The test completion date.
- .3 The report will also contain the following information:
  - .1 Test dates.
  - .2 Report preparation dates.
  - .3 Test information retention period.
  - .4 Location of testing facilities.
  - .5 Full description of test samples, including:
    - .1 Anodized finish, weathering characteristics wood preservative.
    - .2 Condensation resistance.
    - .3 Safety drop - vertical sliding windows only.
    - .4 Block operation - sliding windows only.
    - .5 Sash strength and stiffness - operable casement projecting.
    - .6 Sash pull-off - vinyl windows.
    - .7 Forced entry resistance.

.8 Mullian deflection - combination and composite windows.
.6 Complete description of amendments, as applicable.
.7 Conclusion.
.8 Drawings signed by the testing laboratory, if provided.

1.04 CLOSEOUT SUBMITTALS

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

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

1.05 QUALITY ASSURANCE

.1 Test and Evaluation Reports:
.2 Submit test reports from approved independent testing laboratories, certifying compliance with specifications.
.3 Test reports that reference the NAFS include, on the first page, a summary of the results including, at minimum:
.1 Product manufacturer.
.2 Type of product.
.3 Model number/series number.
.4 Primary product designation.
.5 Secondary product designation.
.1 Positive design pressure.
.2 Negative design pressure.
.3 Water penetration resistance test pressure.
.4 Canadian air infiltration and exfiltration levels.
.6 Test completion date.
.4 Report to contain the following information:
.1 Test dates.
.2 Report preparation dates.
.3 Test information retention period.
.4 Location of testing facilities.
.5 Full description of test samples, including:
.1 Anodized finish, weathering characteristics wood preservative.
.2 Condensation resistance.
.3 Safety drop - vertical sliding windows only.
.4 Block operation - sliding windows only.
.5 Sash strength and stiffness - operable casement projecting.
.6 Sash pull-off - vinyl windows.
.7 Forced entry resistance.
.8 Mullian deflection - combination and composite windows.
.6 Complete description of amendments, as applicable.
.7 Conclusion.
.8 Drawings signed by the testing laboratory, if provided.

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

1.06 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

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

.3 Storage and Handling Requirements:
- .1 Store materials off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
- .2 Store and protect windows from nicks, scratches, and blemishes.
- .3 Replace defective or damaged materials with new.

.4 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials in accordance with Section 01 74 21.

2 PRODUCTS

2.01 MATERIALS

.1 Sheet aluminum: Alloy 1100, F temper, 1.5 mm ($^{3}/_{16}$”) or 3 mm ($^{1}/_{8}$”) minimum thickness, exposed sheet finished to match frames as specified above

.2 Glass: Clear or Tinted, as indicated in window schedule, sealed glass units as specified under Section 08 80 00 Glazing

.3 Fasteners: To ASTM A167, stainless steel, type 304 selected to prevent galvanic action with the components fastened, of suitable size to sustain imposed loads

.4 Gaskets: Neoprene or EPDM with dimensional tolerances and durometer hardness and of suitable size and shape to meet the requirements of the specifications and their specific application. Gaskets shall be virgin material as manufactured by Tremco Ltd., Tremco Ltd. Gaskets shall conform to Tremco Information Bulletins:

For EPDM - TDB-460-1
For Neoprene - TDB-270-1

.5 Supporting angles, plates, bars, rods, and other steel accessories: Mild steel CAN3-G40.20/G40.21, shop painted with zinc chromate primer, thickness as required to sustain imposed loads and in no case less than 5 mm ($^{3}/_{16}$”) thick

.6 Sealant: Including primer, joint filler, as specified in Section 07 92 00

.7 Dielectric separator: Bituminous paint

.8 Thermal separator: Polyvinylchloride, 50 Shore A durometer hardness +5

.9 Glazing Tape: Refer to Section 08 80 00 Glazing

.10 Metal air seal/vapour barrier (by window supplier) to be bonded to window frame and extend behind mounting frame. Seal all corners to maintain air sea/vapour retarder. Install flexible flashing with continuous metal retaining strip to lap to interior wall assembly.

.11 Exterior Fixed Window Frame: To profiles indicated and as required to fulfill performance requirements, nominal thickness 2.5 mm (0.098"), suitable alloy and proper temper for extruding and adequate structural characteristics; and suitable for finishing as specified

2.02 FABRICATION

.1 Fabricate in accordance with AAMA/WDMA/CSA 101/I.S.2/A440 supplemented as follows:

.2 Fabricate units square and true with maximum tolerance of plus or minus 1.5 mm for units with a diagonal measurement of 1800 mm or less, and plus or minus 3 mm for units with a diagonal measurement over 1800 mm.

.3 Face dimensions detailed maximum permissible sizes.

.4 Brace frames to maintain squareness and rigidity during shipment and installation.

.5 Finish steel clips and reinforcement with shop coat primer to MPI #79 380 g/m² zinc coating to ASTM A 123/A 123M.

2.03 ALUMINUM FINISHES

.1 Finish Coatings: All exposed to view surfaces anodized. Conform to AAMA 611, AAM12C22A41, AAMA 611, Architectural Class II Clear Anodic Coating, Color #17 Clear.

.2 Paint ungalvanized steel clips, supports and reinforcing steel with steel primer or bituminous paint.

.3 Non-exposed surfaces may be left natural.

2.04 GLAZING

.1 Glaze windows in accordance with AAMA/WDMA/CSA 101/I.S.2/A440.

2.05 AIR BARRIER AND VAPOUR RETARDER

.1 Equip window frames with factory site installed air barrier and vapour retarder material for sealing to building air barrier and vapour retarder as follows:
- .1 Material: identical to, or compatible with, building air barrier and vapour retarder materials to provide required air tightness and vapour diffusion control throughout exterior envelope assembly.
- .2 Material width: adequate to provide required air tightness and vapour diffusion control to building air barrier and vapour retarder from interior.

3 EXECUTION

3.01 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts acceptable for product installation in accordance with manufacturer's written instructions.
- .1 Visually inspect substrate in presence of Departmental Representative.
- .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
- .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.02 INSTALLATION

.1 Window installation:
- .1 Install in accordance with AAMA/WDMA/CSA 101/I.S.2/A440.
- .2 Arrange components to prevent abrupt variation in colour.

.2 Sill installation:
- .1 Install metal sills with uniform wash to exterior, level in length, straight in alignment with plumb upstands and faces. Use one piece mm lengths at each location.
- .2 Cut sills to fit mm longer than window opening.
- .3 Secure sills in place with anchoring devices located at ends joints of continuous sills and evenly spaced 600 mm on centre in between.
- .4 Fasten expansion joint cover plates and drip deflectors with self tapping stainless steel screws.
- .5 Maintain 6 to 9 mm space between butt ends of continuous sills. For sills over 1200 mm in length, maintain 3 to 6 mm space at each end.

.3 Caulking:
- .1 Seal joints between windows and window sills with sealant. Bed sill expansion joint cover plates and drip deflectors in bedding compound. Caulk between sill upstand and window-frame. Caulk butt joints in continuous sills.
- .2 Apply sealant in accordance with Section 07 92 00 - Joint Sealants. Conceal sealant within window units except where exposed use is permitted by Departmental Representative.

3.03 FIELD QUALITY CONTROL

.1 Have manufacturer of products supplied under this Section review Work involved in handling, installation/application, protection and cleaning of its products, and submit written reports in acceptable format to verify compliance of Work with Contract.

.2 Manufacturer's field services: provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

.3 Schedule site visits to review Work at stages listed:
.1 After delivery and storage of products, and when preparatory Work on which Work of this Section depends completed, but before installation begins.
.2 Twice during progress of Work at 25% and 60% complete.
.3 Upon completion of Work, after cleaning carried out.

.4 Obtain reports within 3 days of review and submit.

3.04 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11.
.1 Leave Work area clean at end of each day.

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

.3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21.

3.05 PROTECTION

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

.2 Repair damage to adjacent materials caused by window installation.

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

.1 American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA)
- .1 ANSI/BHMA A156.1-2000, American National Standard for Butts and Hinges.
- .2 ANSI/BHMA A156.2-2003, Bored and Preassembled Locks and Latches.
- .3 ANSI/BHMA A156.3-2001, Exit Devices.
- .4 ANSI/BHMA A156.4-2000, Door Controls - Closers.
- .5 ANSI/BHMA A156.5-2001, Auxiliary Locks and Associated Products.
- .6 ANSI/BHMA A156.6-2005, Architectural Door Trim.
- .7 ANSI/BHMA A156.8-2005, Door Controls - Overhead Stops and Holders.
- .8 ANSI/BHMA A156.12-2005, Interconnected Locks and Latches.
- .9 ANSI/BHMA A156.13-2002, Mortise Locks and Latches Series 1000.
- .10 ANSI/BHMA A156.15-2006, Release Devices - Closer Holder, Electromagnetic and Electromechanical.
- .11 ANSI/BHMA A156.16-2002, Auxiliary Hardware.
- .12 ANSI/BHMA A156.18-2006, Materials and Finishes.
- .13 ANSI/BHMA A156.19-2002, Power Assist and Low Energy Power - Operated Doors.

.2 Canadian Steel Door and Frame Manufacturers' Association (CSDMA)
- .1 CSDMA Recommended Dimensional Standards for Commercial Steel Doors and Frames - 2009.

1.02 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.

1.03 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.

1.04 MAINTENANCE MATERIAL SUBMITTALS

.1 Extra Stock Materials:

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

.3 Tools:

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

1.05 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.

.3 Provide, in writing, proof that hardware installer is a certified detention contractor.

1.06 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.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 indoors in dry location 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 wrapping strippable coating.

.4 Replace defective or damaged materials with new.

.5 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials in accordance with Section 01 74 19 - Waste Management and Disposal.

2 PRODUCTS

.1 All hardware to be provided as listed in the hardware groups

.2 No substitutions allowed

2.01 HARDWARE ITEMS

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

2.02 DOOR HARDWARE

.1 See hardware groups 3.06 Schedule

2.03 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.

Use fasteners compatible with material through which they pass.

2.04 KEYING

.1 Supply Best Cores for commercial locks to owner

.2 All keying information will be between RPC staff and Best lock

.3 Supply ASSA mogul cylinders to all detention locks

.4 ASSA keying information to be supplied by RPC staff, try to key into existing system if possible

.5 Deliver ASSA mogul keys directly to assigned RPC security staff

.6 if required by RPC supply temporary construction cylinders to required locks

3 EXECUTION

3.01 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.

.8 All detention hardware must be install by a certified detention contractor (DEC)
.

3.02 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.

3.03 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.

3.04 DEMONSTRATION

.1 Maintenance Staff Briefing:
.1 Brief maintenance staff regarding:
.1 Proper care, cleaning, and general maintenance of projects complete hardware.
.2 Description, use, handling, and storage of keys.
.3 Use, application and storage of wrenches for door closers locksets and fire exit hardware.

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

3.05 PROTECTION

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

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

3.06 SCHEDULE

Group 1

Dr 100A	New Door/Frame	Detention Grade Door		
3 ea	Hinge	204FMSS	32D	Southern Steel
1 ea	Elec/Lock	10120AM-2-NL-24VDC (Swing 30)	Galv	Southern Steel
1 ea	Wiring	Lock Pigtail		Southern Steel
1 ea	Surf/Closer	7570-Torx (pull side mtg)	AL	Norton
2 ea	Raised Pull	212C	32D	Southern Steel
1 ea	Kickplate	80A 250 x 35mm L.D.W (S/Steel Rivets)	32D	Gallery
1 ea	DPS	200MRS-TB x 72" Lead	32D	Southern Steel
1 ea	Floor Stop	420	Black	Southern Steel
5 ea	Keys	Mogul (to existing system)		Southern Steel
2 ea	Intercom	By Controls Contractor		

Group 2

Dr 102	New Door/Frame	Detention Grade Door		
3 ea	Hinge	204FMSS	32D	Southern Steel
1 ea	Elec/Lock	10120AM-2-NL-24VDC (Swing 30)	Galv	Southern Steel
1 ea	Wiring	Lock Pigtail		Southern Steel
1 ea	Surf/Closer	CPS7570-Torx-EBC (push side mtg)	AL	Norton
2 ea	Raised Pull	212C	32D	Southern Steel
1 ea	Kickplate	80A 250 x 35mm L.D.W (S/Steel Rivets)	32D	Gallery
1 ea	DPS	200MRS-TB x 72" Lead	32D	Southern Steel
5 ea	Keys	Mogul (to existing system)		Southern Steel
2 ea	Intercom	By Controls Contractor		

Group 3

Dr BD100,	New Door/Framel	Detention Grade Door		
Dr BD104B	New Door/Frame	Detention Grade Door		
3 ea	Hinge	204FMSS	32D	Southern Steel
1 ea	Elec/Lock	10120AM-2-NL-24VDC (Swing 29)	Galv	Southern Steel
1 ea	Wiring	Lock Pigtail		Southern Steel
1 ea	Surf/Closer	CPS7570-Torx- EBC (push side mtg)	AL	Norton
2 ea	Raised Pull	212C	32D	Southern Steel
1 ea	Kickplate	80A 250 x 35mm L.D.W (S/Steel Rivets)	32D	Gallery
1 ea	DPS	200MRS-TB x 72" Lead	32D	Southern Steel
5 ea	Keys	Mogul (to existing system)		Southern Steel
2 ea	Intercom	By Controls Contractor		

Group 4

Dr BD104A	New Door/Frame	Detention Grade Door (Exterior)		
3 ea	Hinge	204FMSS	32D	Southern Steel
1 ea	Elec/Lock	10120AE-2-NL-120VAC (Swing 29)	Galv	Southern Steel
1 ea	Wiring	Lock Pigtail		Southern Steel
1 ea	Surf/Closer	Uni7570-Torx-EBC (push side mtg)	AL	Norton
2 ea	Raised Pull	212C	32D	Southern Steel
1 ea	Kickplate	80A 250 x 35mm L.D.W (S/Steel Rivets)	32D	Gallery
1 ea	DPS	200MRS-TB x 72" Lead	32D	Southern Steel
1 set	W/Strip	375CR x D.S- Torx (Machine Screw)	Black	Pemko
1 ea	Door Sweep	3452CNB x D.W – Torx (Machine Screw)	Black	Pemko
1 ea	Threshold	254X4AFG x D.W – Torx (Tapcon)		Pemko
5 ea	Keys	Mogul (to existing system)		Southern Steel
2 ea	Intercom	By Controls Contractor		

Please Note: Due to exterior use this lock will be 120VAC Solenoid Type Lock

Group 5

Dr BE101	Existing Door Frame	Detention Grade Door	
2 ea	Intercom	By Controls Contractor	

Balance of Hardware is existing

Group 6

Dr BE102	New Door/Frame	Detention Grade Door		
3 ea	Hinge	204FMSS	32D	Southern Steel
1 ea	Elec/Lock	10120AM-2-NL-24VDC (Swing 29)	Galv	Southern Steel
1 ea	Wiring	Lock Pigtail		Southern Steel
1 ea	Surf/Closer	CPS7570-Torx-EBC (push side mtg)	AL	Norton
2 ea	Raised Pull	212C	32D	Southern Steel
1 ea	Kickplate	80A 250 x 35mm L.D.W (S/Steel Rivets)	32D	Gallery
1 ea	DPS	200MRS-TB x 72" Lead	32D	Southern Steel
5 ea	Keys	Mogul (to existing system)		Southern Steel
2 ea	Intercom	By Controls Contractor		

Group 7

Dr 100B	New Door/ExistingFrame	Commercial Door		
2 ea	Hinge	HTA314 114 x 114 (NRP)	32D	McKinney
1 ea	El/Hinge	HTA314-QC10 114 x 114	32D	McKinney
1 ea	Mort/Cyl	1E74- C161-RP3		26D Best
1 ea	Electric Lock	ML20906 x SEC x CSB x L/C x M04	32D	Corbin
1 ea	Kickplate	80A 250 x 35mm L.D.W (S/Steel Rivets)	32D	Gallery
1 ea	Door Harness	QC-C300P		McKinney
1 ea	Wall Harness	QC-C2500P		McKinney
1 ea	DPS	TSB-C	Black	Securitron
1 ea	Card Reader	By Controls Contractor		
2 ea	Intercom	By Controls Contractor (wall mounted)		

Balance of hardware re use existing
Confirm existing doors have closers

Group 8

Dr 101		New door/Existing Frame	Commercial Door		
	2 ea	Hinge	HTA314 114 x 114 (NRP)	32D	McKinney
	1 ea	El/Hinge	HTA314-QC10 114 x 114	32D	McKinney
	1 ea	Mort/Cyl	1E74- C161-RP3	26D	Best
	1 ea	Electric Lock	ML20906 x SEC x CSB x L/C x M04	32D	Corbin
	1 ea	Kickplate	80A 250 x 35mm L.D.W (S/Steel Rivets)	32D	Gallery
	1 ea	Door Harness	QC-C300P		McKinney
	1 ea	Wall Harness	QC-C2500P		McKinney
	1 ea	DPS	1076W		Sentrol
	1 ea	Card Reader	By Controls Contractor		
		Balance of hardware re use existing			
		Confirm existing doors have closers			

Group 9

D 101		New Door/Frame	Commercial Door (90 Min FR)		
	2 ea	Hinge	HTA314 114 x 114 (NRP)	32D	McKinney
	1 ea	El/Hinge	HTA314-QC10 114 x 114	32D	McKinney
	1 ea	Mort/Cyl	1E74- C161-RP3	26D	Best
	1 ea	Electric Lock	ML20906 x SEC x CSB x L/C x M04	32D	Corbin
	1 ea	Closer	7570-Torx (pull side mtg)	AL	Norton
	1 ea	Kickplate	80A 250 x 35mm L.D.W (S/Steel Rivets)	32D	Gallery
	1 ea	Floor Stop	218	26D	Gallery
	1 ea	Door Harness	QC-C300P		McKinney
	1 ea	Wall Harness	QC-C2500P		McKinney
	1 ea	DPS	1076W		Sentrol
	1 ea	Card Reader	By Controls Contractor		

Group 9A

D 105A		New Door/Frame	Commercial Door		
	2 ea	Hinge	HTA314 114 x 114 (NRP)	32D	McKinney
	1 ea	El/Hinge	HTA314-QC10 114 x 114	32D	McKinney
	1 ea	Mort/Cyl	1E74- C161-RP3	26D	Best
	1 ea	Electric Lock	ML20906 x SEC x CSB x L/C x M04	32D	Corbin
	1 ea	Closer	7570-Torx (pull side mtg)	AL	Norton
	1 ea	Kickplate	80A 250 x 35mm L.D.W (S/Steel Rivets)	32D	Gallery
	1 ea	Floor Stop	218	26D	Gallery
	1 ea	Door Harness	QC-C300P		McKinney
	1 ea	Wall Harness	QC-C2500P		McKinney
	1 ea	DPS	1076W		Sentrol
	1 ea	Card Reader	By Controls Contractor		

Group 10

G01		Sgl	Gate		
G04		Sgl	Gate		
	4 ea	Hinge	204FMSS	32D	Southern Steel
	1 ea	Det/Lock	1070A-2-470C- HM (Swing 21)	Galv	Southern Steel
	2 ea	Cyl/Shield	219	32D	Southern Steel
		Gate mfg to provide lock & strike box in gate for 1070A			
		Provide paracentric keys as required			

Group 11

G02		Sgl	Gate		
	4 ea	Hinge	204FMSS	32D	Southern Steel
	1 ea	Det/Lock	1070A-2-470C- HM (Swing 15)	Galv	Southern Steel
	2 ea	Cyl/Shield	219	32D	Southern Steel
		Gate mfg to provide lock & strike box in gate for 1070A			
		Provide paracentric keys as required			

Group 12

G03		Sgl	Gate		
	4 ea	Hinge	204FMSS	32D	Southern Steel
	1 ea	Det/Lock	1070A-2-470C- HM (Swing 16)	Galv	Southern Steel
	2 ea	Cyl/Shield	219	32D	Southern Steel
		Gate mfg to provide lock & strike box in gate for 1070A			
		Provide paracentric keys as required			

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

.1 ASTM International
- .1 ASTM C 542, Standard Specification for Lock-Strip Gaskets.
- .2 ASTM D 790, Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- .3 ASTM C1036, Standard Specification for Flat Glass.
- .4 ASTM D 2240, Standard Test Method for Rubber Property - Durometer Hardness.
- .5 ASTM E 84, Standard Test Method for Surface Burning Characteristics of Building Materials.
- .6 ASTM E 330, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
- .7 ASTM F 1233, Standard Test Method for Security Glazing Materials and Systems.

.2 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-12.1-2017, Tempered or Laminated Safety Glass.
- .2 CAN/CGSB-12.2-M91 (R2017), Flat, Clear Sheet Glass.
- .3 CAN/CGSB-12.3-M91 (R2017), Flat, Clear Float Glass.
- .4 CAN/CGSB-12.4-M91 (R2017), Heat Absorbing Glass.

.3 Glass Association of North American (GANA)
- .1 GANA Glazing Manual - 2008.
- .2 GANA Laminated Glazing Reference Manual - 2009.

1.02 ADMINISTRATIVE REQUIREMENTS

.1 Pre-Installation Meetings:
- .1 Convene pre-installation meeting 1 week prior to beginning work of this Section and on-site installation, with Contractor's Representative and Departmental Representative in accordance with Section 01 31 19 - Project Meetings to:
  - .1 Verify project requirements.
  - .2 Review installation and substrate conditions.
  - .3 Co-ordination with other building subtrades.
  - .4 Review manufacturer's written installation instructions and warranty requirements.

.2 Arrange for site visit with Departmental Representative prior to start of Work to examine existing site conditions adjacent to demolition Work.

.3 Hold project meetings every week month.

.4 Ensure key personnel site supervisor project manager subcontractor representatives attend.

.5 Departmental Representative will submit written notification of change to meeting schedule established upon contract award 24 hours prior to scheduled meeting.

1.03 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 glass, sealants, and glazing accessories 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 Submit duplicate mm size samples of and sealant material.

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

1.04 CLOSEOUT SUBMITTALS

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

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

1.05 QUALITY ASSURANCE

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

1.06 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

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

.3 Storage and Handling Requirements:
- .1 Store materials off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
- .2 Store and protect glazing and frames from nicks, scratches, and blemishes.
- .3 Protect prefinished aluminum surfaces with wrapping strippable coating.
- .4 Replace defective or damaged materials with new.

.4 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials in accordance with Section

01 74 19 - Waste Management and Disposal.

1.07 AMBIENT CONDITIONS

.1 Ambient Requirements:
- .1 Install glazing when ambient temperature is 10 degrees C minimum. Maintain ventilated environment for 24 hours after application.
- .2 Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

2 PRODUCTS

2.01 MATERIALS

.1 Design Criteria:
- .1 Ensure continuity of building enclosure vapour and air barrier using glass and glazing materials as follow:
  - .1 Utilize inner light of multiple light sealed units for continuity of air and vapour seal.
- .2 Size glass to withstand wind loads, dead loads and positive and negative live loads to ASTM E330.
- .3 Limit glass deflection to 1/200 with full recovery of glazing materials.

.2 Flat Glass:
- .1 Safety glass: to CAN/CGSB-12.1, transparent, 6mm thick unless noted otherwise on Drawings.
  - .1 Type 2-tempered.
  - .2 Class B-float.
  - .3 Category 1.
- .2 Float glass: to CAN/CGSB-12.3, glazing quality, 6mm thick unless noted otherwise on Drawings.
- .3 Spandrel glass: Tempered spandrel glass conforming with DD-G-1403, Grade B, Style II, colour as indicated on Drawings, 6mm thick unless noted otherwise on Drawings.
- .4 Clear Wire Glass: clear rolled glass conforming to ASTM C-1036, Type II (flat), Class I, Form 1 (wired and polished both faces), wired with welded polished wires, 13 mm x 13 mm square pattern, 6mm thick unless noted otherwise on Drawings..
- .5 Low emissivity (LOW E) glass, metallic coating: soft, sputtered, 6mm thick unless noted otherwise on Drawings.

.3 Safety Glazing: Plastic polycarbonate glazing: to CAN/CGSB-12.1, as follows:
- .1 Single 6mmmm thick polycarbonate sheet, clear colour.
- .2 Ballistic performance: to ASTM F 1233.
- .3 Flexural strength: to ASTM D 790.
- .4 Surface burning characteristics for flame and smoke spread: to ASTM E 84.

.4 Insulating Glass Units:

.1 Manufacturer and Unit Fabrication: By a member of the Sealed Insulating Glass Manufacturers Assn. (SIGMA) and fabricated in accordance with SIGMA recommendations, except where more stringent requirements are indicated.

.2 Class: "CBA" and certified as such by the Insulating Glass Certification Council (IGCC).

.3 Construction: organic elastomeric sealed edge (no metal edges permitted) consisting of a polyisobutylene primary seal and a silicone secondary seal, with the interior air space hermetically sealed and provided with a concealed desiccant agent. Secondary seals other than silicone shall not be used.

.5 Sealant: in accordance with Section 07 92 00.

2.02 ACCESSORIES

.1 Setting blocks: neoprene or EPDM, 80-90 Shore A durometer hardness to ASTM D2240, size to suit glazing method, glass light weight and area.

.2 Spacer shims: neoprene, 50-60 Shore A durometer hardness to ASTM D2240, 75 mm long x one half height of glazing stop x thickness to suit application. Self adhesive on one face.

.3 Glazing tape:

.1 Preformed butyl compound with integral resilient tube spacing device, 10-15 Shore A durometer hardness to ASTM D2240; coiled on release paper; black colour.

.2 Closed cell polyvinyl chloride foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume 2 %, designed for compression of 25 %, to effect an air and vapour seal.

.4 Glazing splines: resilient silicone, extruded shape to suit glazing channel retaining slot, colour as selected.

.5 Glazing clips: manufacturer's standard type.

.6 Lock-strip gaskets: to ASTM C542.

.7 Frame: stainless steel complete with security screws.

3 EXECUTION

3.01 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for glazing installation in accordance with manufacturer's written instructions.
- .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, and ready to receive glazing.
- .3 Visually inspect substrate in presence of Departmental Representative.
- .4 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
- .5 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.02 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.

3.03 INSTALLATION: EXTERIOR WET/DRY METHOD (PREFORMED TAPE AND SEALANT)

.1 Perform work in accordance with GANA Glazing Manual and GANA Laminated Glazing Reference Manual for glazing installation methods.

.2 Cut glazing tape to length and set against permanent stops, 6 mm below sight line. Seal corners by butting tape and dabbing with sealant.

.3 Apply heel bead of sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete continuity of air and vapour seal.

.4 Place setting blocks at 1/4 1/3 points, with edge block maximum 150 mm from corners.

.5 Rest glazing on setting blocks and push against tape and heel head of sealant with sufficient pressure to attain full contact at perimeter of light or glass unit.

.6 Install removable stops with spacer strips inserted between glazing and applied stops 6 mm below sight line. Place glazing tape on glazing light or unit with tape flush with 16 mm below sight line.

.7 Fill gap between glazing and stop with sealant to depth equal to bite of frame on glazing, maximum 9 mm below sight line.

.8 Apply cap head of sealant along void between stop and glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.04 INSTALLATION: INTERIOR WET/DRY METHOD (TAPE AND SEALANT)

.1 Perform work in accordance with GANA Glazing Manual and GANA Laminated Glazing Reference Manual for glazing installation methods.

.2 Cut glazing tape to length and install against permanent stops, projecting 1.6 mm above sight line.

.3 Place setting blocks at 1/4 1/3 points, with edge block maximum 150 mm from corners.

.4 Rest glazing on setting blocks and push against tape to ensure full contact at perimeter of light or unit.

.5 Install removable stops, with spacer shims inserted between glazing and applied stops at 600 mm intervals, 6 mm below sight line.

.6 Fill gaps between light and applied stop with sealant to depth equal to bite on glazing, to uniform and level line.

.7 Trim protruding tape edge.

3.05 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
- .1 Leave Work area clean at end of each day.
  - .1 Remove traces of primer, caulking.
  - .2 Remove glazing materials from finish surfaces.
  - .3 Remove labels.
  - .4 Clean glass and mirrors using approved non-abrasive cleaner in accordance with manufacturer's instructions.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.06 PROTECTION

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

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

.3 Repair damage to adjacent materials caused by glazing installation.

END OF SECTION