Part 1 General

1.1 REFERENCES

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

.1 ASTM A653/A653M-11, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 ASTM C591-13, Standard Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation

.3 ASTM C1289-13e1, Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.

.2 CGSB 41-GP-19Ma-84, Rigid Vinyl Extrusions for Windows and Doors.

.3 Canadian Standards Association (CSA International)

.1 CSA-G40.20-13/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.2 CSA W59-13, Welded Steel Construction (Metal Arc Welding).

.4 Canadian Steel Door Manufacturers' Association (CSDMA)

.1 CSDMA, Recommended Specifications for Commercial Steel Doors and Frames, 2006.

.2 CSDMA, Selection and Usage Guide for Commercial Steel Doors, 2009.

.5 National Fire Protection Association (NFPA)

.1 NFPA 80-2013, Standard for Fire Doors and Fire Windows.

.2 NFPA 252-2013, Standard Methods of Fire Tests of Door Assemblies.

.6 Underwriters' Laboratories of Canada (ULC)

.1 CAN/ULC S104-10, Standard Method for Fire Tests of Door Assemblies.

1.2 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 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN/ULC S104 for ratings specified or indicated.

.3 Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with CAN/ULC S104, ASTM E152 or NFPA 252 and listed by nationally recognized agency having factory inspection services.

1.3 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, and finishes.

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

1.4 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 21 - Construction/Demolition Waste Management and Disposal.

Part 2 Products

2.1 MATERIALS

.1 Hot dipped galvanized steel sheet: to ASTM A653M, ZF75, minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.

.2 Reinforcement channel: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A653M, ZF75.

2.2 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/m^3 minimum sanded to required thickness.

.2 Insulated core:

.1 Polyisocyanurate: Rigid, modified polyisocyanurate, closed cell board. Density; 32 kg/m^3 (2.0 pcf) minimum, thermal values; RSI 1.9 (R 11.0) minimum, in accordance with ASTM C591 (un-faced) or C 1289 (faced).

.3 Temperature rise rated (TRR): core composition to limit temperature rise on unexposed side of door. Core to be tested as part of a complete door assembly, in accordance with CAN/ULC S104, ASTM E152 or NFPA 252, covering Standard Method of Tests of Door Assemblies and listed by nationally recognized testing agency having factory inspection service.

2.3 ADHESIVES

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

.1 Adhesive: maximum VOC content 50 g/L.

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

2.4 PRIMER

.1 Touch-up prime CAN/CGSB-1.181.

.1 Maximum VOC limit 50 g/L.

2.5 PAINT

.1 Field paint steel doors and frames in accordance with Sections 09 91 13 - Exterior Painting and 09 91 23 - Interior Painting. Protect weatherstrips from paint. Provide final finish free of scratches or other blemishes.

2.6 ACCESSORIES

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

.2 Exterior and interior top and bottom caps: 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.

.6 Sealant: in accordance with Section 07 92 00 – Joint Sealants.

.1 Maximum VOC limit 250 g/L.

.7 Glazing: in accordance with Section 08 80 50 - Glazing.

.8 Make provisions for glazing as indicated and provide necessary glazing stops.

.1 Provide removable stainless steel glazing beads for use with glazing tapes and compounds and secured with countersunk stainless steel screw.

.2 Design exterior glazing stops to be tamperproof.

2.7 FRAMES FABRICATION GENERAL

.1 Fabricate frames in accordance with CSDMA specifications.

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

.3 Exterior frames: 1.6 mm welded, thermally broken type construction using rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19MA.

.4 Interior frames: 1.6 mm welded type construction.

.5 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.

.6 Protect mortised cutouts with steel guard boxes.

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

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

.9 Conceal fastenings except where exposed fastenings are indicated.

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

.11 Insulate exterior frame components with polyurethane insulation.

.12 Prepare frames to receive electronic monitoring and security devices. Refer to Section 08 71 10 - Door Hardware and Section 08 90 10 - Door, Frame and Hardware Schedule. Coordinate frame preparation with Electrical Divisions 26 and 28.

2.8 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.

2.9 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.

2.10 DOOR FABRICATION GENERAL

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

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

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

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

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

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

.7 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in conformance with CAN/ULC S104, ASTM E152, or 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.

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

2.11 DOORS: HONEYCOMB CORE CONSTRUCTION

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

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

2.12 THERMALLY BROKEN DOORS AND FRAMES

.1 Fabricate thermally broken doors by using polyisocyanurate 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.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 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.

3.3 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.

3.4 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 floor and thresholds as follows.

.1 Hinge side: 1.0 mm.

.2 Latchside and head: 1.5 mm.

.3 Finished floor, top of carpet, and thresholds: 13 mm.

.3 Adjust operable parts for correct function.

.4 Install louvres.

3.5 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.

3.6 GLAZING

.1 Install glazing for doors and frames in accordance with Section 08 80 50 - Glazing.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Architectural Woodwork Manufacturers Association of Canada (AWMAC).

.1 Quality Standards for Architectural Woodwork, 1st edition, 2009.

.2 Canadian Standards Association (CSA International).

.1 CAN/CSA O132.2 Series-90(R1998), Wood Flush Doors.

.2 CAN/CSA-O132.5-M1992(R1998), Stile and Rail Wood Doors.

1.2 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's:

.1 For caulking materials during application and curing.

.2 For door materials and adhesives.

.2 Shop Drawings:

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

.2 Indicate door types and cutouts for lights and louvres, sizes, core construction, transom panel construction and cutouts.

1.3 QUALITY ASSURANCE

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

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Storage and Protection:

.1 Protect doors from dampness. Arrange for delivery after work causing abnormal humidity has been completed.

.2 Store doors in well ventilated room, off floor, in accordance with manufacturer's recommendations.

.3 Protect doors from scratches, handling marks and other damage. Wrap doors.

.4 Store doors away from direct sunlight.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.2 Dispose of corrugated cardboard, polystyrene, plastic, and packaging material in appropriate on-site bin for recycling in accordance with site waste management program.

.3 Unused or damaged glazing materials are not recyclable and must not be diverted to municipal recycling programs.

.4 Divert unused adhesive material from landfill to official hazardous material collections site approved by Departmental Representative.

.5 Do not dispose of unused paint materials into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

Part 2 Products

2.1 WOOD FLUSH DOORS

.1 Solid core: to CAN/CSA-O132.2.1.

.1 Construction:

.1 Solid particleboard core: grade LD-1 or LD-2, stile and rail frame bonded to particleboard core with wood lock blocks and top blocks, 5-ply construction, 45 mm thickness. Door core and all materials shall contain no urea formaldehyde.

.2 Face Panels:

.1 Hardwood; veneer grades: Grade I (Premium), flat sliced white birch species.

.3 Adhesive: Type II (water resistant) for interior doors.

2.2 GLAZING

.1 Glass: in accordance with Section 08 80 50 - Glazing.

.2 Accessories: in accordance with Section 08 80 50 - Glazing.

2.3 FABRICATION

.1 Vertical edge strips solid hardwood compatible with face veneer. AWMAC edge type 2.

.2 Prepare doors for louvres and glazing. Provide hardwood species to match face veneer and glazing stops with mitred corners.

.3 Bevel vertical edges of single acting doors 3 mm in 50 mm on lock side and 1.5 mm in 50 mm on hinge side.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

.1 Unwrap and protect doors in accordance with CAN/CSA-O132.2 Series, Appendix A.

.2 Install doors and hardware in accordance with manufacturer's printed.

.3 Adjust hardware for correct function.

.4 Install glazing in accordance with Section 08 80 50 - Glazing.

.5 Install louvres and stops.

3.3 ADJUSTMENT

.1 Re-adjust doors and hardware just prior to completion of building to function freely and properly.

3.4 CLEANING

.1 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.

.2 Remove traces of primer, caulking; clean doors and frames.

.3 Clean glass and glazing materials with approved non-abrasive cleaner.

.4 On completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 SHOP DRAWINGS

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

.2 Submit catalogue details for each type of door illustrating profiles, dimensions and methods of assembly.

1.2 CLOSEOUT SUBMITTALS

.1 Provide maintenance data for cleaning and maintenance of stainless steel finishes for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal, and with the Waste Reduction Workplan.

.2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper, plastic, polystyrene, and corrugated cardboard packaging material for recycling in accordance with Waste Management Plan.

1.4 DELIVERY, STORAGE AND HANDLING

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

Part 2 Products

2.1 ACCESS DOORS

.1 Sizes: Except as indicated otherwise, to be minimum sizes as follows:

.1 For body entry: 600 x 600 mm where not noted otherwise.

.2 For hand entry: 300 x 300 mm where not noted otherwise.

.3 Sizes as noted on drawings.

.2 Construction (except as noted below): Rounded safety corners, concealed hinges, screwdriver latch, anchor straps, able to open 180^{o}.

.3 Construction (for gypsum board walls and ceilings in finished areas): concealed aluminum frame and recessed door to fit either 12.7 mm or 16 mm gypsum board (as specified in wall types) for flush installation into ceiling or wall, which will have a uniform slot/gap around perimeter. Door shall open 120 degrees minimum and be removable. Latch released by mechanism concealed in slot (Not cam latch).

.4 Materials

.1 Tiled surfaces and other special areas as noted: Stainless steel with brushed satin finish.

.2 Other areas: Prime coated steel.

.5 Materials

.1 For finished gypsum board wall and ceiling locations:

.1 Frame: 2mm (.080) aluminum extrusion. For 16mm or 12.7mm depth.

.2 Door panel: 2 mm ((.080) aluminum door for 16mm gypsum board.

.3 Mill finish.

.2 For unfinished or concealed locations:

.1 Frame: 0.55mm (26ga) galvanized steel.

.2 Door panel: 1.01mm (20ga) galvanized steel, flanged on four sides.

.3 Baked enamel, mill finish.

Part 3 Execution

3.1 INSTALLATION

.1 Installation:

.1 Flush installation for drywall surfaces.

3.2 LOCATION

.1 Locations: Refer to drawings.

.2 Ensure that equipment is within view and accessible for operating, inspecting, adjusting, servicing without using special tools.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 American Architectural Manufacturers Association (AAMA).

.1 AAMA 609.1-09, Voluntary Guide Specification for Cleaning and Maintenance of Architectural Anodized Aluminum.

.2 American Society for Testing and Materials International, (ASTM).

.1 ASTM A167-99(2009), Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

.2 ASTM A276-13a, Standard Specification for Stainless Steel Bars and Shapes.

.3 ASTM A480/A480M-13b, Standard Specification for General Requirements for Flat Rolled Stainless Steel and Heat-Resisting Steel Plate, Sheet, and Strip.

.3 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-1.105-M91, Quick-Drying Primer.

1.2 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section Section 01 33 00 - Submittal Procedures. Indicate VOC's:

.1 For caulking materials during application and curing.

.2 For door materials and adhesives.

.2 Shop Drawings:

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

.2 Indicate each type of door, arrangement of hardware, required clearances, electrical characteristics including voltage, size of motors, auxiliary controls and wiring diagrams.

.3 Indicate assembly details and dimensions of fabrication, required clearances and electrical connections.

1.3 CLOSEOUT SUBMITTALS

.1 Provide operation and maintenance data for overhead coiling doors, and hardware for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.2 Dispose of corrugated cardboard, polystyrene, plastic, and packaging material in appropriate on-site bin for recycling in accordance with site waste management program.

.3 Divert unused metal and wiring materials from landfill to metal recycling facility approved by Departmental Representative.

.4 Unused or damaged glazing materials are not recyclable and must not be diverted to municipal recycling programs.

.5 Divert unused paint material from landfill to official hazardous material collections site approved by Departmental Representative.

.6 Do not dispose of unused paint materials into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

Part 2 Products

2.1 MATERIALS

.1 Coiling doors.

.2 Doors.

.1 Door face sheets to interior doors 0.85 mm base thickness.

.3 Stainless steel sheet metal: to ASTM A167, Type 304 with #4 polish finish as per ASTM A480.

.4 Stainless steel bars, wire and shapes: to ASTM A276, Type 304 with #4 polish finish as per ASTM A480.

.5 Primer: to CAN/CGSB-1.105.

2.2 DOORS

.1 Coiling door curtain interlocking slat sections:

.1 Roll formed steel:

.1 Interior slat: 0.85 mm base metal thickness x 76 mm wide, satin stainless steel finish.

.2 Exterior slat: 0.85 mm base metal thickness x 76 mm wide, satin stainless steel finish.

.2 Insulation: rigid CFC free polyurethane, 21 mm thick.

.3 Total slat thickness: 22 mm.

.4 Profile: flat.

.2 Rivet continuous end locks to slat ends.

.3 Provide bottom bar of double equal weight steel angles, satin stainless steel finish. Provide sensing edge (safety switch) with neoprene astrgal extending full width of door bottom bar.

.4 Form guides of metal angles of sections of 5 mm minimum thickness for between jambs installation, mechanically fastened together. Equip guides with replaceable flexible vinyl weatherstrip. Wall angle to be continuous. Top of inner and outer guide angles to be flared outwards to form bellmouth for smooth entry of curtain into guides. Provide removable guide stoppers to prevent over travel of curtain and bottom bas. Stainless steel mill finish.

.5 Construct counterbalance assembly of heat treated oil-tempered torsion spring with 25% overload factor. Enclose spring in steel pipe to support door curtain and counterbalance mechanism with maximum deflection of 1/360th of opening width. Provide ball bearings at rotating points. Provide spring tension adjusting wheel, accessible for setting.

.6 Support counterbalance assembly on 6.4 mm minimum thickness steel plate brackets, forming end enclosures.

.7 Enclose counterbalance assembly with 0.70 mm thick stainless steel sheet formed hood with reinforced top and bottom edges. Provide minimum 6.4 mm steel intermediate support brackets as required to prevent sag, equipped with nylon brush weatherstripping at door header.

.8 Equip door for locking from both sides with slide bolt. Provide interlock switches on motor operated doors.

2.3 OPERATION

.1 Equip door for operation by:

.1 Electric motor operator.

2.4 ELECTRICAL OPERATOR

.1 Electrical motors, controller units, remote pushbutton stations, relays and other electrical components: to CSA and ULC approval.

.2 Power supply: as recommended by door manufacturer for size and type of door.

.3 Motor: high starting torque, instant reversing, capacity to operate grille at 200 mm per second, removable without affecting emergency chain device or setting of limit switches. Equip motor with overload protection, centrifugal clutch and electric brake.

.4 Motor size matching gear reducer with gears running in oil bath.

.5 Controller units with integral motor reversing starter, 3 heater elements for overload protection, including control relays as applicable.

.6 Operation:

.1 Remote push button stations: surface mounted, in one location, with OPEN-STOP-CLOSE push buttons. Locate as directed on site.

.7 Design brake to stop and hold doors in any position.

.8 Include hand crank interlocked auxiliary operator to disconnect motor mechanically and electrically when engaged and allow manual operation of door.

.9 Safety switch: electro mechanical or electro pneumatic device full length of bottom rail of bottom section of door, to reverse door to open position when coming in contact with object on closing cycle.

.10 Door speed: 400 mm/s.

.11 Mounting brackets: galvanized steel, size and thickness to suit conditions.

.12 Control circuit: 24 VAC.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

.1 Install doors in accordance with manufacturer's printed instructions.

.2 Install electrical motors, controller units, pushbutton stations, relays and other electrical equipment required for door operation.

.3 Installation includes electric wiring from power supply located near door.

.4 Adjust door operating components to ensure smooth opening and closing of doors.

3.3 CLEANING

.1 Perform cleaning of aluminum components in accordance with: AAMA 609.1 - Voluntary Guide Specification for Cleaning and Maintenance of Architectural Anodized Aluminum.

.2 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.3 Clean aluminum and stainless steel with damp rag and approved non-abrasive cleaner in accordance with manufacturer's instructions.

.4 Remove traces of primer, caulking; clean doors and frames.

.5 Clean glass and glazing materials with approved non-abrasive cleaner.

.6 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 American National Standards Institute (ANSI)

- .1 ANSI/ICC A117.1-2009, Standard for Accessible and Usable Buildings and Facilities.
- .2 ANSI/NAAMM/HMMA 863-04, Guide Specifications for Detention Security Hollow Metal Doors and Frames.

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

- .1 ASTM A240/A240M-13c, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
- .2 ASTM A568/A568M-13ae1, Standard Specification for Steel, Sheet, Carbon, Structural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for.
- .3 ASTM A653/A653M-11, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .4 ASTM A924/A924M-13, Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
- .5 ASTM A1008/A1008M-13, Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
- .6 ASTM F1450-12a, Standard Test Methods for Hollow Metal Swinging Door Assemblies for Detention Facilities.

.3 Canadian General Standards Board (CGSB)

- .1 CAN/CGSB-1.40-97, Anticorrosive Structural Steel Alkyd Primer.
- .2 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.

.4 Canadian Standards Association (CSA International)

- .1 CAN/CSA-G40.20/G40.21M-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.5 Canadian Steel Door Manufacturers Association (CSDMA),

- .1 Selection and Usage Guide for Steel Doors and Frames, 2009.

.6 National Association of Architectural Metal Manufacturers (NAAMM)

- .1 NAAMM HMMA 802-07, Manufacturing of Hollow Metal Doors and Frames.
- .2 NAAMM HMMA 840-07, Installation and Storage of Hollow Metal Doors and Frames.
- .3 HMMA 841-07, Tolerances and Clearance for Commercial Hollow Metal Doors and Frames.
- .4 HMMA 863-04, Guide Specification for Detention Security Hollow Metal Doors and Frames.

1.2 REGULATORY REQUIREMENTS

.1 Installed Door and Frame Assembly: Conform to ANSI/ICC A117.1

1.3 SUBMITTALS

.1 Submit proof of manufacturer's written certification in accordance with requirements of ANSI/NAAMM HMMA 863 and ASTM F1450 for static load, rack, impact load and removable glazing stop tests.

.2 Provide performance testing data prior to fabrication. Failure to provide required testing data or submission of misrepresented testing data would result in disqualification. In the event of disqualification substitute an acceptable alternate manufacturer or subcontractor, at no additional cost to the Departmental Representative.

.3 Product Data:

.1 Provide product data on standard door construction in accordance with Section 01 33 00 - Submittal Procedures.

.4 Shop Drawings:

.1 Indicate door and frame elevations, materials, internal reinforcement, mortise reinforcement, anchor types, closure methods, fastener locations, finishes, location of cut-outs for hardware, and cut outs for glazing, in accordance with Section 01 33 00 - Submittal Procedures.

.2 Reference doors and frames noted in Door, Frame and Hardware Schedule.

.3 Indicate provisions to accommodate conduit and connection boxes within frames.

.5 Samples:

.1 Submit manufacturer's door corner sample as well as frame corner sample in accordance with Section 01 33 00 - Submittal Procedures.

1.4 MAINTENANCE DATA

.1 Provide maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

.2 Provide documentation including:

.1 Hardware identification including part numbers, manufacturer, and source of supply.

.2 Recommended spare parts list that Departmental Representative for maintenance purposes.

.3 Complete operation, adjustment, maintenance, and repair procedures.

.4 Name, address, and telephone numbers of installing Subcontractor.

.3 Provide two sets of Special Tools for installation and removal of each type of security screws in accordance with Section 01 78 00 - Closeout Submittals.

.4 Sign off and verification of the detention door and hardware system is required during the Commissioning process.

1.5 QUALITY ASSURANCE

.1 Perform Work to requirements of CSDMA (Canadian Steel Door Manufacturers Association) and HMMA (Hollow Metal Manufacturers Association) standards.

.2 Manufacturer:

.1 Minimum 5 years documented experience designing and manufacturing detention hollow metal door assemblies.

1.6 MOCK-UP

.1 Provide a full size mock-up in accordance with Section 01 45 00 – Quality Control for one sliding cell door and one swinging cell door.

.2 Show complete installation including door, frame, glazing, hardware and operating system. Door and controls to be indicative of final installation in every aspect with all functions and indication signals operable for inspection.

1.7 DELIVERY, STORAGE AND PROTECTION

.1 Deliver, store, and handle materials in accordance with Section 01 60 00 - Common Product Requirements.

.2 Comply with HMMA 840.

.3 Weld minimum two temporary jamb spreaders per frame prior to shipment.

.4 Remove doors and frames from wrappings or coverings upon receipt on site and inspect for damage.

.5 Store in vertical position, spaced with blocking to permit air circulation between components.

.6 Store materials out of water and covered to protect from damage.

.7 Clean and touch up scratches or disfigurement caused by shipping or handling with zinc-rich primer.

1.8 WATE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper, plastic, polystyrene and corrugated cardboard packaging material for recycling in accordance with Waste Management Plan.

.4 Divert unused metal materials from landfill to metal recycling facility approved by Departmental Representative.

1.9 WARRANTY

.1 Provide Manufacturer's five (5) year warranty from date of substantial completion, covering material and workmanship.

Part 2 Products

2.1 MATERIALS

.1 Face Sheet Steel:

.1 Commercial grade steel to ASTM A568/A568M, Class 1, hot dipped galvanized to ASTM A568/A568M, commercial quality coating designation to ASTM A924/A924M, ZF075, commercially known as “Colourbond,” “Satincoat,” or “Galvanneal.”

.2 Steel plate, shapes and bars:

.1 Structural quality to CAN/CSA-G40.20/G40.21, type 230G or 260W; free of scale, pitting and other surface blemishes.

.3 Accessories:

.1 Floor anchors, channel spreaders, tee anchors, and wall stud anchors zinc coated to ASTM A1008M, coating designation ZF075, drill stud anchors to wire tie to studs, lag bolts, shields , and bushings for existing openings.

.4 Guard boxes:

.1 ZF075 coating designation zinc finish, 1.6 mm core thickness steel unless noted otherwise.

.5 Door insulation:

.1 Rock wool or rigid fiberglass for sound deadening, minimum 24 kg/m density.

.6 Shop paint primer: to CAN/CGSB-1.40-M.

.7 Zinc primer: zinc rich, ready mix to CAN/CGzSB-1.181.

.8 Filler: Polyester type automotive body spot filler compound.

.9 Door bumpers: Grey neoprene/rubber type; pop rivet to door frame with aluminum rivets. Mask bumpers for painting.

.10 Isolation coating: Alkali resistant bituminous paint.

2.2 DETENTION DOORS

.1 Galvanized Steel

.1 Steel sheet faces 2.5 mm thick, flush design.

.2 Core: Stiffened core in conformance with HMMA 863 standards.

.2 Fabrication Tolerances: To HMMA 841.

2.3 DETENTION FRAMES

.1 Galvanized Steel

.1 Steel sheet 2.75 mm thick.

.2 Fabrication Tolerances: To HMMA 841.

2.4 ACCESSORIES

.1 Glazing Stops: Formed brass, minimum 16 mm (0.625 inch) high, butted corners; prepared for Torx-Plus “Registered” countersink style security tamperproof screws.

.2 Food Pass: 380 mm x 125 mm clear opening, 2.5mm steel fabricated food pass assembly, components made from 6 mm steel. Provide Paracentric cylinder.

.3 Glazing: In accordance with Section 08 80 50 - Glazing.

2.5 FABRICATION

.1 Detention Doors:

.1 Door Edge Construction: Longitudinal edges welded, filled and sanded with no visible edge seams.

.2 Door Core Construction: Stiffened with continuous steel sections, spaced with interior webs not more then 6 in. (152mm) apart, which upon assembly span the full thickness of the interior of the door.

.3 Top and Bottom Channels: Inverted, recessed, welded steel channels.

.4 Reinforce doors where surface mounted hardware is required

.5 Drill and tap for mortised, templated hardware.

.6 Fabricate doors with hardware reinforcement plates welded in place.

.2 Detention Frames:

.1 Welded Frames: 2.75 thick base metal thickness, welded type construction, mitred corners.

.2 Factory assemble and weld frames.

.3 Fabricate frames with hardware reinforcement plates welded in place.

.4 Reinforce frames wider than 1200 mm with roll formed steel channels fitted tightly into frame head, flush with top.

2.6 FINISHES

.1 Galvanized Steel Finish: Factory applied zinc chromate primer to be applied to all exposed surfaces. Touch-up only, where product has been welded and ground smooth.

Part 3 Execution

3.1 INSTALLATION

.1 Install components to manufacturer’s written instructions and reviewed shop drawings.

.2 Install doors and frames to CSDMA and HMMA 840 standards and in accordance with local authority having jurisdiction.

.3 Coordinate with wall construction for anchor placement.

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

.5 Allow for deflection to ensure that structural loads are not transmitted to frame.

.6 Adjust operable parts for correct clearances and function.

.7 Install glazing and door silencers.

.8 Finish paint in accordance with Section 09 91 23 - Interior Painting.

3.2 ERECTION TOLERANCES

.1 Installation tolerances of installed frame for squareness, alignment, twist and plumbness are to be no more than ± 1.5mm in compliance with HMMA 841.

3.3 FIELD QUALITY CONTROL

.1 Provide qualified manufacturer's representative to instruct installers on the proper installation and adjustment of door assemblies.

.2 Provide manufacturer's representative to inspect door installation, and test minimum ten (10) cycles of operation. Correct any deficient doors.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canadian Standards Association (CSA)

.1 CSA W47.1-09, Certification of companies for fusion welding of steel.

.2 CSA W59-13, Welded Steel Construction (Metal Arc Welding).

.2 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-1.40-97, Anticorrosive Structural Steel Alkyd Primer.

1.2 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's:

.1 For glazing materials during application and curing.

.2 Shop Drawings:

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

.2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcements, and accessories.

.3 Clearly indicate each type of grille door, barrier and frame, material, reinforcements, location of anchors, exposed fastenings, finishes, and arrangement of hardware.

.4 Include schedule identifying each unit, with door marks and numbers relatint to numbering on drawings and in Door, Frame, and Hardware Schedule.

.3 Manufacturer's Instructions:

.1 Submit manufacturer's installation instructions.

.4 Closeout Submittals:

.1 Provide maintenance data including cleaning instructions for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.3 QUALITY ASSURANCE

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

.1 Provide testing and analysis of glass under provisions of Section 01 45 00 - Quality Control.

.2 Provide shop inspection and testing for glass.

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

.3 Mock-ups:

.1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.

.2 Mock-up will be used:

.1 To judge workmanship, substrate preparation, operation of equipment and material application.

.2 For testing to determine compliance with performance requirements.

.3 Locate where directed.

.4 Allow 48 hours for inspection of mock-up before proceeding with work.

.5 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work.

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Packing, shipping, handling and unloading:

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

.2 Storage and protection:

.1 Cover exposed stainless steel surfaces with pressure sensitive heavy protection paper and apply strippable plastic coating, before shipping to job site.

.2 Leave protective coating in place until final cleaning of building. Provide instruction for removal of protective covering.

.3 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.4 Divert uninstalled materials for reuse at nearest used building materials facility or similar type facility.

.5 Divert unused caulking and sealant materials from landfill through disposal at special wastes depot.

.6 Unused or damaged glazing materials are not recyclable and must not be diverted to municipal recycling programs.

.7 Remove form site and dispose of packaging materials at appropriate recycling facilities.

.8 Dispose of corrugated cardboard, polystyrene, plastic, and packaging material in appropriate on-site bin for recycling in accordance with site waste management program.

Part 2 Products

2.1 MATERIALS

.1 Provide security screws, security nuts, rivets, or other equally secure approved devises for affixing various components.

.2 Use only rivets, security screws, or security nuts at locations where maximum security against removal is required.

.3 Security screws and nuts to have an extra dead which twists off when screw or nut is fully secured, leaving main head without holes or slots for insertion of tool for removal.

.4 Round head screws not acceptable except at locations approved where material is not thick enough to permit counter-sinking.

.5 Standard screws are not acceptable.

2.2 DETENTION GRILLE DOORS

.1 Fabricate steel detention fixed grille doors as detailed.

.2 Construct doors with a perimeter member of 51 x 51 x 6.4mm hollow structural section (HSS); mitre all corners, fully weld in accordance with CSA W59 using welders holding current certification under CSA W47.1. Continuous deep-penetration arc weld at all joints. Grind smooth all welds. Grid type grille to be installed inside HSS perimeter using 2.4 x 10 mm rectangular bars, at 250 mm centre to centre in the vertical direction, and 2.5 mm centre to centre in the horizontal direction, fully weld all intersections and grind smooth.

.3 Ensure maximum clearance at front edge between swing door when closed, and adjacent frame, does not exceed 5 mm.

.4 Grille doors greater than 2100 mm in height toe receive an additional 51 x 51 x 6.4 mm HSS member fully welded to perimeter members at mid-height.

.5 Swing grille doors to be prepared to receive mortise hinges, door position magnet in top of grille door, recessed track for door closer and recessed lock.

.6 Sliding grille doors greater than 2100 mm in height to receive 19 diameter x 19 mm deep stud welded to front edge of grille door 150 mm above bottom of door. 22 mm receiving hole to be provided in lock column to receive this stud. This assembly is provided to ensure greater lateral stability for large grille doors in the closed position.

.7 Provide all hardware preparations necessary to suit hardware groups designated for each grille door.

2.3 FIXED GRILLE BARRIERS

.1 Fabricate steel detention fixed grille barriers as detailed.

.2 An individual section of fixed barrier must not exceed 1830 mm in width. Where grille barriers are required to be wider than this, weld two sections together. Welds to be 50 mm long, spaced 200 mm centre to centre and dressed.

.3 Where steel frames or imbeds are specified in walls, affix barriers by welding or bolting. Welding if used, to be deep-penetrating arc welding, each weld 50 mm long, spaced 2.5 mm centre to centre. Bolts, if used, to be 10 mm diameter, flat head security type, spaced 200 mm centre to centre.

.4 Where steel frames or imbeds are not specified in walls, affix barriers by bolting, with bolts 10 mm diameter, flat head security type, spaced 200 mm centre to centre. Each bolt to be engaged with expansion shield embedded in wall.

.5 Provide angle floor clip 76 x 76x 10 mm at foot of each vertical perimeter of door framing bar. Affix clip to floor with 10 mm diameter flat head security bolt engaged with lead expansion shield embedded in floor.

.6 For each sliding door, provide continuous full height vertical receiving channel for door to close against. Minimum 2.5 mm thick formed steel. Provide two adjustable rubber bumpers on each (unless bumpers are provided as part of locking device package.)

.7 For each swinging door, provide a continuous full height stop bar for door to close against, if a hollow metal door frame is not provided. Minimum material 25 x 2.5 mm.

2.4 FINISHES

.1 Shop coat primer: to CAN/CGSB-1.40.

.2 Apply one coat of paint primer to steel and ferrous metal with exception of stainless steel and those zinc-coated or galvanized.

.3 Clean, prepare surfaces and apply primer in accordance with manufacturer's instructions.

2.5 SHOP PAINTING

.1 Apply one coat of primer to metal items, with exception of galvanized or concrete encased items.

.2 Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, and grease. Do not paint when temperature is lower the 7 degrees C.

.3 Clean surfaces to be field welded; do not paint.

2.6 ISOLATION COATING

.1 Isolate aluminum from following components' by means of bituminous paint:

.1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.

.2 Concrete, mortar, and masonry.

.3 Wood.

Part 3 Execution

3.1 ERECTION

.1 Do welding work in accordance with CSA W59 unless specified otherwise.

.2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

.3 Secure anchorage and connections to adjacent construction.

.4 Brace frames rigidly in position while building-in. Install temporary horizontal and vertical wood spreaders as necessary to maintain frame alignment. Remove temporary steel and wood spreaders after frames are built-in.

.5 Exposed fastening devices to match finish and be compatible with material through which they pass.

.6 Provide components for building by other sections in accordance with shop drawings and schedule.

.7 Hand items over for casting into wall assemblies to appropriate trades together with setting templates.

.8 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.

.9 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

3.2 DOOR AND BARRIER INSTALLATION

.1 Install detention grille doors and barriers and hardware in accordance with templates and manufacturer's instructions.

.2 Adjust operable parts for correct function.

.3 Cooperate with engineering supervisor provided by Detention Hardware Supplier to ensure proper installation, adjustment, and operation of hardware.

.4 The Detention Equipment Contractor shall be responsible to hang and adjust all doors equipped with locking devices including mechanical installation of the following locking device components:

.1 Mechanism housing at each door complete.
.2 Vertical locking columns complete.
.3 Bottom door guide assemblies complete.
.4 Remote manual emergency release system cabinet.
.5 Rubber bumpers in sliding door receiving channels.

3.3 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.4 SCHEDULE

.1 Refer to drawings.

END OF SECTION

Part 1 General

1.1 SALVAGE ITEMS

.1 Work of this Section includes removal of existing hardware for salvage; items include locksets, closers, card readers, and electric strikes. Turn over to Owner for first right of refusal.

1.2 REFERENCES

.1 Canadian Steel Door and Frame Manufacturers' Association (CSDFMA).

.1 CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction): standard hardware location dimensions.

.2 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-69.18-M90/ANSI/BHMA A156.1-1981, Butts and Hinges.

.2 CAN/CGSB-69.19-93/ANSI/BHMA A156.3-1989, Exit Devices.

.3 CAN/CGSB-69.20-M90/ANSI/BHMA A156.4-1986, Door Controls (Closers).

.4 CAN/CGSB-69.21-M90/ANSI/BHMA A156.5-1984, Auxiliary Locks and Associated Products.

.5 CAN/CGSB-69.22-M90/ANSI/BHMA A156.6-1986, Architectural Door Trim.

.6 CAN/CGSB-69.24-M90/ANSI/BHMA A156.8-1982, Door Controls - Overhead Holders.

.7 CAN/CGSB-69.26-96/ANSI/BHMA A156.10-1991, Power-operated Pedestrian Doors.

.8 CAN/CGSB-69.28-M90/ANSI/BHMA A156.12-1986, Interconnected Locks and Latches.

.9 CAN/CGSB-69.29-93/ANSI/BHMA A156.13-1987, Mortise Locks and Latches.

.10 CAN/CGSB-69.32-M90/ANSI/BHMA A156.16-1981, Auxiliary Hardware.

.11 CAN/CGSB-69.35-M89/ANSI/BHMA A156.19-1984, Power Assist and Low Energy Power Operated Doors.

1.3 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Hardware List:

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

.2 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.

.3 Manufacturer's Instructions:

.1 Submit manufacturer's installation instructions.

.4 Closeout Submittals

.1 Provide operation and maintenance data for door closers, locksets, door holders electrified hardware and fire exit hardware for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

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

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

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Packing, Shipping, Handling and Unloading:

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

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

.2 Storage and Protection:

.1 Store finishing hardware in locked, clean and dry area.

1.6 WASTE DISPOSAL AND MANAGEMENT

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Dispose of corrugated cardboard, polystyrene, plastic, and packaging material in appropriate on-site bin for recycling in accordance with site waste management program.

1.7 MAINTENANCE

.1 Extra Materials:

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

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

Part 2 Products

2.1 HARDWARE ITEMS

.1 For new hardware use one manufacturer's products only for similar items.

.2 Existing locksets and specialty items as noted on demolition plans and as listed below shall be removed and salvaged by the Hardware Contractor. Salvage items noted below:

.1 Mortised locksets (Sargent.)
.2 Closers.
.3 Card readers.
.4 Electric strikes.

.3 Turn over all locksets and hardware to the Owner for first right of refusal.

2.2 DOOR HARDWARE

.1 Locks and latches:

.1 Interconnected locks and latches: to CAN/CGSB-69.28, series 5000 interconnected lock, grade 1, designed for function and keyed as stated in Hardware Schedule.
.2 Mortise locks and latches: to CAN/CGSB-69.29, series 1000 mortise lock, grade 1, designed for function as stated in Hardware Schedule.
.3 Knobs: Sargent ‘B’ design.
.4 Lever handles: Sargent ‘L’ design
.5 Roses: Sargent ‘L.’
.6 Escutcheons : Sargent ‘LE1.’
.7 Normal strikes: box type, lip projection not beyond jamb.
.8 Cylinders: Sargent 6 pin, LA keyway, 0 bitted; keying by Owner.
.9 Finish: 26D.
.10 Acceptable manufacturer: Sargent.
.11 List of locksets:
a) ANSI F01; Sargent Model 8215-LE1L-26D (Passage)
b) ANSI F05; Sargent Model 8237-LE1L-26D (Classroom)
c) ANSI F07; Sargent Model 8204-LE1L-26D (Storeroom)
d) ANSI F10; Sargent Model 8247-LE1L-26D (Office)
e) ANSI F13; Sargent Model 8225-LE1L-26D (Exit)
f) ANSI F22; Sargent Model 8265-LE1L-26D (Privacy)
g) Sargent Model 8251-LE1L-26D (Storeroom Deadbolt)

.2 Butts and hinges:

.1 Butts and hinges: to CAN/CGSB-69.18, listed in Hardware Schedule.
.2 List of hinges:
a) FBB 168 114 x 114.
b) FBB 168 114 x 144 NRP.
.3 Acceptable manufacturers: Stanley, Hager, Monthard, McKimmey or approved alternate.

.3 Exit devices: to CAN/CGSB-69.19, type and function as noted, grade 1, finished to 630.

.1 Exit devices in fire-rated doors shall be ULC listed.
.2 List of exit devices:

a) Rim type: ETL exterior trim, cylinder lock, non-doggable.
.1 Acceptable manufacturer: Sargent 12-8888-ETL.
b) Deadbolt-style latch, with positive deadlocking by auxiliary bolt, exterior cylinder lock, FLL exterior trim.
.1 Acceptable manufacturer: Corbin Russwin ED5200S.

.4 Door Closers and Accessories:

.1 Door controls (closers): to CAN/CGSB-69.20, size in accordance with CAN/CGSB-69.20, table A1, finished to 630.
.1 Grade 1, heavy duty, adjustable hyudraulic back check, separate regulation of closing speed and latching speed, rack and pinion action.
.2 List of closers:
.1 LCN 4040 with delayed action function.
.3 Acceptable manufacturers: LCN, Sargent, Norton, Rixson or approved alternate.

.2 Door controls (overhead hold open/door stop): to ANSI A156.8, as listed in Hardware Schedule, finished to 652.
.1 Heavy duty hold open-stop, grade 1, heavy duty shock spring, surface mounted, 110° opening, arm, shoe and slider cam assembly.
.2 Acceptable manufacturers: Rixson 9-336 or approved alternate.

.5 Door Operators:

.1 Power-operated pedestrian doors: to CAN/CGSB-69.26.
.2 Power assist and low energy power operated doors: to CAN/CGSB-69.35.

.6 Auxiliary locks and associated products: to CAN/CGSB-69.21, as listed in Hardware Schedule, finished to 26D.

.1 Grade 1, heavy duty, dead bolt type. Keyed exterior and turn lever interior. Keying by Owner.
.2 Acceptable manufacturer: Sargent 480 Series
.3 List of deadbolt:
.1 ANSI E0161; Sargent Model 487 (classroom)
.4 Power transfer lead cover:
.1 Acceptable manufacturer: Abloy EA281.

.7 Architectural door trim: to CAN/CGSB-69.22, as listed in Hardware Schedule, finish as noted

.1 Door protection plates: kick plate type, 1.27 mm thick stainless steel, bevelled edges, 300 mm high by 25 mm less than door width, 32D finish.
.2 Push plates: 1.27 mm thick stainless steel, bevelled edges, 125 mm wide by 400 mm high, finished to 32D.
.3 Pulls: 19 mm diameter “D” style, projecting 35 mm from door, height 300 mm, without rose.

.8 Auxiliary hardware: to CAN/CGSB-69.32, as listed in Hardware Schedule and as listed below.

.1 Door check chain: heavy duty compression springs, heavy duty welded steel chain, vinyl cover. 650 mm long, 26D finish.

.2 Wall stop: concave wall stop with concealed mounting, 62 mm diameter, 30 mm projection, cast brass with rubber bumper, 26D finish.

.1 Acceptable products: Hager 234 or Richelieu 2205.

.3 Floor stop: to ANSI A156.16, low dome stop, 45 mm diameter, 3.2 mm thick base, cast brass, 26D finish.

.1 Acceptable products: Hager 241, or Richelieu 218.

.9 Thresholds:

a) 127 mm wide x full width of door opening, 12.7mm height, 3.8 mm wall. stainless steel mill finish, plain surface.

b) 127 mm wide x full width of door opening, extruded aluminum mill finish, serrated surface, with lip and vinyl door seal insert. Pemko 2005_T or approved alternate.

c) 127 mm wide x full width of door opening, 12.7 mm height, extruded stainless steel, mill finish, serrated surface, with thermal break of rigid PVC.

.10 Weatherstripping:

.1 Head and jamb seal:

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

.2 Door bottom seal:

.1 Heavy duty, extruded aluminum frame and closed cell neoprene weather seal, surface mounted, closed ends, adjustable, clear anodized finish.

.11 Barrier Free Door Operator and Actuators:

.1 Operator supplier shall include transformer for power and wireless radio receiver for actuators. System shall include two push plate operators, mounted on push and pull side of doors. Tie operation of door operator to release electric strike where electric strike is provided with hardware on door. Operator shall be able to be adjusted to reduce force required to open manually from 66 N to 40 N. Operator supplier shall be responsible for wiring of all low voltage wiring for controlling door. Electrical will provide 120V.

.2 Control boxes: complete with electric strike relay.

.3 Mount operators on push and pull sides of doors as required.

.4 Actuation of operators by card readers.

.5 Electrical box and actuator: Radio controlled actuator with stainless steel 114 mm round plate, engraved with blue filled handicap symbol. Mounting box 72 mm wide x 102 mm high x 43 mm deep single gang electrical box, surface mounted on existing walls, locations indicated. Wireless radio transmitters for each actuator.

.6 Provide switched line voltage to control box. Locate switch adjacent to box.

.7 Provide low voltage wiring to each.

.8 Mount control box in location as directed by Departmental Representative.

.9 Acceptable manufacturers: Gyrotech 500, Horton, Stanley, or approved alternate.

.12 Sound Seals:

.1 Head and jamb seal:

.1 Self-adhesive silicone perimeter gasketing.

.2 Acceptable Manufacturer: Pemko S773, DraftSeal DS340CS or approved alternate.

.2 Door bottom seal:

.1 Auto door bottom: heavy duty, door seal of extruded aluminum frame and solid closed cell neoprene seal, surface mounted, closed ends, automatic retract mechanism when door is open, clear anodized finish.

.2 Acceptable manufacturer: Pemko 4131CPKL, Draft Seal DS343CR or approved alternate.

.13 Electric strike: To ANSI/BHMA A156.5, Grade 1. To accept lockset or exit device scheduled. Heavy duty, stainless steel construction, dual voltage, fail secure operation unless noted otherwise, 630 finish. ULC listed for fire rated doors.

a) Acceptable product: HES 9500-12/24-630 fail secure.

b) Acceptable product: SDC Uni-Flex 55-ABCD-630

.14 Card reader: provided by Owner.

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 Owner will provide construction cores. Contractor to install construction cores and perform operation verification for all locks.

.2 Provide 000000 bitted for keying by Owner.

.3 Provide two blank keys, in duplicate, for every lock in this Contract.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

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

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

3.2 INSTALLATION

.1 Install hardware to standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame Manufacturers' Association.

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

.3 Use only manufacturer's supplied fasteners. Failure to comply may void manufacturer's warranties and applicable licensed labels. Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.

.4 Remove construction cores and locks when directed by Departmental Representative; install permanent cores and check operation of locks.

3.3 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 provide tight fit at contact points with frames.

3.4 TESTING

.1 All locks must be tested by the Contractor with the installed permanent cores for proper installation. All doors and locks not installed and operating correctly will be rejected.

3.5 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.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 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.6 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.

3.7 SCHEDULE

Group 1	NOT USED	**Group 2**	1 lockset c) 1 closer 1 card reader by Owner 1 electric strike b) Existing hardware to remain
Group 3	1 automatic door operator c/w associated activating devices (tie into existing card access sytem) Existing hardware to remain	**Group 4**	1 exit device b) 1½ pair hinges 1 wall stop
Group 5	1½ pair hinges 1 closer 1 wall stop 1 exit device a) 1 card reader by Owner 1 electric strike a)	**Group 6**	1½ pair hinges 1 closer 1 wall stop 1 push plate 1 pull
Group 7	1 lockset c)	**Group 8**	1 lockset a) 1½ pair hinges 1 closer 1 check chain

Group 9

1 lockset a)
1½ pair hinges
1 wall stop

Group 10

1 lockset a)
1 deadbolt (keyed corridor side)
1½ pair hinges NRP
1 floor stop
1 set sound seals c/w auto door bottom

Group 11

1 lockset c)
1½ pair hinges
1 closer
1 overhead stop
1 card reader by Owner
1 electric strike b)

Group 12

1 lockset a)
1½ pair hinges
1 closer
1 wall stop

Group 13

2 lockset b)
3 pair hinges
2 walls tops
2 sets sound seals c/w auto door bottom
2 thresholds b)
2 door protection plates (interior side)

Group 14

1 lockset b)
1½ pair hinges
1 wall stop

Group 15

1 lockset b)
1½ pair hinges
1 overhead stop

Group 16

1 lockset b)
1½ pair hinges
1 closer
1 wall stop

Group 17

1 lockset b)
1½ pair hinges
1 wall stop
1 set sound seals c/w auto door bottom
1 threshold b)

Group 18

1 lockset c)
1 ½ pair hinges
1 closer
1 overhead stop
1 card reader by Owner
1 electric strike b)

Group 19

1 lockset c)
1½ pair hinges
1 closer
1 wall stop
1 card reader by Owner
1 electric strike b)

Group 20

1 lockset c)
1 pair hinges
1 closer
1 check chain

Group 21

1 lockset c)
1½ pair hinges
1 closer
1 overhead stop

Group 22

1 lockset c)
1 ½ pair hinges
1 closer
1 wall stop

Group 23

1 lockset c)
1½ pair hinges
1 wall stop

Group 24

1 lockset c)
1½ pair hinges
1 overhead stop

Group 25

1 lockset c)
1½ pair hinges
1 closer
1 overhead stop
1 card reader by Owner
1 electric strike b)

Group 26

1 lockset c)
1½ pair hinges
1 overhead stop
1 card reader

Group 27

1 lockset d)
1½ pair hinges
1 wall stop
1 set sound seals c/w auto door bottom
1 threshold b)

Group 28

1 lockset d)
1½ pair hinges
1 overhead stop

Group 29

1 lockset g)
1½ pair hinges NRP
1 closer
1 overhead stop
1 set weatherstripping
1 sweep
1 threshold c)
1 card reader by Owner
1 electric strike b)

Group 30

1 lockset f)
1 ½ pair hinges
1 overhead stop

Group 31

1 lockset g)
1½ pair hinges
1 closer
1 overhead stop

Group 32

1 lockset c)
1 ½ pair hinges
1 closer
1 wall stop
1 set sound seals c/w auto door bottom

Group 33

1 lockset a)
1½ pair hinges
1 closer
1 overhead stop

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 American National Standards Institute (ANSI)

.1 ANSI/BHMA A156.26-2012, Continuous Hinges.

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

.1 ASTM F1577-05(2012), Standard Test Methods for Detention Locks for Swinging Doors.

.2 ASTM F1643-05(2012), Standard Test Methods for Detention Sliding Door Locking Device Assembly

.3 Canadian Steel Door and Frame Manufacturers' Association (CSDFMA).

.1 CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction): standard hardware location dimensions.

.4 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-69.18-M90/ANSI/BHMA A156.1-1981, Butts and Hinges.

.2 CAN/CGSB-69.20-M90/ANSI/BHMA A156.4-1986, Door Controls (Closers).

.3 CAN/CGSB-69.21-M90/ANSI/BHMA A156.5-1984, Auxiliary Locks and Associated Products.

.4 CAN/CGSB-69.22-M90/ANSI/BHMA A156.6-1986, Architectural Door Trim.

1.2 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Samples:

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

.2 Identify each sample by label indicating applicable specification paragraph number, brand name and number, finish and hardware package number.

.3 After approval samples will be returned for incorporation in the Work.

.3 Hardware List:

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

.2 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.

.4 Manufacturer's Instructions:

.1 Submit manufacturer's installation instructions.

.5 Closeout Submittals

.1 Provide operation and maintenance data for door closers, locksets, door holders electrified hardware and fire exit hardware for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

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

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

.4 Pre-installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Packing, Shipping, Handling and Unloading:

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

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

.2 Storage and Protection:

.1 Store finishing hardware in locked, clean and dry area.

1.5 WASTE DISPOSAL AND MANAGEMENT

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Dispose of corrugated cardboard, polystyrene, and plastic packaging material in appropriate on-site bin for recycling in accordance with site waste management program.

1.6 MAINTENANCE

.1 Extra Materials:

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

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

Part 2 Products

2.1 HARDWARE ITEMS

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

2.2 DOOR HARDWARE

.1 Mechanical Detention Locks:

.1 Paracentric Mechanical Deadbolt, keyed one side (PMD1):

.1 Heavy duty, maximum security, paracentric keyed, lever tumbler deadlock, locks and unlocks by key only. Supply with manufacturer's appropriate mounting plate to suit door.

.2 Acceptable products:

.1 Airteq 5080-HM;

.2 Southern Steel 1080A-1; and

.3 RR Brink 7080.

.2 Electro-Mechanical Locks:

.1 Motor operated locks with 24 volt DC, continuous duty.

.2 Factory wired to a plug connector. Furnish with 16 AWG wire leads for field connections.

.3 Single pole double throw type status switch, 5 amp rated ULC listed. Use of mathetic reed switches are not acceptable. Provide switch for interlocking capabilities with indications listed as follows:

.1 Locked/Deadlocked

.2 Unsecure

.4 Full cycle operation, locks and unlocks when the motor is energized by a momentary-contact switch. Once unlocked, the latchbolt is held mechanically retracted until the door is opened.

.5 Case of minimum 4.7 mm thickness steel plate construction with cover of same material and gauge,

.6 Latchbolt: case hardened, plated high strength alloy steel or stainless steel.

.7 Deadlock actuator: stainless steel, mechanical roller type.

.8 Key cylinder: provide as specified for each type lock, complete with appropriate collars.

.9 Strike/keeper: manufacturer's mortise type case, hardened cold-rolled steel or investment cast stainless steel. Provide with dust box and four flathead Torx-Plus "Registered" tamper-resistant security screws. Furnish templates for door and frame hardware preparation.

.10 Remotely controlled, motor operated, wide profile, swinging door lock, keyed one side (RCSD1):

.1 Heavy duty, maximum security, Paracentric Keyway, deadlatch.

.2 Provide cylinder extensions to suit frame jamb depth when lock is keyed on stop side of frame.

.3 Acceptable products:

.1 Airteq 9724xK1SxGR1;

.2 Folger Adams 122M-1-01;

.3 Southern Steel 10120AM-1; and

.4 RR Brink 5021M.

.11 Remotely controlled, motor operated, narrow stile, swinging door lock, keyed both sides (RCSD2):

.1 Heavy duty, maximum security Paracentric Keyway, deadlatch.

.2 Provide cylinder extensions to suit frame jamb depth when lock is keyed on stop side of frame.

.3 Acceptable products:

.1 Airteq 9424xK2SxGR1;

.2 Folger Adams NS406E;

.3 Southern Steel 10300M-2; and

.4 RR Brink 3520-600.

.12 Remotely controlled, motor operated, door mounted, swinging institutional mortise door lock, keyed one side (RCSD3)

.1 Heavy duty, maximum security Paracentric Keyway, deadlatch.

.2 Provide strike switch, bolt strikes, and all accessories for complete installation in grille door.

.3 Acceptable products:

.1 Folger Adams D9343E;

.2 Southern Steel 10603;

.3 Airteq approved alternate; and

.4 RR Brink approved alternate.

.3 Sliding Electric Locking System:

.1 Remotely controlled, two point rear locking device for sliding doors (RCSL1):

.1 To ASTM F1643, Security Grade 1.

.2 When the door is locked closed, activation of the “open” switch shall cause the lock mechanism to release and the door to move to the fully open position and automatically deadlock.

.3 When the door is locked open, activation of the “closed” switch shall cause the lock mechanism to release and the door to move to the fully closed position and automatically deadlock.

.4 Locking devices shall be capable of being controlled individually and in groups.

.5 Door speed shall be 300mm per second and independently adjustable at each door.

.6 Door shall decelerate as it reaches the dull open or full closed position and not “bang” or bounce when reaching the full open or full close position.

.7 Operating force shall be set at 18kg (40 lbs.) However this shall be adjustable from 9kg t0 18kg (20 lbs to 40 lbs.) The operating force shall be set independently adjustable at each door.

.8 Devise shall provide for sufficient resistance to prevent freewheeling of the door in the event of total loss or electric power.

.9 If an obstruction is placed in the path of the door, the door shall resume movement in the selected direction. The operator must be capable of being stalled indefinitely without harming the devise.

.10 Operator shall be capable or "instantly" stopping the door or reversing the direction of the door travel at any point an immediately resuming the pre-set travel speed of the door.

.11 Whenever a door is stopped in any intermediate position, it shall be possible to manually move the door to the full open or full closed position and the door will automatically deadlock.

.12 In the event of a total loss of electric power, individual doors may be released manually at the door with a key inserted through a security access in the housing cover. With the lock mechanism released, moving the door manually to the full open or full closed position shall cause the door to be automatically locked. Manual operation of all doors shall not interfere with the normal operation of the doors.

.13 Doors shall be equipped with Delrin POM concave arcuate rollers and shall run on 25 mm diameter alloy steel track; engaging surface to provide smooth quiet operation. Door rollers shall be self-lubricating, incorporating sealed lifetime lubricated bearings.

.14 Roller axels shall be constructed of 8620 alloy drawn steel with a hardness of 58-62 Rockwell C. Roller. Roller and axel assembly shall provide for up and down and in and out adjustment of the door.

.15 Roller track shall be constructed of a single solid piece of 25mm diameter 1018 cold drawn steel.

.16 Door shall lock at the top and bottom in both the open and closed positions.

.17 The vertical lock bar shall be mechanically connected to the lock mechanism at all times.

.18 The locking mechanism shall include an automatic mechanical deadlock feature.

.19 Vertical locking column to be formed out of 10 gauge steel or equivalent tubing.

.20 Top and bottom door guides must be designed to limit side motion of door to 76 mm ± to significantly reduce rattle induces noises.

.21 Bottom door guide shall have replaceable wear pads to provide for smooth silent operation.

.22 All devices shall be factory wired to a multi pin connector located within the housing above the door.

.23 All switches necessary for the function of the devise and for door status indication shall be ULC recognised.

.24 All limit switches shall be rated 5 amps.

.25 All solenoid valves shall be rated by the manufacturer for continuous operation.

.26 Control of the door shall require no more than three wires from the controls.

.27 Position indicator of the lock and door shall require no more than three wires from the controls.

.28 Devise shall be supplied with status switches to provide indication and interlocking capabilities. Status switches shall provide the following indications:

.1 Deadlocked, closed

.2 Deadlocked, open.

.29 Housing covers to be constructed of 3.5 mm steel plate and shall be secured with Torx-Plus "Registered" security screws. Housing cover to be of one piece construction, securely enclosing the top, front, and bottom of the door operator.

.30 The rear of the housing shall be constructed of 4.8 mm steel plate.

.31 The door hanger slot shall be securely baffled in both the door open and door closed positions.

.32 There shall be no exposed flat surfaces on the housing or in the door hanger slot.

.33 The housing shall protrude from the wall surface a maximum or 150 mm. The housing shall extend a maximum or 300 mm above the door opening.

.34 In cases where devise housings are not continuous, ends shall be neatly closed and welded with 3.5 mm steel plates.

.35 Hinged housing cover feature provides for hinged covers on all individual devices, secured in place the Torx-Plus "Registered" security fasteners.

.36 Cell door skirt feature toe be constructed with 6 mm perorated steel plate with 6 mm diameter offset holes. Door skirt feature decreases standard 75 mm undercut to 9 mm.

.37 Acceptable products:

.1 Airteq Motorglide 7320:

.2 Folger Adam 3B.2;

.3 Southern Steel 3150LX.b; and

.4 RR Brink 57700.

.2 Remotely controlled, two point rear locking device for sliding grilles (RCSL2):

.1 To ASTM F1643, Security Grade 1.

.2 Function, features, and components to be the same as RCSL1.

.3 Provide lock column with hip-high key release feature with a high security mogul key cylinder, provides for local manual activate all sliding grill barrier doors. This operation shall duplicate the open and close functions of the security control panel. Key release shall be located approximately 1020 mm above finished floor. Keyed two sides.

.4 Acceptable products:

.1 Airteq Motorglide 7350;

.2 Folger Adam D3B.2;

.3 Southern Steel 3165LX.b; and

.4 RR Brink 57700.

.4 Food Pass Locks:

.1 Paracentric Mechanical Deadbolt, keyed one side (MMD1):

.1 Heavy duty, maximum security, paracentric keyed, lever tumbler deadlock, locks and unlocks by key only. Supply with manufacturer's appropriate mounting plate to suit door.

.2 Acceptable products:

.1 Airteq;

.2 Southern Steel; and

.3 RR Brink.

.2

.5 Butts and hinges:

.1 Butts and hinges: to CAN/CGSB-69.18, Grade 1, and ASTM F1577, listed in Hardware Schedule.

.2 Detention hinges: full mortise hinges, detention strength, investment cast stainless steel, three knuckle anti-friction bearing hinges with integral cast security studs for security hollow metal doors and frames.

.1 Hospital style sloping barrel tips with concealed non-removable hinge pins. Hinge tips shall be either continuous solid cast construction enclosing spring loaded hinge pin, or welded tips with hinge pin secured in place with permanent concealed hardened cross pins. Set screws shall not be permitted for security hinge pins.

.2 Size: 114mm x 114mm.

.3 Provide minimum three hinges per door leaf up to 915mm wide or 2100mm high. Add one additional hinge for each door leaf greater than 915mm wide and one additional hinge for each 610mm, or fraction thereof, exceeding 2100mm high in height.

.4 Acceptable manufacturers:

.1 Airteq Industries, 604FMCS-US32D;

.2 Gallery Hardware, GSH918-C32D;

.3 Hager Companies, IHTHB953xRSSxUS32D;

.4 Southern Steel, 204FMSS; and

.5 RR Brink, #4-1/2 Institutional Hinge x US32D.

.3 Electric Detention Hinge: full mortise hinges, detention strength, investment cast stainless steel, three knuckle anti-friction bearing hinges with integral cast security studs for security hollow metal doors and frames complete with six concealed tamperproof wires contained within hinge, ULC listed. Security screws not required for electric hinges.

.1 Hospital style sloping barrel tips with concealed non-removable hinge pins. Hinge tips shall be either continuous solid cast construction enclosing spring loaded hinge pin, or welded tips with hinge pin secured in place with permanent concealed hardened cross pins. Set screws shall not be permitted for security hinge pins.

.2 Size: 114mm x 114mm.

.3 Provide minimum three hinges per door leaf up to 915mm wide or 2100mm high. Add one additional hinge for each door leaf greater than 915mm wide and one additional hinge for each 610mm, or fraction thereof, exceeding 2100mm high in height.

.4 Acceptable manufacturers:

.1 Airteq Industries, 604FMCS-CE-US32D;
.2 Gallery Hardware, GSH918-CCU-C32D;
.3 Hager Companies, IHTHB953xETWxUS32D;
.4 Southern Steel, 204E; and
.5 RR Brink, #4-1/2 Institutional Hinge x US32D.

.4 Continuous Hinge: to ANSI A156.26.
.1 Type 304 stainless steel.
.2 Full mortise edge mount, barrel type, full height of door.

.6 Door Closers and Accessories:

.1 Door controls (closers): to CAN/CGSB-69.20, as listed below and as listed in Hardware Schedule.
.2 Concealed door closer:
.1 Heavy duty, high security track closer, concealed in head of frame, adjustable hydraulic back check, security track, metal cover plates, Torx-Plus “Registered” security screws with centre pin, and door position switch.
.2 Size in accordance with CAN/CGSB-69.20, Table A1, finished to 626.
.3 Acceptable products:
.1 LCN 2011;
.2 Sargent 269; and
.3 Norton 7970.
.3 Surface mounted door closer:
.1 Heavy duty, high security track closer, surface mounted, adjustable hydraulic back check, security track, heavy gauge metal cover plate, and Torx-Plus “Registered” security screws with centre pin.
.2 Size in accordance with CAN/CGSB-69.20, Table A1, finished to 626.
.3 Acceptable products:
.1 LCN 4213T; and
.2 Norton PR7570ST.

.7 Door Position Indicator Switches:

.1 Surface door position switch:
.1 Surface mounted, tamperproof magnetic contact switch with triple biased reeds, ULC listed.
.2 Switch: single pole, double throw type.
.3 Wiring: factory wired with minimum 915mm length stainless steel armoured cable leads.
.4 Mounting brackets: aluminum brackets as per manufacturer.
.5 Acceptable products:
.1 Sentrol 2505AH c/w 1904A brackets; and
.2 Securitron MSS-1G c/w required mounting brackets.
.2 Concealed door position switch:

.1 Full mortise ANSI size stainless steel plate mounted, concealed magnetic contact switch with triple biased reeds, ULC listed.

.2 Switch: single pol, double throw type, rated maximum 1 amp at 24 volts AC/DC.

.3 Wiring: factory concealed colour coded wires with minimum 305mm leads.

.4 Acceptable products:

.1 Airteq DPS6200;

.2 Sentrol 2757;

.3 Securitron MSS-1C;

.4 Southern Steel 240CPS; and

.5 RR Brink 201023.

.8 Auxiliary locks and associated products: to CAN/CGSB-69.21, as listed below and as listed in Hardware Schedule.

.1 Paracentric Cylinders:

.1 Security hardware manufacturer's standard as specified with locks and locking devices. Furnish with investments cast silicone bronze alloy keys of design to fit paracentric cylinders in quantities as specified with restricted keying.

.2 Key into keying system as directed.

.3 Acceptable manufacturers:

.1 Airteq;

.2 Southern Steel;

.3 RR Brink.

.2 Mogul cylinders:

.1 51 mm barrel diameter containing six stainless steel bails engaging tumblers and key.

.2 Key into keying system as directed.

.3 Acceptable products:

.1 Airteq six-pin tumbler;

.2 ASSA 8551-V10; and

.3 Southern Steel high security six-pin tumbler.

.4 RR Brink RRBLS.

.9 Door trim: to CAN/CGSB-69.22, as listed below and listed in Hardware Schedule, finished to 626.

.1 Escutcheon:

.1 3mm thick stainless steel, 32D finish,

.2 Single wing.

.3 Partial cover for paracentric lock cylinder with one wing opening to control key removal only in locked position.

.4 Acceptable products:

.1 Airteq 601; and

.2 Southern Steel 218.1.

.2 Pull:

.1 Surface mounted, raised hand grasp design with drilled, countersunk holes in flanges for fasteners.

.2 Cast bronze, satin chrom finish or stain stainless steel.

.3 220mm overall length x 45m m width x 55mm projection.

.4 Provide each pull with minimum two 3/8-16 x 16mm tamper-resistant Torx-Plus “Registered” security screws.

.5 Acceptable products:

.1 Airteq 612;

.2 Gallery GSH 920;

.3 Southern Steel 212C; and

.4 RR Brink 300021.

2.3 MISCELLANEOUS HARDWARE

.1 Indexed key control cabinet: supplied by Owner, wall mounted system, enamel paint finish, colour as selected by Departmental Representative.

2.4 FASTENINGS

.1 Provide tamper-resistant security screws with heads having a deep hex 6-lobe recess with a solid post formed in the centre, requiring a special mated driver to install or remove a screw. Acceptable manufacture: Torx-Plus “Registered” Drive System.

.2 Provide flathead undercut Torx-Plus “Registered” machine screws where countersinking is required. Size screw to match countersunk holes to provide a proper fitted installation with heads seated flush and aligned with adjacent surfaces.

.3 Provide button-head Torx-Plus “Registered” machine screws where no countersinking is required. Permission to use button-head Torx-Plus screws where material is not thick enough to permit countersinking at the discretion of the Departmental Representative.

.4 Base metal for screws shall be steel or stainless steel as required for hardware finishes specified. Stainless steel screws to be used for all exterior and wet locations. Finishes for screws shall match finish of hardware to which screws are applied. Where finishes cannot be matched, provide specified screws with satin stainless steel finish C32D.

.5 Provide two complete sets for drivers for use with specified screws. Drivers shall be of design allowing substantial insertion into recesses of screwheads to eliminate drive tool slippage.

.6 Provide regular Torx hex 6-lobe fasteners only when Torx-Plus fasteners are not available due to product size requirements.

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

.8 Exposed fastening devices to match finish of hardware.

2.5 KEYING

.1 All key-codes shall be factory registered with supplier to correspond with the Facility Name and Location. All re-ordering of keys to reference key-code.

.2 Provide keys in triplicate for every key-code.

.3 Master keying and construction keying are not allowed.

.4 Stamp keying code numbers on keys, detention lock cases, and detention lock cylinders. Key-code numbers which directly relate to the actual physical cuts of the keys are not allowed.

.5 Provide one key systems for this project; paracentric cylinders. Key system shall be keyed in sets as directed by Departmental Representative.

.6 Provide and establish key control system. The sale of cut keys and blanks shall be factory regulated to control usage and reproduction.

.7 Level of key combination shall be established exclusive within the Province of Saskatchewan. No other facilities within the region shall have the same combination of keyway and bitting.

.8 Provide keyway and bitting which can only be duplicated by cylinder manufacture with established release procedure. All keys shall be accounted for at all times and surrendered to the Departmental Representative upon completion of the project. Receipt for all keys received to be provided.

.9 If a key cannot be accounted for, the lock cylinder shall be re-keyed, or the entire lock replaced if re-keying is not possible, at no additional cost to the Departmental Representative.

2.6 WIRING AND CABLING

.1 Cabling shall be supplied, installed and terminated from door devises. All wiring for systems to be PVC insulated, multi-conductor as required. All wiring for systems shall be installed in conduit or wire trays. Conduit from lock box to junction box and door position indicator switch box within the frame shall be supplied and installed by Electrical Contractor. Contractor to terminate all field side wiring to field side of lock with pigtails supplied by lock manufacturer, allowing field side leads to extend 450 mm beyond termination of lock boxes.

.2 Wiring for lock power circuits shall be #14 AWG. Wiring for door position indicates and locked status indicators shall be #18 AWG.

.3 Selection of type of cable shall be at discretion of system installed but the system, when complete, must perform to the complete satisfaction of the Departmental Representative and must be free from all interference from cross-talk, hum, switch and relay noise.

.4 All serviceable devices such as locks and door position indicators shall have connection terminated with AMP or Molex type connectors provided by the hardware suppler. All connections on the controls side of the lock pigtail shall be secure and shall be terminated by Electrical Contractor.

.5 The detention hardware contractor shall terminate cabling, within swing door frames, from field wiring to all Molex pigtail connectors provided by the detention hardware manufacturer. The detention hardware contractor shall terminate all field wiring, within the sliding door housing, to terminal strips provided by detention hardware manufacturer. The detention hardware contractor shall terminate controls end of all cabling for lock control output and monitoring status inputs.

Part 3 Execution

3.1 EXAMINATION

.1 Examine in place construction and verify that conditions are acceptable to receive security hardware installation.

.2 The electrical circuits for each locking system shall be tested by the representative of the security hardware manufacturer or supplier and shall be certified in writing as having compatible voltage, protection against overload, and duty cycle capability consistent with the operation and installation of hardware

.3 Review detention hollow metal doors and frames to verify acceptable tolerances are met for proper hardware operation. Beginning of hardware installation to any door and frame implies acceptance to security hardware supplier of the door and frame condition to accommodate installation.

.4 Inspect and verify that installed work of other trades is complete to the point where security hardware installation can commence. Verify that specified items can be installed in accordance with reviewed and accepted design.

.5 Examine functions of security hardware against job site conditions and interference. Report discrepancies and deficiencies to the Departmental Representative at once and retain subject hardware in its original packaging. In the event discrepancies, do not proceed in those areas until discrepancies have been fully resolved by General Contractor, and it is acceptable to the Departmental Representative.

3.2 MANUFACTURER'S INSTRUCTIONS

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

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

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

.4 Coordinate all trades for installation and execution of a complete operating system. System application and field device connection shall be commissioned and signed off by the Departmental Representative.

3.3 INSTALLATION

.1 Install hardware, both mechanical and electrical, to standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame Manufacturers' Association.

.2 Install hardware in accordance with approved shop drawings and manufacturers installation instructions.

.3 Set units level, plumb, true to line and location. Adjust and reinforce the attachment substrate as necessary for secure and proper installation and operation.

.4 Drill and countersink units which are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards except where more stringent requirements are specified.

.5 Use only manufacturer's security supplied fasteners. Failure to comply may void manufacturer's warranties and applicable licensed labels. Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.

.6 Electrical Contractor will be responsible for installation of all control cabling, low voltage wires in conduit and wire trays. Coordinate control cabling and low voltage wires in conduit, raceways and cable trays.

.7 All electrical at each door assembly shall be installed by the detention hardware supplier or installer and terminated to the junction boxes, where door controls systems will be tied in by Electrical Contractor. Door position indicators and lock status indicators shall be terminated at the junction box.

.8 All wiring for system from the junction boxes to the door devices shall be supplied, installed and terminated by this Section. All wiring shall be installed in conduit.

.9 All wiring shall be terminated with Molex ends and neatly installed, laces tagged where required. Supply opposite Molex ends to Electrical Contractor.

.10 All systems related equipment shall be installed by factory authorized and trained personnel.

.11 Template and install overhead stops and holders to the required degree of opening to protect exposed trim from contacting other surfaces.

.12 If shimming is necessary, use only approved corrosive resistant metal shims. Organic materials are not acceptable.

.13 Install hardware to the following heights unless noted otherwise on approved shop drawings:

.1 Door pull – 1070 mm from bottom of frame to cente line of door pull.

.2 Door knob or lever – 1020 mm from bottom of frame to centre line of knob.

.3 Deadlock – 1220 mm from bottom of frame to centre line of strike plate.

.4 Electro-mechanical locks – 1040 mm from bottom of frame to centre line of key cylinder.

3.4 TESTING AND VERIFICATION

.1 Provide lock testing unit to installers fore field testing of locks. Prior to final inspection, verify that all hardware has been installed according to the approved hardware schedule and manufacturer's instructions. Ensure proper operation.

.2 Test all electrical hardware and monitoring devices to ensure correct operation and outputs. Provide a list to the Departmental Representative that all devices have been tested and are operational.

3.5 ADJUSTING

.1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, and safety. Make final adjustment to door closers after HVAC system has been balanced.

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

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

3.6 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.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 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.7 DEMONSTRATION

.1 Keying System Setup and Cabinet:

.1 Set up key control system with file key tags, duplicate key tags, numerical index, alphabetical index and key change index, label shields, control book and key receipt cards.

.2 Turn over keys to Departmental Representative.

.2 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 and locksets.

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

3.8 HARDWARE SCHEDULE

.1 Detention Group 1 (D1): (sliding cell)

.1 1 sliding electric locking system (RCSL1).
.2 1 jamb mounted paracentric cylinder, keyed one side.
.3 1 pushbutton (interior side).
.4 1 food pass (MMD1)

.2 Detention Group 2 (D2): (sliding grille)

.1 1 sliding electric locking system (RCSL2).
.2 1 overhead mounted paracentric (mogul) cylinder, keyed one side.

.3 Detention Group 3 (D3): (swinging cell)

.1 1 1/2 pair detention hinges.
.2 1 remote operated swing door lock (RCSD1).
.3 1 jamb mounted Paracentric cylinder, keyed one side.
.4 1 pull (exterior side)
.5 1 concealed magnetic position switch.
.6 1 pushbutton (interior side).

.4 Detention Group 4 (D4): (swinging cell grille)

.1 1 1/2 pair detention hinges.
.2 1 remote operated swing door lock (RCSD1).
.3 1 jamb mounted Paracentric cylinder, keyed one side.
.4 1 pull (exterior side)
.5 1 concealed magnetic position switch.
.6 1 pushbutton (interior side).

.5 Detention Group 5 (D5): (swinging door)

.1 1 1/2 pair detention hinges.
.2 1 remote operated swing door lock (RCSD2).
.3 1 Paracentric cylinder, keyed both sides.
.4 2 knobs.
.5 1 concealed magnetic position switch.
.6 1 door closer.

.6 Detention Group 6 (D6): (swinging grille)

.1 1 1/2 pair detention hinges.
.2 1 remote operated swing door lock (RCSD1).
.3 1 Paracentric cylinder, keyed both sides.
.4 2 knobs.
.5 1 concealed magnetic position switch.
.6 1 door closer.

.7 Detention Group 7 (D7): (manual swinging grille)

.1 1 ½ detention hinges.
.2 1 swing door lock (PMD1)
.3 1 Paracentric cylinder, keyed one side.
.4 2 knobs.

.8 Detention Group 8 (D8): (swinging grille door)

.1 1 1/2 pair detention hinges.
.2 1 remote operated swing door lock (RCSD3).
.3 1 Paracentric cylinder, keyed one side.
.4 2 knobs.
.5 1 concealed magnetic position switch.
.6 1 door closer.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 American National Standards Institute (ANSI).

.1 ANSI/ASTM E330-02(2010), Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

.2 American Society for Testing and Materials International, (ASTM).

.1 ASTM C542-05(2011), Standard Specification for Lock-Strip Gaskets.

.2 ASTM D790-10, Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

.3 ASTM D1003-13, Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics.

.4 ASTM D1929-13a, Standard Test Method for Determining Ignition Temperature of Plastics.

.5 ASTM D2240-05(2010), Standard Test Method for Rubber Property - Durometer Hardness.

.6 ASTM E84-13a, Standard Test Method for Surface Burning Characteristics of Building Materials.

.7 ASTM F1233-08(2013), Standard Test Method for Security Glazing Materials and Systems.

.3 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-12.1-M90, Tempered or Laminated Safety Glass.

.2 CAN/CGSB-12.3-M91, Flat, Clear Float Glass.

.3 CAN/CGSB-12.5-M86, Mirrors, Silvered.

.4 CAN/CGSB-12.11-M90, Wired Safety Glass.

.4 Flat Glass Manufacturers Association (FGMA).

.1 FGMA Glazing Manual.

.5 Laminators Safety Glass Association (LSGA).

.1 LSGA Laminated Glass Design Guide.

1.2 SYSTEM DESCRIPTION

.1 Performance Requirements:

.1 Polycarbonate glazing to HP White TP-0500 - level II.

.2 Abrasion resistant polycarbonate – clear.

1.3 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's:

.1 For glazing materials during application and curing.

.2 Shop Drawings:

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

.3 Samples:

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

.4 Manufacturer's Instructions:

.1 Submit manufacturer's installation instructions.

.5 Closeout Submittals:

.1 Provide maintenance data including cleaning instructions for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 QUALITY ASSURANCE

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

.1 Provide testing and analysis of glass under provisions of Section 01 45 00 - Quality Control.

.2 Provide shop inspection and testing for glass.

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

.3 Mock-ups:

.1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.

.2 Construct mock-up to including glass glazing.

.3 Mock-up will be used:

.1 To judge workmanship, substrate preparation, operation of equipment and material application.

.2 For testing to determine compliance with performance requirements.

.4 Locate where directed.

.5 Allow 48 hours for inspection of mock-up before proceeding with work.

.6 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work.

1.5 SITE CONDITIONS

.1 Environmental 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.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.2 Divert uninstalled materials for reuse at nearest used building materials facility or similar type facility.

.3 Divert unused caulking and sealant materials from landfill through disposal at special wastes depot.

.4 Unused or damaged glazing materials are not recyclable and must not be diverted to municipal recycling programs.

.5 Remove form site and dispose of packaging materials at appropriate recycling facilities.

.6 Dispose of corrugated cardboard, polystyrene, plastic, and packaging material in appropriate on-site bin for recycling in accordance with site waste management program.

Part 2 Products

2.1 MATERIALS: FLAT GLASS

.1 Float glass: to CAN/CGSB-12.3.

.2 Safety glass: to CAN/CGSB-12.1, transparent, 6 mm (typical) and 9 mm thick as indicated on schedules or drawings.

.1 Type 2-tempered.
.2 Class B-float.
.3 Category 1.

.3 Silvered mirror glass: to CAN/CGSB-12.5, 6 mm thick.

.1 Type 1A-Float glass for normal use, polished smooth edges on all sides.
.2 Film reinforcing on back side of mirror.

.4 Silvered dome mirrored glass: 3 mm polycarbonate.

.5 Wired glass: to CAN/CGSB-12.11, 6 mm thick.

.1 Type 1-Polished both sides (transparent).
.2 Wire mesh styles 3-Square.

.6 Polycarbonate security glazing:

.1 13mm total thickness, 3-ply laminated abrasion resistant polycarbonate sheet, 3mm/6mm/3mm with urethane interlayer, clear. Typical where polycarbonate glazing is scheduled.
.2 Forced entry: to ASTM F1233. Class III; ASTM 1915. Grade 2; HP White Level II TP-0500.02.

.3 Flexural strength: to ASTM D790.

.4 Light transmittance: to ASTM D1003.

.5 Surface burning characteristics for flame and smoke spread: to ASTM E84.

.6 Self-ignition characteristics: to ASTM D1929.

2.2 MATERIALS

.1 Plastic Film: in accordance with Section 08 87 33 - Decorative Films and Section 08 87 53 - Security Films.

.2 Sealant: as recommended by manufacturer.

2.3 ACCESSORIES

.1 Setting blocks: Neoprene, 80-90 Shore A durometer hardness to ASTM D2240, 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.

.4 Glazing splines: resilient polyvinyl chloride, 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 Mirror attachment accessories:

.1 Vandal-resistant stainless steel clips.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 EXAMINATION

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

.2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

3.3 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.

3.4 INSTALLATION: INTERIOR - DRY METHOD (TAPE AND TAPE)

.1 Perform work in accordance with FGMA Glazing Manual, IGMAC, and Laminators Safety Glass Association - Standards Manual for glazing installation methods.

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

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

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

.5 Place glazing tape on free perimeter of glazing in same manner described.

.6 Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.

.7 Knife trim protruding tape.

3.5 INSTALLATION: MIRRORS

.1 Set mirrors with clips. Anchor rigidly to wall construction.

.2 Place plumb and level.

3.6 INSTALLATION: PLASTIC FILM

.1 Install plastic film in accordance with Section 08 87 33 – Decorative Films and Section 08 87 53 – Security Films.

.2 Install decorative and security films prior to installation in frame.

3.7 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Remove traces of primer, caulking.

.3 Remove glazing materials from finish surfaces.

.4 Remove labels after work is complete.

.5 Clean glass and mirrors using approved non-abrasive cleaner in accordance with manufacturer's instructions.

.6 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.8 PROTECTION OF FINISHED WORK

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

3.9 SCHEDULE

.1 Refer to drawings.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 American National Standards Institute (ANSI)

.1 ANSI Z97.1-2009, Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test.

.2 International Window Film Association (IWFA)

.1 IWFA Visual Quality Standard for Applied Window Film 1999.

.3 Government of Canada

.1 Canada Labour Code, WHMIS datasheets.

1.2 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Product Data: submit WHMIS MSDS - Material Data Sheets.

.3 Submit shop drawings and product data in accordance with Section 01 33 00 – Submittal Procedures.

.4 Submit samples in accordance with Section 01 33 00 – Submittal Procedures.

.1 Submit one 500 x 500mm sample of film installed on 7mm thick clear plate glass.

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

.1 Provide operation and maintenance data for window film for incorporation into manual.

.2 Follow manufacturers written instructions for care and maintenance of security and safety film.

.3 Use only cleaning solution recommended by manufacturer for regularly scheduled cleaning of security film.

1.3 QUALITY ASSURANCE

.1 Health and Safety:

.1 Comply with requirements of WHMIS regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets acceptable to Canada Labour Code.

1.4 DELIVERY, STORAGE AND HANDLING

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

.2 Remove from storage, in quantities required for same day use.

.3 Store materials in accordance with manufacturers written instructions.

.4 Waste Management and Disposal:

.1 Separate and recycle waste materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal

1.5 WARRANTY

.1 Contractor hereby warrants that Security and Safety Film will stay in place without delaminating, peeling or blistering for 10 years.

.2 Ensure warranty includes items as follows:

.1 Maintaining adhesion properties without blistering, bubbling or delaminating from glass surface.

.2 Maintaining appearance without discolouration.

.3 Removing, replace and reapply defective materials.

.4 In event of product failure under warranty terms, remove and re-apply film without glass replacement at no cost to Owner.

Part 2 Products

2.1 MATERIALS

.1 Vinyl.

.2 Abrasion resistant coating.

.3 Release liner.

.4 Film thickness: 2.0 mil

.5 Film: pattern - to be selected.

.2 Acceptable manufacturers:

.1 Avery UC 900 Ultimate Cast Series

.2 3M – Fansara Series

.3 Approved alternate

Part 3 Execution

3.1 PREPARATION

.1 See drawings and specifications for locations of privacy film.

.2 Clean glass before beginning installation using neutral cleaning solution. Ensure no deleterious material adheres to glass by scraping surface of glass using industrial razors.

.3 Ensure dust, grease, and chemical residue are removed from surface of glass before installation of film. Examine glass under natural daylight and identify cracks, blisters, bubbles, discolouration, edge defects or other anomalies that may cause film to delaminate or cause vision transparency or distortion problems. Report findings to Departmental Representative.

.4 Before beginning Work, place absorbent material on windowsill or at sash frame to absorb moisture accumulation generated by film application.

3.2 INSTALLATION

.1 Field Installation of Film to Glass Windows:

.1 Install film in the same manner as tested.

.2 Remove window stops prior to installation of film.

.3 Install film to glass windows ensuring no blisters, bubbles, scratches or distortions.

.2 Cut film edges straight and square within 3mm of edge of glass.

.3 Ensure film is installed behind window stops.

.4 Cut edges in accordance with manufacturer’s written instructions.

.5 Apply and attach film to glass in accordance with manufacturer's written instructions.

.6 Use only water and film slip solution on glass to facilitate positioning of film.

.7 Ensure removal of excess water from between film and glass.

.8 Remove left over material form work area and return work area to original condition.

3.3 INSTALLER'S INSPECTION

.1 Visual Inspection: in accordance with IWFA - Visual Quality Standard for Applied Window Film.

.2 Remove and replace without glass replacement, film that continues to show blisters, bubbles, tears, scratches, edge defects or vision distortion in film when viewed under natural daylight from 1.0 m minimum after 30 day period.

3.4 FINAL CLEANING

.1 Wash interior and exterior of each glass panel and film using cleaning solution recommended by film manufacturer.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 American National Standards Institute (ANSI)

.1 ANSI Z97.1-1984(R1994), Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test.

.2 International Window Film Association (IWFA)

.1 IWFA Visual Quality Standard for Applied Window Film 1999.

.3 Consumer Product Safety Commission Publications (CPSC)/Code of Federal Regulations (CFR)

.1 CPSC, 16 CFR 1201 CAT I.

.2 CPSC, 16 CFR 1201 CAT II.

.4 General Services Administration (GSA)

.1 GSA-TS01-2003, Test Method for Glazing and Window Systems Subject to Dynamic Overpressure Loadings.

.5 Government of Canada

.1 Canada Labour Code, WHMIS datasheets.

.6 Underwriters laboratories of Canada (ULC)

.1 ULC-S332-93, Standard for Burglary Resisting Material.

.2 UL-972-02, Burglary resisting Glazing Material.

1.2 DEFINITIONS

.1 Safety: reduction of risk of injury, loss or death of persons due to accidental, natural or unintentional causes.

.2 Security: reduction of risk of injury, loss or death of persons due to intentional actions of others.

.3 Security and Safety Film Types:

.1 Type 1 Safety: areas of concern related to common residential or light commercial accidents.

.2 Type 2 Safety / Security / Seismic: areas of concern related to seismographic upgrade, low end smash and grab break and entry and over pressure due to violent weather.

.3 Type 3 Security / Blast: areas of concern related to bomb blasts.

1.3 SUBMITTALS

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

.2 Product Data: submit WHMIS MSDS - Material Data Sheets in accordance with Section 02 81 01 - Hazardous Materials.

.3 Submit shop drawings and product data in accordance with Section 01 33 00 - Submittal Procedures.

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

.1 Submit one 600 x 600 mm sample of film installed on 6 mm thick clear plate glass.

.5 Submit test reports in accordance with Section 01 33 00 - Submittal Procedures.

.1 Submit test reports from approved independent testing laboratory, certifying film's compliance with specified requirements.

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

.1 Provide operation and maintenance data for window film for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

.2 Follow manufacturers written instructions for care and maintenance of security and safety film.

.3 Use only cleaning solution recommended by manufacturer for regularly scheduled cleaning of security film.

1.4 QUALITY ASSURANCE

.1 Health and Safety:

.1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

.2 Comply with requirements of WHMIS regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets acceptable to Canada Labour Code.

1.5 DELIVERY, STORAGE AND HANDLING

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

.2 Provide and maintain dry, off-ground weatherproof storage.

.3 Store rolls of film flat on cross supports. Do not stand rolls of film on end.

.4 Remove from storage, in quantities required for same day use.

.5 Store materials in accordance with manufacturers written instructions.

.6 Waste Management and Disposal:

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal, and with Waste Reduction Workplan.

.2 Place materials defined as hazardous or toxic waste in designated containers.

.3 Ensure emptied containers are sealed and stored safely.

1.6 WARRANTY

.1 Work of this Section 08 87 53 - Security Films 12 months warranty period is extended to 10 years.

.2 Ensure warranty includes items as follows:

.1 Maintaining adhesion properties without blistering, bubbling or delaminating from glass surface.

.2 Maintaining appearance without discolouration.

.3 Removing, replace and reapply defective materials.

.4 In event of product failure under warranty terms, remove and re-apply film without glass replacement at no cost to Departmental Representative.

1.7 MAINTENANCE DATA

.1 Provide operation and maintenance data for window film for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

Part 2 Products

2.1 MATERIALS

.1 Security Film - General: optically clear polyester film, abrasion resistant coating and release liner.

.1 Type 2 Safety / Security / Seismic Film (including sun control):

.1 Testing in accordance with ANSI Z97.1, CPSC 16 CFR 1201 CAT II , and ULC - S332.

.2 Thickness: 5mil.

.3 Trouser tear: 7.8 lbs

.4 Tensile strength: 30,000 PSI.

.5 Visible light transmittance: 19%

.6 Shading coefficient: 0.26.

.7 U-factor: 0.95

.2 Acceptable manufacturers:

.1 3M S25NVAR400 Superior Strength Night Vision.

.2 Approved alternate.

2.2 FABRICATION

.1 Shop installation of security film to glass panels:

.1 Ensure dust, grease, and chemical residue are removed from surface of glass before installation of film.

.2 Examine glass under natural daylight and identify cracks, blisters, bubbles, discolouration, edge defects or other anomalies that may cause film to delaminate, or cause vision transparency or distortion problems.

.1 Install security film to glass panels ensuring no blisters, bubbles, scratches, edge defects or distortions.

.2 Cut film edges straight and square to within 3 mm of edge of panel.

.3 Deliver glass panels complete with security film installed and labels intact and legible to site in accordance with section 01 61 00 - Common Product Requirements.

Part 3 Execution

3.1 INSTALLATION

.1 Ensure film is installed behind window stops.

3.2 INSTALLER'S INSPECTION

.1 Visual Inspection: in accordance with IWFA - Visual Quality Standard for Applied Window Film.

.2 Remove and replace glass panel that continues to show blisters, bubbles, tears, scratches, edge defects or vision distortion in film when viewed under natural daylight from 2.0 m minimum after 30 day period.

3.3 FINAL CLEANING

.1 Wash interior and exterior of each window, glass panel and film using cleaning solution recommended by film manufacturer.

END OF SECTION

General notes:
.1 This schedule is to be read in conjunction with the Drawings and applicable Specification Sections.
.2 Refer to Section 08 71 10, Door Hardware for hardware groups.
.3 Refer to Drawings for door and frame types
.4 Refer to Electrical for Card reader rough-ins, door contacts, power operators and associated power. Hardware manufacturer/installer shall be responsible for making all low voltage connections.
.5 Verify all door and frame sizes prior to ordering.

Door No.	Room Name	Door				Frame			Rating (Min.)	Glass	H'ware Group	Comments
		Size	Type	Mat'l	Fin.	Type	Mat'l	Fin.				
Exterior												
E101		900 x 2135	A	HM	P	1	PS	P			8	
Sub-Basement												
001		Existing							45		2	
002		600 x 600 ±	A	HM	P	1	PS	P	45		8	
003		1000 x 1000 ±	A	HM	P	1	PS	P	45		8	
First Floor												
102		914 x 1219 ±	A	HM	P	1	PS	P	45		20	
111		914 x 2135 ±	A	HM	P	1	PS	P	45		31	
115A		914 x 1219 ±	A	HM	P	1	PS	P	45		20	
115B		Existing							45		7	Remove existing latch, hasp and padlock
117		813 x 2135 ±	A	HM	P	1	PS	P	45		21	
123		1100 x 2135	B	HM	P	1	PS	P	45	WG	5	
125		813 x 2135 ±	A	HM	P	1	PS	P	45		21	
126		813 x 2135 ±	A	HM	P	1	PS	P	45		21	
131		Existing									3	
135		900 x 2135	A	HM	P	1	PS	P	45		32	
142		1100 x 2135	B	HM	P	1	PS	P	45	WG	5	
144		813 x 2135 ±	A	HM	P	1	PS	P	45		21	
145		813 x 2135 ±	A	HM	P	1	PS	P	45		21	
Second Floor												
202		508 x 1219 ±	A	HM	P	9	PS	P	45		20	
208		813 x 2135 ±	A	HM	P	1	PS	P	45		21	
209		813 x 2135 ±	A	HM	P	1	PS	P	45		21	

Door No.	Room Name	Door				Frame			Rating (Min.)	Glass	H'ware Group	Comments
		Size	Type	Mat'l	Fin.	Type	Mat'l	Fin.				
229		1100 x 2135	B	HM	P	1	PS	P	45	WG	5	
231		813 x 2135 ±	A	HM	P	1	PS	P	45		21	
232		813 x 2135 ±	A	HM	P	1	PS	P	45		21	
246		1100 x 2135	B	HM	P	1	PS	P	45	WG	5	
248		813 x 2135 ±	A	HM	P	1	PS	P	45		21	
249		813 x 2135 ±	A	HM	P	1	PS	P	45		21	
Third Floor												
301		1100 x 2135	B	HM	P	1	PS	P	45		5	
302		508 x 1219 ±	A	HM	P	9	PS	P	45		20	
303		900 x 2135	A	HM	P	1	PS	P			6	
304		900 x 2135	A	HM	P	1	PS	P			6	
305		900 x 2135	A	HM	P	1	PS	P			23	
307A		2 – 900 x 2135	B	HM	P	2	PS	P		TG	13	
307B		900 x 2135	C	STL	P	5	PS	P		TG	D6	Control from Room 309
308		900 x 2135	C	HM	P	5	PS	P		TG	D5	Free egress from room Control from Room 309
309		900 x 2135	B	HM	P	1	PS	P		TG	14	
310		900 x 2135	B	SCW	S/V	1	PS	P		TG	10	
311		900 x 2135	B	SCW	S/V	1	PS	P		TG	10	
312		900 x 2135	A	SCW	S/V	1	PS	P			30	
313		900 x 2135	B	SCW	S/V	1	PS	P		TG	14	
314		900 x 2135	B	HM	P	1	PS	P		TG	15	
317		900 x 2135	B	HM	P	1	PS	P		TG	14	
319		900 x 2135	B	HM	P	1	PS	P		TG	14	
320		900 x 2135	A	SCW	S/V	6	PS	P			9	
321		900 x 2135	A	SCW	S/V	6	PS	P			9	
322		900 x 2135	B	HM	P	1	PS	P		TG	14	
323		900 x 2135	B	HM	P	1	PS	P		TG	14	
324		900 x 2135	B	HM	P	1	PS	P	45	WG	22	
325A		900 x 2135	B	HM	P	1	PS	P	45	WG	22	
325B		900 x 2135	B	HM	P	1	PS	P	45	WG	16	

Door No.	Room Name	Door				Frame			Rating (Min.)	Glass	H'ware Group	Comments
		Size	Type	Mat'l	Fin.	Type	Mat'l	Fin.				
326		Existing							45		5	Existing door & frame to remain
327		Existing										
329		Existing							45			
330		1100 x 2135	B	HM	P	1	PS	P	45	WG	16	
331		900 x 2135	B	HM	P	1	PS	P		TG	15	
332A		900 x 2135	B	HM	P	1	PS	P		TG	9	
332B		900 x 2135	B	HM	P	1	PS	P		TG	9	
333A		800 x 2135	B	HM	P	1	PS	P		TG	14	9mm glazing
333B		900 x 2135	B	HM	P	1	PS	P		TG	4	9mm glazing
334A		1100 x 2135	B	HM	P	1	PS	P		TG	9	
334B		1200 x 2135	C	STL	P	3	STL	P			D2	Control from Room 331 and Room 333
335A		900 x 2135	B	HM	P	1	PS	P		TG	14	
335B		1200 x 2135	C	STL	P	3	STL	P			D2	Control from Room 333
335C		1200 x 2135	C	STL	P	3	STL	P			D2	Control from Room 333
337		900 x 2135	B	HM	P	1	PS	P		TG	14	9mm glazing
338		1025 x 2135	F	STL	P	5	PS	P			D7	
339		1025 x 2135	F	STL	P	5	PS	P			D7	
340A		900 x 2135	B	HM	P	1	PS	P		TG	15	9mm glazing
340B		900 x 2135	B	HM	P	1	PS	P		TG	15	9mm glazing
340C		2975 x 2700 +/-	G	-	-	-	-	-				Overhead coiling door
341		875 x 2150	E	HM	P	4	STL	P		PG	D1	13mm polycarbonate glazing
342		875 x 2150	D	HM	P	4	STL	P		TG	D1	9mm glazing
343		875 x 2150	D	HM	P	4	STL	P		TG	D1	9mm glazing
344		875 x 2150	D	HM	P	4	STL	P		TG	D1	9mm glazing
345		875 x 2150	D	HM	P	4	STL	P		TG	D1	9mm glazing
346		875 x 2150	D	HM	P	4	STL	P		TG	D1	9mm glazing
347		875 x 2150	D	HM	P	4	STL	P		TG	D1	9mm glazing
348		900 x 2135	B	HM	P	1	PS	P		TG	14	
349		1100 x 2135	A	HM	P	1	PS	P			25	
350		1100 x 2135	B	HM	P	1	PS	P	45	WG	5	

Door No.	Room Name	Door				Frame			Rating (Min.)	Glass	H'ware Group	Comments
		Size	Type	Mat'l	Fin.	Type	Mat'l	Fin.				
351		1100 x 2135	B	HM	P	1	PS	P	45	WG	12	
352		813 x 2135±	A	HM	P	1	PS	P	45		21	
353		813 x 2135±	B	HM	P	1	PS	P	45		21	
354A		Existing										
354B		Existing										
354C		Existing										
354D		900 x 2135	A	HM	P	1	PS	P			23	
354E		900 x 2135	A	HM	P	1	PS	P			24	
355		Existing										
356A		Existing										
356B		900 x 2135	A	HM	P	1	PS	P			22	
357		Existing										
358		Existing							45			
359		Existing										
360		1100 x 2135	H	HM	P	1	PS	P			19	
360.1		1100 x 2135	B	HM	P	1	PS	P	45	WG	19	
362		1100 x 2135	B	HM	P	1	PS	P	45	WG	19	
363		900 x 2135	B	HM	P	5	PS	P		TG	D5	Control from Room 362
364		900 x 2135	B	HM	P	1	PS	P		TG	14	
365A		900 x 2135	B	HM	P	1	PS	P		TG	14	
365B		900 x 2135	B	HM	P	1	PS	P		TG	15	
366		875 x 2150	E	HM	P	5	PS	P		PG	D3	Add food pass (MMD1) 13mm polycarbonate glazing
367		875 x 2150	D1	HM	P	5	PS	P		TG	D3	
368		875 x 2150	F	STL	P	5	PS	P			D4	
369		875 x 2150	D	HM	P	5	PS	P		TG	D3	Add food pass (MMD1)
370		875 x 2150	D1	HM	P	5	PS	P		TG	D3	
371		875 x 2150	D1	HM	P	5	PS	P		TG	D3	
372		900 x 2135	B	HM	P	1	PS	P		TG	17	
373		1100 x 2135	A	HM	P	1	PS	P			24	
374		1100 x 2135	B	HM	P	1	PS	P	45	WG	5	

Door No.	Room Name	Door				Frame			Rating (Min.)	Glass	H'ware Group	Comments
		Size	Type	Mat'l	Fin.	Type	Mat'l	Fin.				
375		1100 x 2135	B	HM	P	1	PS	P	45	TG	33	
376		813 x 2135±	A	HM	P	1	PS	P	45		21	
377		813 x 2135±	A	HM	P	1	PS	P	45		21	
378A		Existing										
378B		Existing										
378C		Existing										
378D		900 x 2135	A	HM	P	1	PS	P			23	
379		Existing										
380		900 x 2135	B	HMI	P	1	PS	P		TG	29	
Fourth Floor												
401		1100 x 2135	B	HM	P	1	PS	P	45		5	
402		508 x 1219 ±	A	HM	P	9	S	P	45		20	
403		Existing									7	
407		900 x 2135	B	HM	P	1	PS	P		TG	17	
408		900 x 2135	B	HM	P	1	PS	P		TG	17	
409		900 x 2135	B	HM	P	1	PS	P		TG	17	
411		900 x 2135	B	HM	P	1	PS	P		TG	17	
412		900 x 2135	A	HM	P	7	PS	P			27	
413		900 x 2135	A	HM	P	1	PS	P			28	
414		900 x 2135	A	HM	P	1	PS	P			22	
415		Existing							45		5	Existing door & frame to remain
416		Existing										
417		Existing										
419		Existing										
420		900 x 2135	A	HM	P	7	PS	P			27	
421		1100 x 2135	B	HM	P	1	PS	P			18	
422		900 x 2135	B	HM	P	1	PS	P	45		11	
425A		Existing										
425B		Existing										
426		1100 x 2135	B	HM	P	1	PS	P	45	WG	5	

Door No.	Room Name	Door				Frame			Rating (Min.)	Glass	H'ware Group	Comments
		Size	Type	Mat'l	Fin.	Type	Mat'l	Fin.				
427		1100 x 2135	B	HM	P	1	PS	P			19	
428		813 x 2134±	A	HM	P	1	PS	P	45		21	
429		813 x 2134±	A	HM	P	1	PS	P	45		21	
430A		Existing										
430B		Existing										
430C		Existing										
430D		900 x 2135	A	HM	P	1	PS	P			23	
431		Existing										
432		900 x 2135	A	HM	P	1	PS	P			22	
433		Existing									2	
434		Existing							45			
435		Existing										
436		1100 x 2135	H	HM	P	1	PS	P			19	
437		900 x 2135	B	HM	P	1	PS	P		TG	17	
438		900 x 2135	B	HM	P	1	PS	P		TG	17	
440		900 x 2135	B	HM	P	1	PS	P		TG	17	
441A		Existing										
441B		Existing										
442		1100 x 2135	B	HM	P	1	PS	P	45	WG	5	
443		1100 x 2135	B	HM	P	1	PS	P			16	
444		813 x 2134±	A	HM	P	1	PS	P	45		21	
445		813 x 2134±	A	HM	P	1	PS	P	45		21	
446A		Existing										
446B		Existing										
446C		Existing										
446D		900 x 2135	A	HM	P	1	PS	P			23	
446E		900 x 2135	A	HM	P	1	PS	P			24	
447		Existing										
Penthouse												

Door No.	Room Name	Door				Frame			Rating (Min.)	Glass	H'ware Group	Comments
		Size	Type	Mat'l	Fin.	Type	Mat'l	Fin.				
501		Existing							45			
502		Existing										

Abbreviations HM – Hollow Metal Door HMI – Hollow Metal Insulated Door P – Paint PG – Polycarbonate Glass PS – Pressed Steel Frame (welded) SCW – Solid Core Wood Door	TG – Tempered Glass STL – Steel S/V – Stain and Varnish WG – Wire Glass