Part 1 General

1.1 REFERENCES

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

- .1 ASTM A653/A653M-06a, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 ASTM B29-03, Standard Specification for Refined Lead.
- .3 ASTM B749-03, Standard Specification for Lead and Lead Alloy Strip, Sheet and Plate Products.

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

.4 Canadian Steel Door Manufacturers' Association (CSDMA)

- .1 CSDMA, Recommended Specifications for Commercial Steel Doors and Frames, 2000.
- .2 CSDMA, Selection and Usage Guide for Commercial Steel Doors, 1990.

.5 National Fire Protection Association (NFPA)

- .1 NFPA 80-99, Standard for Fire Doors and Fire Windows.
- .2 NFPA 252-03, Standard Methods of Fire Tests of Door Assemblies.

.6 South Coast Air Quality Management District (SCAQMD), California State

- .1 SCAQMD Rule 1113-04, Architectural Coatings.
- .2 SCAQMD Rule 1168-05, Adhesives and Sealants Applications.

.7 Underwriters' Laboratories of Canada (ULC)

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

1.2 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 Maximum deflection for exterior steel entrance screens under wind load of 1.2 kPa not to exceed 1/175th of span.

.3 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104 NFPA 252 for ratings specified or indicated.

.4 Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with CAN4-S104 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 Manitoba, Canada.

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

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

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

.5 Submit test and engineering data, and installation instructions.

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 Stiffened: face sheets laminated, insulated core.

.1 Fibreglass: to CAN/ULC-S702, semi-rigid, density 24 kg/m^3.

.1 Expanded polystyrene: CAN/ULC-S701, density 16 to 32 kg/m^3.

.2 Polyurethane: to CAN/ULC-S704 rigid, modified poly/isocyanurate, closed cell board. Density 32 kg/m^3.

.3 Temperature rise rated (TRR): core composition to limit temperature rise on unexposed side of door to 250 degrees C at 60 minutes. Core to be tested as part of a complete door assembly, in accordance with CAN4-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 to SCAQMD Rule 1168.

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

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

2.4 PRIMER

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

.1 Maximum VOC limit 50 g/L to GC-03.

2.5 PAINT

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

.1 Maximum VOC emission level 50 g/L to GS-11 to SCAQMD Rule 1113.

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 Door bottom seal: Metal with neoprene strip.

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

.6 Fire labels: metal rivited.

.7 Sealant: Type 8.

.1 Maximum VOC limit 250 g/L to SCAQMD Rule 1168.

.8 Glazing: Tempered or wired glass.

.9 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 screws.

.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 (16 gauge) welded thermally broken type construction.

.4 Interior frames: 1.6 mm (16 gauge) 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.

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.

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

2.10 DOOR FABRICATION GENERAL

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

.2 Exterior doors: hollow steel construction with polyurethane cores. Interior doors: honeycomb construction.

.3 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.

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

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

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

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

.8 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in conformance with CAN4-S104, ASTM E152 and NFPA 252 and list by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

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

2.11 DOORS: HONEYCOMB CORE CONSTRUCTION

.1 Form face sheets for interior doors from 1.2 mm (18 gauge) sheet steel with honeycomb temperature rise rated core laminated under pressure to face sheets.

2.12 HOLLOW STEEL CONSTRUCTION

.1 Form face sheets for exterior doors from 1.2 mm (18 gauge) mm sheet steel.

.2 Reinforce doors with vertical stiffeners, securely welded or laminated to face sheets at 150 mm on centre maximum.

.3 Fill voids between stiffeners of exterior doors with polyurethane core.

2.13 THERMALLY BROKEN DOORS AND FRAMES

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

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

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

.4 Apply insulation.

2.14 SECURITY DOORS

.1 Fabricate security doors with extra duty stile and rail 45 mm thick in flush panel design.

.2 Door panels to be minimum 1.6 mm (16 gauge) sheet steel, bonded to 0.45 kg density structural foam with a thermosetting adhesive.

.3 Observation window: door mounted observation window and privacy cover (slide on outside). Glazing to be impact resistant wire glass, laminated, plastic polycarbonate glazing or ULC 972 rated laminated tempered glass.

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, noncombustible sill 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 The Aluminum Association Inc. (AA).

.1 Aluminum Association Designation System for Aluminum Finishes-DAF 45-03.

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

.1 ASTM A1008/A1008M-02e1, Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

.2 ASTM D523-99(R1999), Test Method for Specular Gloss.

.3 ASTM D822-01, Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.

.3 Canadian General Standards Board (CGSB).

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

.2 CAN/CGSB-1.213-95, Etch Primer (Pretreatment Coating) for Steel and Aluminum.

.3 CGSB 1.181-99, Coating, Zinc-Rich, Organic, Ready Mixed.

.4 Canadian Standards Association (CSA International).

.1 CSA G164-M92 (R1998), Hot Dip Galvanizing of Irregularly Shaped Articles.

1.2 SYSTEM DESCRIPTION

.1 Design Requirements.

.1 Design exterior door assembly to withstand windload of 1 kPa with a maximum horizontal deflection of 1/240 of opening width.

.2 Design door panel assemblies with thermal insulation factor 2.4 RSI.

.3 Design door assembly to withstand minimum 2000 cycles per annum, and 25 years total life cycle.

1.3 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and datasheet 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 sizes, service rating, types, materials, operating mechanisms, glazing locations and details, hardware and accessories, required clearances and electrical connections.

.3 Manufacturer's Instructions:

.1 Submit manufacturer's installation instructions.

.4 Manufacturers' Field Reports: submit copies of manufacturers field reports.

1.4 CLOSEOUT SUBMITTALS

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

1.5 QUALITY ASSURANCE

.1 Provide certified test reports showing compliance with specified performance characteristics and physical properties to Departmental Representative.

.2 Provide product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements to Departmental Representative.

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

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.

1.7 MAINTENANCE

.1 Extra Materials.

.1 Provide spare parts in accordance with Section 01 78 00 - Closeout Submittals.

Part 2 Products

2.1 MATERIALS

.1 Galvanized steel sheet: commercial quality Z275 zinc coating.

.2 Steel sheet: commercial quality to ASTM A1008/A1008M, exposed (E), with paint finish.

.3 Primer: to CAN/CGSB-1.105 for steel and CGSB1.181, for galvanized steel surfaces.

.4 Insulation: CFC free and HCFC free polyurethane, fully encapsulated. RSI 2.4.

.5 Glazing: Three (3) lites, 300 mm x 600 mm, double glazed sealed units with tempered safety glass.

.6 Cable: multi-strand galvanized steel aircraft cable.

2.2 DOORS

.1 Fabricate 50 mm thick insulated, flush panel doors of interlocking, roll formed steel sections.

.1 Exterior skin: minimum 0.95 mm (20 gauge) thick steel.

.2 Interior skin: minimum 0.43 (26 gauge) mm thick steel.

.2 Fabricate panel frames in a continuous box frame with vertical stiffeners at 600 mm centres.

.3 Install glazing for vision panels. Sizes and number of vision panels as indicated.

.4 Assemble components by means of spot or arc welding or coated rivet system or adhesive and self tapping screws to manufacturer's recommendations.

.5 Fabricate doors from prime painted steel stock in preparation for custom shop paint colour. Doors to be complete with shop applied finish paint coat.

2.3 HEAVY DUTY INDUSTRIAL HARDWARE

.1 Track: vertical lift hardware with 75 mm size 2.66 mm core thickness galvanized steel track.

.2 Track Supports: 2.3 mm core thickness continuous galvanized steel angle track supports.

.3 Spring counter balance: heavy duty oil tempered torsion spring with manufacturer's standard brackets.

.1 Drum: 200 mm diameter die cast aluminum.

.2 Shaft: 32 mm diameter galvanized steel.

.4 Top roller carrier: galvanized Steel 3.04 mm thick adjustable.

.5 Rollers: full floating grease packed hardened steel, ball bearing 75 mm diameter solid steel tire.

.6 Roller brackets: adjustable, minimum 2.5 mm galvanized steel.

.7 Hinges: heavy duty, 3.04 mm thick as recommended by manufacturer.

.8 Cable: 6 mm diameter galvanized steel aircraft cable.

2.4 ACCESSORIES

.1 Overhead horizontal track and operator supports: galvanized steel, type and size to suit installation.

.2 Track guards: 5 mm thick formed sheet 1500 mm high track guards.

.3 Pusher springs.

.4 Handles.

.1 Flat bar door latch.

.2 Handles: key operated from outside, handle operated from inside.

.3 Drop ring: outside drop ring handle for high lift doors.

.5 Weather-stripping.

.1 Sills: bulb type full width extruded neoprene or EPDM weather-strip.

.2 Jambs and head: extruded aluminum and arctic grade vinyl weather-strip to manufacturer's standard.

.6 Finish ferrous hardware items with minimum zinc coating of 300 g/m^2 to CSA G164.

2.5 PREFINISHED STEEL SHEET

.1 Prefinished steel with factory applied polyvinyl chloride.

.1 Class F1S.

.2 Colour to be custom colour selected by Departmental Representative.

.3 Specular gloss: 30 units +/-5 in accordance with ASTM D523.

.4 Coating thickness: not less than 200 micrometres.

.5 Resistance to accelerated weathering for chalk rating of 8, colour fade 5 units or less and erosion rate less than 20% to ASTM D822 as follows:

.1 Outdoor exposure period 5000 hours.

.2 Humidity resistance exposure period 5000 hours.

2.6 MOTORIZED OPERATOR

.1 Electrical jack shaft centre mounted type operator.

.2 Electrical motors, controller units, remote pushbutton stations, relays and other electrical components: to CSA approval with CSA enclosure. Motor speed to move door between 200mm to 300mm per second.

.3 Controller units with integral motor reversing starter, solenoid operated brake, heater elements for overload protection, including pushbuttons and control relays as applicable.

.4 Operation:

.1 Remote pushbutton stations: surface mounted, in one location, with "OPEN-STOP-CLOSE" designations on pushbuttons in English, key operated.

.2 CLOSE pushbutton to be manually operated with continuous pressure.

.5 Safety switch: combination roll rubber with limit switches for 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.

.6 For jack shaft operators:

.1 Provide floor level disconnect device to allow for manual operation in event of power failure.

.2 Equip Operator with:

.1 Electrical interlock switch to disconnect power to operator when in manual operation.

.2 Built-in chain hoist for manual operation in event of power failure.

.7 For trolley operators:

.1 Attach operator to door with quick release device to disconnect door from operator in event of power failure.

.8 Automatic illumination complete with time delay, self extinguishing.

.9 Door speed: 300 mm per second.

.10 Control transformer: for 24 VAC control voltage.

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

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 door and hardware in accordance with manufacturer's instructions.

.2 Rigidly support rail and operator and secure to supporting structure.

.3 Touch-up steel doors with primer where galvanized finish damaged during fabrication.

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

.5 Lubricate and adjust door operating components to ensure smooth opening and closing of doors.

.6 Adjust weather-stripping to form a weather tight seal.

.7 Adjust doors for smooth operation.

3.3 FIELD QUALITY CONTROL

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

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

.3 Schedule site visits to review Work at stages listed:

.1 After delivery and storage of products, and when preparatory Work on which Work of this Section depends is complete, but before installation begins.

.2 Twice during progress of Work at 25% and 60% complete.

.3 Upon completion of Work, after cleaning is carried out.

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

3.4 CLEANING

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

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Aluminum Association (AA), Designation System for Aluminum Finishes (2000)

.2 Canadian General Standards Board (CGSB)

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

.2 CAN/CGSB-79.1-M91, Insect Screens.

.3 Canadian Standards Association (CSA) International

.1 CSA-A440-00/A440.1-00, A440-00, Windows / Special Publication A440.1-00, User Selection Guide to CSA Standard A440-00, Windows.

.2 CAN/CSA-G164-M92(R1998), Hot Dip Galvanizing of Irregularly Shaped Articles.

.3 CAN/CSA-Z91-M90(R2000), Safety Code for Window Cleaning Operations.

1.2 SHOP DRAWINGS

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

.2 Indicate materials and details in full size scale for head, jamb and sill, profiles of components, interior and exterior trim, junction between combination units, elevations of unit, anchorage details, location of isolation coating, description of related components and exposed finishes, fasteners, and caulking. Indicate location of manufacturer's nameplates.

1.3 SAMPLES

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

.2 Submit one representative model of each type window.

.3 Include frame, sash, sill, glazing and weatherproofing method, insect screens, surface finish and hardware. Show location of manufacturer's nameplates.

.4 Include 150 mm long samples of head, jamb, sill, meeting rail, mullions to indicate profile.

1.4 TEST REPORTS

.1 Submit test reports from approved independent testing laboratories, certifying compliance with specifications, for:

.1 Windows classifications.

.2 anodized finish, weathering characteristics.

.3 Insect screens.

.4 Air tightness.

.5 Water tightness.

.6 Wind load resistance.

.7 Condensation resistance.

.8 Sash strength and stiffness - Projecting.

.9 Ease of operation - windows with operable lights.

.10 Forced entry resistance.

.11 Mullion deflection - combination and composite windows.

1.5 CLOSEOUT SUBMITTALS

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

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

.3 Collect and separate for disposal packaging material in appropriate on-site bin for recycling in accordance with Waste Management Plan.

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

.5 Divert unused or damaged wood materials from landfill to recycling, reuse or composting facility.

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

.7 Divert unused caulking material from landfill to official hazardous material collections site.

.8 Plastic caulking tubes are not recyclable and must not be diverted for recycling with other plastic materials.

Part 2 Products

2.1 MATERIALS

.1 Materials: to CSA-A440/A440.1 supplemented as follows:

.2 All windows by same manufacturer.

.3 Main frame: aluminum thermally broken. Frame members 125-155 mm depth x 51 mm width overall nominal size. Deflection head allowance to be accommodated by framing system.

.4 Acceptable products: Kawneer 1602 or 1600 Series, U.S. Aluminum 3250 Series, Columbia Aluminum Products 200 Series.

.5 Glass: See Specification 08 80 50 Glazing

.6 Exterior metal sills and aluminum facings: extruded aluminum of type and size to suit job conditions; minimum 3 mm thick, complete with joint covers, jamb drip deflectors, chairs, anchors and anchoring devices.

.7 Isolation coating: alkali resistant bituminous paint.

2.2 WINDOW TYPE AND CLASSIFICATION

.1 Type:

.1 Fixed: with double glazing insulating glass.

.2 Classification rating: to CSA-A440/A440.1.

.1 Air tightness: A3.

.2 Water tightness: B4.

.3 Wind load resistance: C3.

.4 Condensation resistance: Temperature Index, TF40

2.3 FABRICATION

.1 Fabricate in accordance with CSA-A440/A440.1 supplemented as follows:

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

.3 Face dimensions detailed are maximum permissible sizes.

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

.5 Finish steel clips and reinforcement with 380 g/m^2 zinc coating to CAN/CSA-G164.

2.4 ALUMINUM FINISHES

.1 Finish exposed surfaces of aluminum components in accordance with Aluminum Association Designation System for Aluminum Finishes.

.1 Anodized Aluminum: #29 Black, AA-M10C22A44, Architectural Class 1.

2.5 ISOLATION COATING

.1 Isolate aluminum from following components, by means of isolation coating:

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

.2 Concrete, mortar and masonry.

.3 Wood.

2.6 GLAZING

.1 Glaze windows in accordance with CSA-A440/A440.1.

2.7 AIR BARRIER AND VAPOUR RETARDER

.1 Equip window frames with factory and site installed air barrier and vapour retarder material for sealing to building air barrier and vapour retarder as follows:

.1 Material: identical to, or compatible with, building air barrier and vapour retarder materials to provide required air tightness and vapour diffusion control throughout exterior envelope assembly.

.2 Material width: adequate to provide required air tightness and vapour diffusion control to building air barrier and vapour retarder from interior.

Part 3 Execution

3.1 WINDOW INSTALLATION

.1 Install in accordance with CSA-A440/A440.1.

.2 Arrange components to prevent abrupt variation in colour.

3.2 SILL INSTALLATION

.1 Install metal sills with uniform wash to exterior, level in length, straight in alignment with plumb upstands and faces. Use one piece lengths at each location.

.2 Cut sills to fit window opening.

.3 Secure sills in place with anchoring devices located at ends joints of continuous sills and evenly spaced 600 mm on centre in between.

.4 Fasten expansion joint cover plates and drip deflectors with self tapping stainless steel screws.

.5 Maintain 6 to 9 mm space between butt ends of continuous sills. For sills over 1200 mm in length, maintain 3 to 6 mm space at each end.

3.3 CAULKING

.1 Seal joints between windows and window sills with sealant. Bed sill expansion joint cover plates and drip deflectors in bedding compound. Caulk between sill upstand and window-frame. Caulk butt joints in continuous sills.

.2 Apply sealant in accordance with Section 07 92 00 - Joint Sealing. Conceal sealant within window units except where exposed use is permitted.

END OF SECTION

Part 1 General

1.1 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-69.17, Bored and Preassembled Locks and Latches.

.3 American National Standards Institute (ANSI)/Builders Hardware Manufacturer’s Association (BHMA)

.1 ANSI/BHMA A156.1-2006, Butts and Hinges.
.2 ANSI/BHMA A156.3-2003, Exit Devices.
.3 ANSI/BHMA A156.4-2008, Door Controls (Closers).
.4 ANSI/BHMA A156.5-2001, Auxiliary Locks and Associated Products.
.5 ANSI/BHMA A156.6-2005, Architectural Door Trim.
.6 ANSI/BHMA A156.8-2010, Door Controls - Overhead Holders.
.7 ANSI/BHMA A156.12-2005, Interconnected Locks and Latches.
.8 ANSI/BHMA A156.13-2005, Mortise Locks and Latches.
.9 ANSI/BHMA A156.14-2007, Sliding and Folding Door Hardware.
.10 ANSI/BHMA A156.15-2006, Closer/Holder Release Device.
.11 ANSI/BHMA A156.16-2003, Auxiliary Hardware.
.12 ANSI/BHMA A156.17-1987, Self-Closing Hinges and Pivots.
.13 ANSI/BHMA A156.18-2006, Materials and Finishes.
.14 ANSI/BHMA A156.19-2007, Power Assist and Low Energy Power Operated Doors.
.15 ANSI/BHMA A156.26-2006, Continuous Hinges.

.4 Canadian Standards Association (CSA International).

.1 CAN/CSA-B651-10, Barrier-Free Design.

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 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 Locks and latches:

.1 Bored and preassembled locks and latches: to CAN/CGSB-69.17, series 2000 preassembled lock, grade 1, designed for function and keyed as stated in Hardware Schedule.

.2 Interconnected locks and latches: to ANSI/BHMA A156.12-2005, series 5000 interconnected lock, grade 1, designed for function and keyed as stated in Hardware Schedule.

.3 Mortise locks and latches: to ANSI/BHMA A156.13-2005, series 1000 mortise lock, grade 1, designed for function and keyed as stated in Hardware Schedule.

.4 Deadbolts: hardened with minimum projection of 25.4 mm.

.5 Lever handles: plain design, heavy duty L series.

.6 Roses: round.

.7 Escutcheons: square plain.

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

.9 Cylinders: key into keying system as noted.

.10 Finished to 626 dull chromium.

.2 Butts and hinges:

.1 Butts and hinges: to ANSI/BHMA A156.1-2006, Grade 1.

.2 Self-closing hinges and pivots: to to ANSI/BHMA A156.17-1987, Grade 1.

.3 Full mortise type bearing hinges: Five knuckle standard or heavy duty series.

.4 Exterior door hinges brass or bronze base polished and plated.

.5 Interior door hinges steel base polished and plated.

.6 Provide non-removable pins at all exterior doors with security stud to lock hinge plates together when door is in closed position.

.7 Finish: 26D, dull chromium.

.3 Hinges for Aluminum Swinging Doors:

.1 Continuous hinge, institutional to ANSI/BHMA A156.26-2006, Grade 1.

.4 Exit devices: to ANSI/BHMA A156.3-2003

.1 Aluminum doors: Concealed vertical rod with touchbar. Model 35A, Finish 628 Anodized Aluminum.

.2 Metal doors: Mortise lock type, Model 9875, Finish 626 dull chromium.

.3 Auxiliary items: door co-ordinator, type 21, for pairs of doors with overlapping astragals. Dust proof strikes for flush bolts.

.5 Door Closers and Accessories:

.1 Door controls (closers): to ANSI/BHMA A156.4-2008, Grade 1. Heavy duty parallel and double arm for high traffic application.

.2 Finish: powder coat 689 Aluminum.

.3 Door controls - overhead holders: to ANSI/BHMA A156.8-2010, Grade 1.

.4 Closer/holder release devices: to ANSI/BHMA A156.15-2006, Grade 1.

.5 Door co-ordinator: concealed for pairs of doors with overlapping astragal.

.6 Concealed spring closing device to return manual swing out in swinging doors to closed position for aluminum doors.

.6 Door Operators:

.1 Power-operated pedestrian doors: to ANSI/BHMA A156.10-2005.

.2 Power assist and low energy power operated doors: to ANSI/BHMA A156.19-2007.

.7 Auxiliary locks and associated products: to ANSI/BHMA A156.5-2001.

.1 Dead bolt: key into keying system.

.2 Cylinders: for installation in deadlocks provided with special doors as listed in Hardware Schedule. Key into keying system.

.8 Architectural door trim: to ANSI/BHMA A156.6-2005.

.1 Door protection plates: kick plate type, 1.27 mm thick stainless steel, x 450mm high x width to suit door size. Finish to brushed stainless steel or 26D, dull chromium.

.2 Door protection plates: armor plate type, 1.27 mm thick stainless steel, x 900mm high x width to suit door size. Finish to brushed stainless steel or 26D, dull chromium.

.3 Push plates: 1.27 mm thick stainless steel. Size 100 mm x 400 mm. Finish to brushed stainless steel or 26D, dull chromium.

.4 Push/Pull units: aluminum or stainless steel to suit door material, 300 mm high, finished to 26D, dull chromium.

.9 Sliding door hardware: to ANSI/BHMA A156.14-2007, 26D, dull chromium.

.1 Bi-passing sliding door hardware: double leg steel or aluminum track with fascia and hangers, as listed in above standard for door weight.

.2 Accessory item: door pulls, handles, stops, guides and latch.

.10 Auxiliary hardware: to ANSI/BHMA A156.16-2003.

.1 Wall Stop: cast brass or stainless steel, finish 26D dull chromium, GSH 250B.

.2 Floor Stop: dome type, cast brass, bronze, finish 26D dull chromium, GSH 218B.

.3 Door viewer: glass magnification, listed or labelled for fire doors, similar to Model No. CS1404.

.11 Door bottom seal: heavy duty, door seal of extruded aluminum frame and solid closed cell neoprene weather seal, surface mounted with drip cap, closed ends, clear anodized finish.

.12 Thresholds: 127 mm wide x full width of door opening, extruded aluminum, grooved surface, with thermal break of rigid PVC.

.13 Weatherstripping:

.1 Head and jamb seal:

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

.2 Adhesive backed neoprene material.

.2 Door bottom seal:

.1 Extruded aluminum frame and solid neoprene sweep, clear anodized finish.

.14 Astragal: overlapping, extruded aluminum frame with vinyl insert, finished to match doors.

.15 Power Assisted Door Operator:

.1 Electromechanical power assisted door opener and closer to meet ANSI/BHMA 156.19 for accessible doors to the disabled.

.2 Full closing force shall be provided when the power or assist cycle ends.

.3 Maximum of 6.8kg of manual opening force function.

.4 Provision for separate conduits to carry high and low voltage wiring in compliance with the National Electrical Code, Section 725-31.

.5 Arm function: Standard single and regular double type.

.6 UL listed for use on labelled doors.

.7 Standard anodized aluminum finish.

2.3 SECURE ROOM DOOR HARDWARE – LEVEL 1

.1 SR-1 requires a heavy-duty commercial grade 1 operational mortise lockset with a deadbolt and ANSI F15 (without indicator) or ANSI F13 function conforming to ULC 437, ANSI/BHMA standards A156.13 and A156.5. Use grade 1 unless the lock employs an anti-drill plate, in which case grade 2 could be considered.

.2 All locksets shall be equipped with a mechanical high security level B cylinder that conforms to ANSI/BHMA standard A156.30. Provide locksets with 19 mm deadlatching feature, 25 mm deadbolt, and outside fixed lever handle.

.3 Provide NRP (non removable pins) hinges on outswinging doors, overhead door closer and reinforce door to accept hardware.

2.4 MISCELLANEOUS HARDWARE

.1 Indexed key control system: to CAN/CGSB-69.21.

2.5 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.

2.6 KEYING

.1 Doors, padlocks and cabinet locks to be keyed alike in groups.

.2 The Main Port building, Generator building and Tertiary Garage building are to be keyed alike and similarly for doors on each building but each building is to be keyed differently. All exterior doors to be keyed alike and may be included on a master keyway system. Prepare detailed keying schedule in conjunction with Departmental Representative.

.3 Interior doors for the Main Port Building to be keyed differently and keyed to master keyway system.

.4 Provide keys in duplicate for every lock in this Contract.

.5 Provide three masterkeys for each keying system group.

.6 Stamp keying code numbers on keys and cylinders.

.7 Provide construction cores.

.8 Provide all permanent cores and keys to Departmental Representative.

.9 Doors with keypad access no keys required.

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 Install key control cabinet.

.4 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.

.5 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 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 manufacture's instructions.

.3 Remove protective material from hardware items where present.

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

3.5 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 Place file keys and duplicate keys in key cabinet on their respective hooks.

.3 Lock key cabinet and turn over key 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, locksets and fire exit hardware.

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

3.6 SCHEDULE

Set: 1.0

3	Hinge (heavy weight)	TA386 NRP SSF 4-1/2" x 4-1/2"	US26D	MK
1	Storeroom Lock	8251 LNL	US26D	SA
1	Electric Strike	310-3-1-24D-LCBMA	630	FO
1	Strike Latch Guard	150		HS
1	Concealed Overhead Stop	1-X36	630	RF
1	Door Closer	281 P10	EN	SA
1	Kick Plate	K1050 10"	US32D	RO
1	Threshold	171A		PE
1	Gasketing	2891AS		PE
2	Gasketing	290AS		PE
1	Sweep	315CN		PE
1	Digital Entry	DK-26BK		SU
1	DK Cover Plate	DK-CPSS		SU
1	Power Supply	BPS-24-2		SU

Notes: Install keypad on single gang box with DK cover plate. Digital entry is for temporary use and will be removed when permanent card readers are installed. Provide all required wiring for both keypad and future card reader. Provide 5 change keys per lock.

2891AS to be installed to head of frame. Mount closer to weatherstrip.

Set: 2.0

3	Hinge	TA714 NRP 4-1/2" x 4"	US26D	MK
1	Storeroom Lock	8204 LNL	US26D	SA
1	Strike Latch Guard	150		HS
1	Electric Strike	310-2-3/4-24D-LCBMA	630	FO
1	Door Closer	1431 P9	EN	SA
1	Kick Plate	K1050 10"	US32D	RO
1	Wall Stop	406	US32D	RO
1	Digital Entry	DK-16		SU
1	Power Supply	BPS-24-2		SU
1	Viewer	627	CRM	RO

Notes: Install keypad on single gang box. Digital entry is for temporary use and will be removed when permanent card readers are installed. Provide all required wiring for both keypad and future card reader. Provide 5 change keys per lock.

Set: 3.0

3	Hinge	TA714 NRP 4-1/2" x 4"	US26D	MK
1	Storeroom Lock	8204 LNL	US26D	SA
1	Strike Latch Guard	150		HS
1	Electric Strike	310-2-3/4-24D-LCBMA	630	FO
1	Door Closer	1431 P9	EN	SA
1	Kick Plate	K1050 10"	US32D	RO
1	Wall Stop	406	US32D	RO
1	Digital Entry	DK-16		SU
1	Power Supply	BPS-24-2		SU

Notes: Install keypad on single gang box. Digital entry is for temporary use and will be removed when permanent card readers are installed. Provide all required wiring for both keypad and future card reader. Provide 5 change keys per lock.

Set: 4.0

3	Heavyweight Hinge	TA786 NRP 4-1/2" x 4-1/2"	US26D	MK
1	Passage Set	8215 LNL	US26D	SA
1	Concealed Overhead Stop	1-X36	630	RF
1	Door Closer	1431 P9	EN	SA
1	Kick Plate	K1050 10"	US32D	RO

Set: 5.0

3	Hinge	TA714 4-1/2" x 4"	US26D	MK
1	Office Lock	8205 LNL	US26D	SA
1	Door Closer	1431 O	EN	SA
1	Kick Plate	K1050 10"	US32D	RO
1	Wall Stop	406	US32D	RO
1	Gasketing	S88BL		PE
1	Door Bottom	4131CRL		PE

Notes: Provide 5 change keys per lock.

Set: 6.0

3	Hinge	TA714 NRP 4-1/2" x 4"	US26D	MK

1	Pull Plate	107x70C	US32D	RO
1	Push Plate	70E	US32D	RO
1	Concealed Overhead Stop	1-X36	630	RF
1	Door Closer	1431 P9	EN	SA
1	Kick Plate	K1050 10"	US32D	RO

Set: 7.0

3	Heavyweight Hinge	TA786 NRP 4-1/2" x 4-1/2"	US26D	MK
1	Storeroom Lock	8251 LNL	US26D	SA
1	Electric Strike	310-3-1-24D-LCBMA	630	FO
1	Strike Latch Guard	150		HS
1	Door Closer	281 P10	EN	SA
1	Kick Plate	K1050 10"	US32D	RO
1	Wall Stop	406	US32D	RO
1	Digital Entry	DK-16		SU
1	Power Supply	BPS-24-2		SU

Notes: Install keypad on single gang box. Digital entry is for temporary use and will be removed when permanent card readers are installed. Provide all required wiring for both keypad and future card reader. Provide 5 change keys per lock.

Set: 8.0

3	Hinge	TA714 4-1/2" x 4"	US26D	MK
1	Storeroom Lock	8251 LNL	US26D	SA
1	Door Closer	1431 O	EN	SA
1	Kick Plate	K1050 10"	US32D	RO
1	Wall Stop	406	US32D	RO

Notes: Provide 5 change keys per lock.

Set: 9.0

3	Hinge	TA714 NRP 4-1/2" x 4"	US26D	MK
1	Storeroom Lock	8251 LNL	US26D	SA
1	Door Closer	1431 P9	EN	SA
1	Kick Plate	K1050 10"	US32D	RO
1	Wall Stop	406	US32D	RO

Notes: Provide 5 change keys per lock.

Set: 10.0

6	Hinge	TA714 NRP 4-1/2" x 4"	US26D	MK
2	Flush Bolt	555	US26D	RO
1	Dust Proof Strike	570	US26D	RO
1	Storeroom Lock	8251 LNL	US26D	SA
2	Concealed Overhead Stop	1-X36	630	RF
1	Door Closer	1431 P9	EN	SA
2	Kick Plate	K1050 10"	US32D	RO
1	Astragal	357SPTB		PE

Notes: Closer for use on active leaf only. Provide 5 change keys per lock.

Set: 11.0

4	Heavyweight Hinge	TA786 NRP 4-1/2" x 4-1/2"	US26D	MK
1	Storeroom Lock	8251 LNL	US26D	SA
1	Electric Strike	310-3-1-24D-LCBMA	630	FO
1	Strike Latch Guard	150		HS
1	Door Closer	281 P10	EN	SA
1	Kick Plate	K1050 10"	US32D	RO
1	Wall Stop	406	US32D	RO
1	Digital Entry	DK-16		SU
1	Power Supply	BPS-24-2		SU

Notes: Install keypad on single gang box. Digital entry is for temporary use and will be removed when permanent card readers are installed. Provide all required wiring for both keypad and future card reader. Provide 5 change keys per lock.

Set: 12.0

5	Hinge	TA714 NRP 4-1/2" x 4"	US26D	MK
1	Hinge	TA714 CC8 4-1/2" x 4"	US26D	MK
2	Flush Bolt	555	US26D	RO
1	Dust Proof Strike	570	US26D	RO
1	Storeroom Lock	8251 LNL	US26D	SA
1	Electric Strike	310-3-1-24D-LCBMA	630	FO
2	Concealed Overhead Stop	6-X36	630	RF

1	Door Closer	1431 O	EN	SA
2	Kick Plate	K1050 10"	US32D	RO
1	Astragal	357SPTB		PE
1	Digital Entry	DK-16		SU
1	Power Supply	BPS-24-2		SU

Notes: Closer for use on active leaf only.

Install keypad on single gang box. Digital entry is for temporary use and will be removed when permanent card readers are installed. Provide all required wiring for both keypad and future card reader. Provide 5 change keys per lock.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 American National Standards Institute (ANSI).

.1 ANSI/ASTM E330-02, 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 C542-94(1999), Specification for Lock-Strip Gaskets.

.2 ASTM D790-02, Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

.3 ASTM D1003-00, Test Method for Haze and Luminous Transmittance of Plastics.

.4 ASTM D1929-96(R2001)e1, Test Method for Determining Ignition Temperature of Plastics.

.5 ASTM D2240-02b, Test Method for Rubber Property - Durometer Hardness.

.6 ASTM E84-01, Test Method for Surface Burning Characteristics of Building Materials.

.7 ASTM F1233-98, 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-12.2-M91, Flat, Clear Sheet Glass.

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

.4 CAN/CGSB-12.4-M91, Heat Absorbing Glass.

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

.6 CAN/CGSB-12.6-M91, Transparent (One-Way) Mirrors.

.7 CAN/CGSB-12.8-97, Insulating Glass Units.

.8 CAN/CGSB-12.9-M91, Spandrel Glass.

.9 CAN/CGSB-12.10-M76, Glass, Light and Heat Reflecting.

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

.4 Canadian Standards Association (CSA International).

.1 CSA A440.2-98, Energy Performance Evaluation of Windows and Sliding Glass Doors.

.2 CSA Certification Program for Windows and Doors 2000.

.5 Environmental Choice Program (ECP).

.1 CCD-045-95, Sealants and Caulking.

.6 Glazing Association of North America (GANA)

.1 GANA Glazing Manual - 2004.

1.2 SYSTEM DESCRIPTION

.1 Performance Requirements:

.1 Provide continuity of building enclosure vapour and air barrier using glass and glazing materials as follow:

.1 Utilize inner light of multiple light sealed units for continuity of air and vapour seal.

.2 Size glass to withstand wind loads, dead loads and positive and negative live loads acting normal to plane of glass to a design pressure of 1.48 kPa as measured in accordance with ANSI/ASTM E330].

.3 Limit glass deflection to 1/200 with full recovery of glazing materials.

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.

.2 Submit duplicate mm size samples of and sealant material.

.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, and perimeter air barrier and vapour retarder seal.

.3 Mock-up will be used:

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

.4 Locate where directed by Departmental Representative.

.5 Allow 24 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.

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

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 metal cut-offs from landfill by disposal into on-site Metal recycling bin or at nearest metal recycling facility.

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

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

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

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

.7 Dispose of packaging material in appropriate on-site bin for recycling in accordance with site waste management program.

1.7 WARRANTY

.1 Extend 12 month General Condition Warranty to 24 months for exterior insulating sealed glass units.

Part 2 Products

2.1 MATERIALS: FLAT GLASS

.1 Float glass: to CAN/CGSB-12.3, Glazing quality, 6.4 mm thick.

.2 Sheet glass: to CAN/CGSB-12.2, AA-Special selected, 6.4 mm thick.

.3 Safety glass: to CAN/CGSB-12.1, transparent, 8.3 mm thick.

- .1 Type 2-tempered.
- .2 Class B-float.
- .3 Category 11 – 540J impact resistance.
- .4 Edge treatment: polished

.4 Heat absorbing glass: to CAN/CGSB-12.4, 6.25 mm thick.

- .1 Type 2-Insulating glass unit.
- .2 Class A-Annealed.
- .3 Style 1a-Intermediate light transmittance.
- .4 Grade B-Medium shading co-efficient.
- .5 Tint Gray + Solarban 60.

.5 Silvered mirror glass: to CAN/CGSB-12.5, 6.4 mm thick.

- .1 Type 3C- Film reinforced.

.6 Wired glass: to CAN/CGSB-12.11, 8.3 mm thick.

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

.7 Polycarbonate security glazing to ULC 972:

- .1 Laminated, each lamination 6.25 mm thick separated by plastic film, 13 mm overall thickness polycarbonate sheet, clear colour.
- .2 Ballistic performance: to ASTM F1233.
- .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.

.8 Low emissivity (LOW E) glass, 6.25 mm thick.

- .1 Metallic coating: soft, sputtered.
- .2 Light transmittance: 35%.
- .3 Shading co-efficient: 0.37.
- .4 Solar heat gain co-efficient: 0.32
- .5 U-Value: winter 1.5 maximum, summer 1.8 maximum.

2.2 MATERIALS: SEALED INSULATING GLASS

.1 Insulating glass units: to CAN/CGSB-12.8, double unit, 25 mm overall thickness.

.1 Glass thickness: 6.25 mm each light.

.2 Inter-cavity space thickness: 12.5 mm between inner and outer lights with low conductivity spacers.

.3 Glass coating: surface number 2, low "E" with grey colour.

.4 Transmittance: Ultraviolet 8%, Visible 35%, Total solar energy 17%.

.5 Exterior reflectance: Visible light 7%, Total solar energy 13%.

.6 U-Value: 0.29 Night Time, 0.27 Day Time

.7 Shading Coefficient: 0.32

.8 Solar Heat Gain Coefficient: 0.28

2.3 ACCESSORIES

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

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

.3 Glazing tape:

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

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

.4 Glazing splines: resilient polyvinyl chloride, extruded shape to suit glazing channel retaining slot.

.5 Glazing clips: manufacturer's standard type.

.6 Lock-strip gaskets: to ASTM C542.

.7 Mirror attachment accessories:

.1 Stainless steel clips.

.2 Mirror adhesive, chemically compatible with mirror coating and wall substrate.

.3 Mirror frames: stainless steel.

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: EXTERIOR GLAZING

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

3.5 INSTALLATION: MIRRORS

.1 Set mirrors with adhesive, applied in accordance with adhesive manufacturer's instructions.

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

.3 Set in frame.

.4 Place plumb and level.

3.6 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 manufacture's instructions.

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

3.7 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.

END OF SECTION