Mark	Room Name	Height	Width	DOOR INFORMATION			FRAME INFORMATION			Door & Frame Fire Rating	Comments
				Type	Material	Finish	Type	Material	Finish		
101	STORAGE	2134	914	D1	HM	PT	F1	HM	PT		
102	UNASSIGNED	2134	914	D1	HM	PT	F1	HM	PT		
103	ELECTRICAL	2134	914	D1	HM	PT	F1	HM	PT	45MIN	
104	MECHANICAL	2134	914	D1	HM	PT	F1	HM	PT		
107	UNASSIGNED	2134	914	D1	HM	PT	F1	HM	PT		
200A	STAIR	2134	914	D2	HM	PT	F1	HM	PT	20MIN	
200B	STAIR	2134	914	D2	WD	ST	F1	HM	PT	20MIN	
201A	ASSEMBLY	2440	2- 914	D3	IM	PT	F3	IM	PT		EXTERIOR DOOR
201B	ASSEMBLY	2440	914	D3	IM	PT	F4	IM	PT		EXTERIOR DOOR
203	OFFICE	2134	914	D1	WD	ST	F2	HM	PT		
204	WR	2134	914	D1	WD	ST	F1	HM	PT		
205	MEN'S WR	2134	914	D1	WD	ST	F1	HM	PT		
206	WOMEN'S WR	2134	914	D1	WD	ST	F1	HM	PT		
207	JANITOR	2134	914	D1	WD	ST	F1	HM	PT	45MIN	
208A	CORRIDOR	2134	914	D3	WD	ST	F1	HM	PT		
208B	CORRIDOR	2134	914	D3	WD	ST	F1	HM	PT		
208C	CORRIDOR	2440	914	D3	IM	PT	F5	IM	PT		EXTERIOR DOOR

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 08 71 00 - Door Hardware.

1.2 REFERENCES

.1 American Society for Testing and Materials International (ASTM)
.1 ASTM A 653/A 653M-06a, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
.2 ASTM B 29-03, Standard Specification for Refined Lead.
.3 ASTM B 749-03, 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.

.6 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.

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

1.4 ACTION AND INFORMATIONAL SUBMITTALS

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

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

.3 Provide shop drawings: in accordance with Section 01 33 00 - Submittal Procedures.
.1 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.
.2 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and reinforcing fire rating finishes.
.3 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.
.4 Submit test and engineering data, and installation instructions.

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

1.5 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 22 - Construction/Demolition Waste Management and Disposal.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Hot dipped galvanized steel sheet: To ASTM A 653, AF75, 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 A 653M, ZF75.

.3 Composites: balance of core materials used in conjunction with lead: in accordance with manufacturers' proprietary design.

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 Expanded polystyrene: CAN/ULC - S701 Type, Density 16 to 32 kg/m3 for exterior doors, as noted on door schedule.

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 99 - 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 .

2.6 ACCESSORIES

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

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

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

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

.5 Fire labels: metal rivited.

.6 Sealant: As per section 07 92 00 - Joint Sealants.
.1 Maximum VOC limit 250 g/L .

.7 Glazing: As per 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 screws dry glazing of snap-on type.
.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.

.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.

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 Exterior doors: hollow steel construction. Interior doors: honeycomb construction.

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

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

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

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

.7 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.

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

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

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

2.11 DOORS: HONEYCOMB CORE CONSTRUCTION

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

.2 Form face sheets for interior doors from 1.2 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 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 floorand 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

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 08 71 00 - Door Hardware.

.2 Section 08 80 50 - Glazing.

1.2 REFERENCES

.1 Architectural Woodwork Manufacturers Association of Canada (AWMAC).
  .1 Quality Standards for Architectural Woodwork 1998.

.2 Canadian General Standards Board (CGSB).
  .1 CAN/CGSB-71.19-M88, Adhesive, Contact, Sprayable.
  .2 CAN/CGSB-71.20-M88, Adhesive, Contact, Brushable.

.3 Canadian Standards Association (CSA International).
  .1 CSA A440.2-98, Energy Performance of Windows and Other Fenestration Systems.
  .2 CSA O115-M1982(R2001), Hardwood and Decorative Plywood.
  .3 CAN/CSA O132.2 Series-90(R1998), Wood Flush Doors.
  .4 CAN/CSA-O132.5-M1992(R1998), Stile and Rail Wood Doors.
  .5 CAN/CSA-Z808-96, A Sustainable Forest Management System: Guidance Document.
  .6 CSA Certification Program for Windows and Doors 00.

.4 Environmental Choice Program (ECP).
  .1 CCD-045-92, Sealants and Caulking Compounds.
  .2 CCD-046-92, Adhesives.

.5 National Fire Protection Association (NFPA).
  .1 NFPA 80-1999, Standard for Fire Doors and Fire Windows.

.6 Underwriters' Laboratories of Canada (ULC).
  .1 CAN-4S104M-80(R1985), Fire Tests of Door Assemblies.
  .2 CAN4-S105M-85 (R1992), Fire Door Frames Meeting the Performance Required by CAN4-S104.

1.3 ACTION AND INFORMATIONAL 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.

1.4 SAMPLES

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

.2 Submit one 300 x 300 mm corner sample of each type wood door.

.3 Show door construction, core, glazing detail and faces.

.4 Manufacturer's Instructions:
.1 Submit manufacturer's installation instructions.

1.5 QUALITY ASSURANCE

.1 Regulatory Requirements:
.1 Wood fire rated doors: labelled and listed by an 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.

1.6 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.

1.7 WASTE MANAGEMENT AND DISPOSAL

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

.2 Dispose of corrugated cardboard, polystyrene, plastic, 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: stile and rail frame bonded to particleboard core with integrated wood lock blocks. Include a 22mm piece of hardwood matched with faces for a total width of 107mm. 5-ply construction.
- .2 Face Panels:
  - .1 Hardwood; veneer grades: Grade I (Premium), white maple species. Rotary Cut. Finished with two coats of clear polyurethane on all six (6) surfaces, factory applied.
- .3 Adhesive: Type I (waterproof) for interior doors.

2.2 GLAZING

.1 Glass: Glazing as per Section 08 80 50 - Glazing.

2.3 FABRICATION

.1 Vertical edge strips to match face veneer.

.2 Prepare doors for louvres and glazing. Provide hardwood to match face veneer 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.

.4 Radius vertical edges of double acting doors to 60 mm radius.

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 labelled fire rated doors to NFPA 80.

.3 Install doors and hardware in accordance with manufacturer's printed instructions and CAN/CSA-O132.2 Series, Appendix A.

.4 Adjust hardware for correct function.

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

.6 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

PART 1 - GENERAL

1.1 REFERENCES

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

.2 American Architectural Manufacturers Association (AAMA)
.1 AAMA 609/610-09, Cleaning and Maintenance Guide for Architecturally Finished Aluminum.

.3 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-12.1-M90, Tempered or Laminated Safety Glass.
.2 CAN/CGSB-12.12-M90, Plastic Safety Glazing Sheets.

.4 Electrical Equipment Manufacturers Association of Canada (EEMAC)

.5 Environmental Choice Program (ECP)
.1 CCD-045-95, Sealants and Caulking Compounds.
.2 CCD-046-95, Adhesives.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for side coiling grilles and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:
.1 Indicate assembly and instruction details, dimensions of fabrication, required clearances materials, finishes, egress doors hardware and electrical connections.

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

.5 Manufacturers Reports:
.1 Manufacturer's Field Reports: submit manufacturer's written reports within 3 days of review, verifying compliance of Work, as described in Part 3 - FIELD QUALITY CONTROL.

1.3 CLOSEOUT SUBMITTALS

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

.2 Operation and Maintenance Data: submit operation and maintenance data for side coiling grilles and enclosures and hardware for incorporation into manual.

1.4 QUALITY ASSURANCE

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

1.5 DELIVERY, STORAGE AND HANDLING

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

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

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

.4 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials as specified in in accordance with Section 01 74 22 - Construction/Demolition Waste Management and Disposal.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Aluminum sheet metal: mill finish plain utility sheet.

.2 Anodized aluminum sheet metal: plain anodizing quality.

.3 Aluminum extrusions: Aluminum Association alloy AA 6063-T5.

.4 Ceiling track closures: size 33 mm wide, material aluminum, finish clear anodized.

.5 Plastic glazing: to CAN/CGSB-12.12, translucent acrylic sheet 4mm thick, light transmission of 80% minimum.

.6 Adhesives and Sealants: in accordance with Section 07 92 00 - Joint Sealants.

2.2 DOOR CURTAIN

.1 Fabricate door curtain:
.1 Rods: stainless steel.
.2 Sleeves: stainless steel.
.3 Horizontal links: stainless steel aluminum.
.4 Panels: alternating solid and open panels acrylic inserts.
.5 Finish: Class 1.1, Clear Anodized Finish.

2.3 HARDWARE

.1 Top track: extruded aluminum 32 x 32 mm anodized as indicated.

.2 Hangers: ball bearing.

.3 Locking: include cylinder locks operable from both sides for leading post locking:
.1 Include one cylinder lock and spring loaded dustproof drop bolt at intermediate members. Coordinate locking requirements with Departmental Representative.

2.4 ALUMINUM FINISHES

.1 Finish exposed surfaces of aluminum components in accordance with Aluminum Association Designation System for Aluminum Finishes.
.1 Clear anodic finish: designation AA-.

2.5 OPERATION

.1 Equip grille for operation by:
.1 Hand, install handles.

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 INSTALLATION

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

.2 Erect side coiling grilles and closures in accordance with manufacturers' printed instructions.

.3 Install master keyed cylinder specified in Section 08 71 00 - Door Hardware.

.4 Adjust operating components to ensure smooth opening and closing of side coiling grilles and closures.

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 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.
.2 Perform cleaning of aluminum components in accordance with: AAMA 609.

.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.

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

.4 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 22 - Construction/Demolition Waste Management and Disposal.
.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.4 PROTECTION

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

.2 Repair damage to adjacent materials caused by side coiling grille installation.

END

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Fibreglass casement and awning windows.

1.2 RELATED REQUIREMENTS

.1 Section 06 20 00 - Finish Carpentry.

.2 Section 07 92 00 - Joint Sealants.

.3 Section 09 91 99 - Paintomg for Minor Works.

1.3 REFERENCES

.1 American Architectural Manufacturers Association (AAMA).
.1 C1036: Standard Specification for Flat Glass.
.2 E90-09: Standard Test Method for Laboratory Measurement of airborne Sound Transmission Loss of Building Partitions and Elements.
.3 E 283: Standard Test Method for Rate of Air Leakage through Exterior Windows, Curtain Walls and Doors.
.4 E 330: Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Door by Uniform Static Air Pressure Difference.
.5 E 547: Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Cyclic Static Air Pressure Differential.
.6 E 2190: Standard Specification for Insulating Glass Unit Performance Evaluation.
.7 F 2090-10: Standard Specification for Window Fall Prevention Devices with Emergency Escape (Egress) Release Mechanisms.

.2 Insulating Glass Manufacturer's Alliance/Insulating Glass Certification Council (IGMA/IGCC).

.3 American Architectural Manufacturer's Association/Window and Door Manufacturer's Association/Canadian Standards Association (AAMA/WDMA/CSA): (use appropriate specifications depending on certification for each product type).
.1 AAMA/WDMA/CSA 101/I.S.2/A440-05: Standard/Specification for windows, doors, and skylights.
.2 AAMA/WDMA/CSA 101/I.S.2/A440-08: North American Fenestration Standard/Specification for windows, doors, and skylights.

.4 Window and Door Manufacturer's Association (WDMA): Hallmark Certification Program.

.5 American Architectural Manufacturer's Association (AAMA): 624-10: Voluntary Specification, Performance Requirements and Test Procedures for Organic Coatings on Fiber Reinforced Thermoset Profiles.

.6 National Fenestration Rating Council (NFRC): 101: Procedures for Determining Fenestration Product Thermal Properties.

1.4 PERFORMANCE REQUIREMENTS

.1 All windows to be tested in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-08, NAFS - North American Fenestration Standard/Specification for Windows, Doors and Skylights and to meet the listed requirements below:
- .1 Minimum performance grade: 30
- .2 Minimum positive design pressure: 1440PA
- .3 Minimum negative design pressure: 1440PA
- .4 Minimum water penetrationh test pressure: 400PA
- .5 Minimum Canadian air infiltration/exfiltration A2.

1.5 SUBMITTALS

.1 Submit in accordance with seciton 01 33 00 - Submittals Procedures.

.2 Product Data: Submit manufacturer's product data, including installation instructions.

.3 Samples:
- .1 Submit corner section under provision of section 01 33 00 - Submittals.
- .2 Specified performance and design requirements under provisions of Section 01 33 00 - Submittals.

.4 Quality Cotnrol Submittals: Certificates: Submit manufacturer's certification indicating compliance with specified performance and design requirement under provision of Seciton 01 33 00 - Submittals.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Delivery: Deliver materials to wite undamaged in manufacturer's or sales branch's original, unopened containers and packaging, with labels clearly identifying manufacturer and product name. Include installation isntructions.

.2 Storage:
.1 Store materials in accordance with manufacturer's instructions.
.2 Store materilas in accordance with manufactuer's instructions.
.3 Protect materials from weather, direct sunlight, and construction activities.

1.7 WARRANTY

.1 Clear insulating glass with stainless steel spacers is warranted against seal failure caused by manufacturing defects and resulting in visible obstruction through the glass for twenty (20) years from the original date of purchase. glass is warranted against stress cracks caused by manufacturing defects from ten (10) years from the original date of purchase.

.2 Hardware and other non-glass components are warranted to be free from manufacturing defects for ten (10) years from the original date of purchase.

PART 2 - PRODUCTS

2.1 FIBERGLASS CASEMENT AND AWNING WINDOWS

.1 Casement and Awning Windows.
.1 Factory-assembled fiberglass windows with outward-opening sash installed in frame, fixed unit.
.2 Frame and Sah Material: 5-layer, pultruded-fibreglass material, reinforced with interlocking mat.

2.2 FRAME DESCRIPTION

.1 Interior:
.1 Pultruded reinforced fiberglass 2mm thick wall.

.2 Frame depth:
.1 79mm.

.3 Jamb depth:
.1 51mm.

2.3 SASH DESCRIPTION

.1 Pultruded reinforced fiberglass 2mm thick wall.

.2 Composite sash thickness:
.1 24mm.

2.4 GLAZING

.1 Select quality complying with aSTM C1036. Insulating glass SIGMA/IGCC when tested in accordance with ASTM E 2190. STC/OITC ragings are tested tot he stated performance level in accordance with ASTM E90-09.

.2 Glazing Method: 11/16" (17mm) insulating glass.

.3 Glass Type: Low E3/ERS Argon glass.

.4 Glazing seal: Silicone bear at exterior; interior has glazing boot inserted.

.5 Glazing Options: STC/OITC upgrade.

2.5 MULLING

.1 Standard Mulling
.1 Directional mull limits: 6 wide by 1 unit high; Rough Opening not to exceed 2896mm x 1981mm.
.2 Directional mull limits: 5 units wide by 5 units high: Rough Opening not to exceed 2438mm x 2438mm.

.2 Reinforced Mulling
.1 Directional mull limits: 6 wide by 1 unit high; Rough Opening not to exceed 2896mm x 1981mm.
.2 D. Directional mull limits: 5 units wide by 5 units high: Rough Opening not to exceed 2438mm x 2438mm.

2.6 FINISH

.1 Exterior: Pultruded fiberglass
.1 Factory baked on acrylic urethane.
.2 Meets AAMA 624-10 requirements.

.2 Interior: Pultruded fiberglass.
.1 Factory baked on acrylic urethane.
.2 Meets aAMA 624-10 and 00022716 requirements.

.3 Colour: Stone White exterior with stone White interior.

2.7 HARDWARE

.1 Lock: Multipoint locking mechanism is actuated from a single point of operation. The lock mechanism is concealed with only the actuator handle and escutcheon being visible to the interior.

.2 Hinges: Concealed stainless steel track and injection molded shoe.

.3 Handle: Die cast detachable folding handle.

.4 Roto-gear Operator: E-GardT coated hinge arm and housing mechanism.

.5 Snubber: Pulls the sash tight to the frame and provides engagement to keep the sash in place under structural loads.

.6 Color: Applies to handle and locking hardware:
.1 Stone White.

2.8 WEATHER STRIP

.1 Primary is an extruded TPE foam filled bulb attached to all four sides of the frame by a kerf and provides seal between sash and frame.

.2 Secondary weather strip is an extruded TPE hollow bulb that attaches to a kerf in the sash and provides seal between sash and frame.

.3 Standard weather strip color: black.

2.9 INSECT SCREEN (REMOVE FOR FIXED WINDOWS)

.1 Factory-isntalled screen.
.1 Screen mesh, 19 by 16; charcoal fiberglass.
.2 Aluminum frame finish: Stone White.

2.10 ACCESSORIES AND TRIM

.1 Exterior Casing:
.1 Non-integral to the unit. Fastened to the exterior wall with barb and kerf.

.2 Installation Accessories:
.1 Factory-installed vinyl nailing fin/drip cap at head, sill and side jambs.
.2 Installation brackets: Brackets for 4 9/16" (116mm); 6 9/16" (167mm) jambs.
.3 Sheet rock return
.4 J-channel

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Condition: Before installation, verify openings are plumb, square and of proper dimensions as required in Section 01 71 00. Report frame defects or unsuitable conditions to the General Contractor before proceeding.

.2 Acceptance of Condition: Beginning installation confirms acceptance of existing conditions.

3.2 INSTALLATION

.1 Assemble and install window/door unit(s) according to manufacturer's instruction and reviewed shop drawing.

.2 Install sealant and related backing materials at perimeter of unit or assembly in accordance with Section 07 92 00 Joint Sealants. Do not use expansive foam sealant.

.3 Install accessory items as required.

.4 Use finish nails to apply wood trim and mouldings.

3.3 CLEANING

.1 Remove visible labels and adhesive residue according to manufacturer's instruction.

.2 Leave windows and glass in a clean condition. Final cleaning as required in Section 01 74 11 - Cleaning.

3.4 PROTECTING ISNTALLED CONSTRUCTION

.1 Protecting windows from damage by chemicals, solvents, paint or other construction operations that may cause damage.

END

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 05 50 00 - Metal Fabrications.

.2 Section 06 10 00 - Rough Carpentry.

.3 Section 07 62 00 - Sheet Metal Flashing and Trim.

.4 Section 07 92 00 - Joint Sealants.

.5 Section 07 46 13 - Preformed Metal Roofing.

1.2 SECTION INCLUDES

.1 Fixed curb mount unit skylight with formed curb counterflashing for mounting on prefabricated roof curbs, for flat, low-slope and steep-slope roofing applications.

1.3 REFERENCES

.1 General: Applicable edition of references cited in this Section is current edition published on date of issue of Project specifications, unless otherwise required by building code in force.

.2 American Architectural Manufacturers Association (www.aama.net), Window & Door Manufacturers Association (www.wdma.com), Canadian Standards Association (www.csagroup.org/us/en/services)
.1 AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/ Specification for Windows, Doors, and Skyights (NAFS)
.2 CSA A440S1-09 - Canadian Supplement to AAMA/WDMA/CSA 1.4 /I.S.2/A440
.3 AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems
.4 AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on aluminum and Panels

.3 ASTM International: www.astm.org:
.1 ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
.2 ASTM E 108 - Standard Test Methods for Fire Tests of Roof Coverings

.3 ASTM E 283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
.4 ASTM E 331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
.5 ASTM E 408 - Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques
.6 ASTM E 1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials
.7 ASTM E 1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes

.4 Code of Federal Regulations:
.1 29 CFR 1910.23 (e) (8) - Occupational Safety and Health Standards for Walking-Working Surfaces to Guard Floor and Wall Openings and Holes.

.5 Illuminating Engineering Society of North America (IESNA): www.ies.org:
.1 IESNA - The Lighting Handbook

.6 National Fenestration Rating Council: www.nfrcommunity.org:
.1 NFRC 100 - Procedure for Determining Fenestration Product U-factors.
.2 NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence.

.7 National Fire Protection Association: www.nfpa.org:
.1 NFPA 70 National Electrical Code.

1.4 COORDINATION

.1 Coordinate dimensions, locations, and details of skylight curbs with unit skylight curb flashings. Verify requirements for roofing system terminations.

.2 Coordinate unit skylight interior termination locations with structural layout, ceiling grid layouts, and other ceiling-mounted items.

1.5 5 PREINSTALLATION MEETINGS

.1 Preinstallation Conference: Conduct conference at Project site prior to delivery of unit skylight and installation of roof deck.

1.6 ACTION SUBMITTALS

.1 Product Data: for unit skylights. Include standard construciton details, product performance characteristics, and material descriptions, dimensions of individual components and profiles, and finishes.
.1 Include test reports of qualified independent testing agency or third party certificates verifying compliance with performance requirements.

1.7 CLOSEOUT SUBMITTALS

.1 Operation and Maintenance Data.

1.8 QUALITY ASSURANCE

.1 Manufacturer Qualifications: A qualified manufacturer listed in this Section with minimum 30 years' experience manufacturing similar products in successful use on similar projects and able to provide unit skylights meeting requirements.
.1 Approval of Manufacturers and Comparable Products: Submit the following in accordance with project substitution requirements, within time allowed for substitution review:
.1 Completed and signed Substitution request form.
.2 Product data, including photometric data and independent test data indicating compliance with
.3 Sample product warranty.

1.9 WARRANTY

.1 Manufacturer's Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of unit skylights that fail in materials or workmanship under normal use within specified warranty period.
.1 Failures include, but are not limited to the following:
.1 Deterioration of metals, metal finishes, dome and other materials beyond normal weathering.
.2 Breakage of glazing.
.2 Warranty Period:
.1 Unit Skylight and Flashing Product Warranty: 10 years from date of purchase.

.2 Unit skylight and Flashing Installation "No Leak" Warranty: 10 years from date of purchase.
.3 Hail Breakage Warranty for Skylight Glass: 10 years from the date of purchase on all insulated glass units using laminated glass.
.4 Insulating Glass Seal Failure Warranty: 20 years from date of purchase.

PART 2 - PRODUCTS

2.1 FIXED CURB MOUNTED (FCM) UNIT SKYLIGHTS

.1 System description: Fixed curb mounted unit skylight with a roll-formed aluminum frame counter-flashing joined by corner keys, an interior condensation drainage gasket, an insulated glass unit, structural sealant, mounting fasteners, flashing and accessories, as required to meet installation and performance requirements indicated. FCM skylights shall be suitable for installation on roof curbs ranging from 0 degrees up to 60 degrees from horizontal.

.2 Aluminum frame Counter-Flashing: Maintenance-free, roll formed aluminum, 15 gauge, 0.06 inch (1.5mm) thick with neutral grey Kynar 400 polyinylidene fluoride resin finish. Counter-flashing frames joined with neutral grey corner keys constructed from injection molded Acrylonitrile Styrene Acrylate (AS) Luran.
.1 Unit Sizes: As indicated on drawings.

.3 Condensation drainage Gasket: Factory applied black thermoplastic rubber gasket mounted around the entire interior aluminum frame assembly providing a thermal break weather seal and drawings for interior condensation.

.4 Insulated Glass Unit: factory assembled with low emissivity exterior pane and clear interior pane separated by a stainless steel spacer sealing the space between panes with 95% argon gas.
.1 Exterior Pane: 0.16 inch (4mm) thick tempered glass with Neat exterior coating and interior surface coated with three layers of low emissivity silver (LOE3) coatings.
.2 Interior Pane:
.1 Laminated, two clear 0.090 inch (2.3mm) heat-strengthened panes with a 0.030 inch (0.76mm) clear polyvinyl butyral interlayer sandwiched together.

.5 Structural Sealant: Factory applied silicone sealant, black colour, bonding the glass pane to the aluminum frame and suitable for external exposure.

.6 Mounting Fasteners: #8 x 1.75" (44mm) stainless steel, black zinc coated, self-drilling screws provided with skylight. 14

field installed screws secures skylight to site built curb as indicated in manufacturer's installation instructions.

2.2 FLASHINGS

.1 Step Flashing: Roll formed aluminium, neutral grey finish, factory engineered and fabricated seams, consisting of head flashing, sill flashing, step flashing pieces and adhesive underlayment suitable for use with 4" (100mm) and 6" (150mm) curbs on roof pitches 10 to 60 degrees from horizontal.
- .1 Size: As required for skylight sizes indicated.
- .2 Material:
  - .1 Head flashing 23 gauge (0.57mm) thick aluminum with polyester lacquer finish.
  - .2 Sill flashing 22 gauge (0.65mm) thick aluminum with Kynar 500 finish.
  - .3 Step pieces 23 gauge (0.57mm) thick aluminum with polyester lacquer finish.
  - .4 Adhesive underlayment: 9 inches (229mm) wide x 21 feet (6.4m) length x 0.03 inch (0.8mm) thick, SBS modified bitumen with white polyethylene backing sheet.

2.3 PERFORMANCE REQUIREMENTS

.1 Unit skylight standard, FCM 4646 or smaller unit with tempered Lo-E 366 coated exterior glass pane and interior pane as follows:
- .1 AAMA/WDMA/CSA 101/I.S.2/A440 (NAFS-11 or previous):
  - .1 Performance Grade (Primary Designator):
    - .1 Laminated with 0.030 inch (0.76mm) Interlayer: "SKG-PG120 Size Tested 1308 x1308mm (51" x 51")".
    - .2 Tempered "SKG-PG100 Size Tested 1308 x1308mm (51" x 51").
    - .3 Laminated with 0.090" (2.3mm) PVB. Interlayer: "SKG-PG100 Size Tested 1308 x 1308mm (51" x 51")".
  - .2 Design Pressure (DP):
    - .1 Laminated with 0.030" (0.76mm) Interlayer: DP = +250/-120 psf (+11.9/-5.75 kPa)
    - .2 Tempered: DP = +100/-140 psf (+4.9/-6.7 kPa)
    - .3 Laminated with 0.090 inch (2.3mm) PVB Interlayer:DP = +100/-80 psf (+4.9/-3.83 kPa)
  - .3 Water Test Pressure: 15 psf (0.72 kPa) with no leakage at 5 gallons per minute spray rate.
  - .4 Air Leakage Rate: 0.030 crm/ft2 maximum.

.2 Unit Skylight Standard, 2270 size and smaller unit with tempered Lo-E 366 coated exterior glass pane and laminated interior pane with 0.030 inch (0.76mm) interlayer.
- .1 AAMA/WDMA/CSA 101/I.S.2/A440 (NAFS-11 or previous):
  - .1 Performance Grade (Primary Designator): "SKG-PG100 Size Tested 660 x 1854 mm (26 x 73 in.)".

.2 Design Pressure (DP): +200/-100 psf (+9.58/-4.79 kPa).
.3 Water Test Pressure: 15 psf (0.72 kPa) with no leakage at 5 gallons per minute spray rate.
.4 Air Leakage Rate: 0.030 cfm/ft2 maximum

.3 Daylighting: Provide daylighting photometric performance comparable to basis of design product at layout indicated, based upon daylighting profile of March 21, 9:00 am local time, at Project location by simulation in accordance with IESNA guidelines.

.4 Air Infiltration: Maximum air leakage through tested size of 0.030 cfm/sq. ft. (1.5 L/s/sq. m) of fixed area as determined according to ASTM E 283 at a static-air-pressure differential of 1.57 lbf/sq. ft. (75Pa.)

.5 Water Penetration under Static Pressure: No evidence of water penetration through unit when tested according to ASTM E 331 at a static-air-pressure differential of 15 lbf/sq. ft. (720 Pa).

.6 Fire Ratings for Roof Assemblies with Fire Classifications: Unit skylight tested in accordance with ASTM E 108 and listed as passing Burning Brand test with target classification of Class B.

.7 Energy Performance ratings for any size fixed curb mounted unit skylight with tempered Lo-E 366 coated exterior glass pane and interior pane as follows:
.1 Thermal Transmittance: NFRC 100 maximum U-factor:
.1 Clear Laminated with 0.030 inch (0.76 mm) Interlayer: 0.48 Btu/hr*ft2*deg F (2.73 W/m2*deg C).
.2 Tempered: 0.49 Btu/hr*ft2*deg F (2.78 W/m2*deg C).
.3 Laminated with 0.090 inch (2.3 mm) PVB Interlayer: 0.46 Btu/hr*ft2*deg F (2.61 W/m2*deg C).
.4 Laminated with 0.090 inch (2.3 mm) Sentryglasplus Interlayer: 0.46 Btu/hr*ft2*deg F (2.61 W/m2*deg C).
.5 White Laminated with 0.030 inch (0.76 mm) Interlayer: 0.48 Btu/hr*ft2*deg F (2.73 W/m2*deg C).
.2 Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum SHGC:
.1 Clear Laminated with 0.030 inch (0.76 mm) Interlayer: 0.27
.2 Tempered: 0.27
.3 Laminated with 0.090 inch (2.3 mm) PVB Interlayer: 0.27
.4 Laminated with 0.090 inch (2.3 mm) Sentryglasplus1 Interlayer: 0.27
.5 White Laminated with 0.030 inch (0.76 mm) Interlayer: 0.26
.3 Visible Transmittance (Vt): NFRC 200 maximum Vt:
.1 Clear Laminated with 0.030 inch (0.76 mm) Interlayer: 0.63

.2 Tempered: 0.6
.3 Laminated with 0.090 inch (2.3 mm) PVB Interlayer: 0.62
.4 Laminated with 0.090 inch (2.3 mm) Sentryglasplus1 Interlayer: 0.63
.5 White Laminated with 0.030 inch (0.76 mm) Interlayer: 0.47

.8 Fall Protection Standard Compliance: 29 CFR 1910.23: Passed for all laminated fixed curb mount unit skylights.

2.4 MATERIALS

.1 Aluminum Sheet: Flat sheet complying with ASTM B 209/B 209M.

.2 Joint Sealants: As specified in Section 07 92 00 "Joint Sealants."

.3 Mastic Sealants: Polyisobutylene; nonhardening, nonskinning, nondrying, nonmigrating sealant.

2.5 FINISHES

.1 Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

.2 Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

.2 Proceed with unit skylight installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

.1 Install skylights in accordance with manufacturer's written instructions and approved shop drawings. coordinate installation of units with installation of substrates, air and vapor retarders, roof insulation, roofing membrane, and flashing as required to ensure that each element of the Work performs properly and that finished installation is weather tight.
.1 Anchor unit skylights securely to supporting substrates.
.2 Install unit skylights on curbs specified in another section with tops of curbs parallel to finished roof slope.

.2 Where metal surfaces of unit skylights will contact incompatible metal or corrosive substrates, including preservative-treated wood, apply bituminous coating on concealed metal surfaces, or provide other permanent separation recommended in writing by unit skylight manufacturer.

.3 For custom flashings, install unit skylight curb counter-flashing to produce weatheproof seal with curb and overlap with roofing system termination at top of curb.

3.3 FIELD QUALITY CONTROL

.1 Testing Agency: Engage testing agency to perform tests and inspections.
.1 Test for water leaks according to AAMA 501.2 after installation and curing of sealants but prior to installation of interior finishes.
.2 Perform test for total area of each unit skylight.

.2 Work will be considered defective if it does not pass tests and inspections.

.3 Additional testing and inspections, at Contractor's expense, wil be performed to determine compliance of replaced or additional work with specified requirements.

.4 Prepare test and inspection reports.

3.4 CLEANING AND PROTECTION

.1 Clean exposed unit skylight surfaces according to manufacturer's written instructions. Touch up damaged metal coatings and finishes. Remove excess sealants, glazing materials, dirt and other substances.

.2 Replace glazing that has been damaged during construction period.

.3 Protect unit skylight surfaces from contact with contaminating substances resulting from construction operations.

END

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 08 11 00 - Metal Doors and Frames.

.2 Section 08 14 16 - Flush Wood Doors.

.3 Section 08 33 36 - Side Coiling Grills.

1.2 REFERENCES

.1 American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA)
.1 ANSI/BHMA A156.1-2000, American National Standard for Butts and Hinges.
.2 ANSI/BHMA A156.2-2003, Bored and Preassembled Locks and Latches.
.3 ANSI/BHMA A156.3-2001, Exit Devices.
.4 ANSI/BHMA A156.4-2000, Door Controls - Closers.
.5 ANSI/BHMA A156.5-2001, Auxiliary Locks and Associated Products.
.6 ANSI/BHMA A156.6-2005, Architectural Door Trim.
.7 ANSI/BHMA A156.8-2005, Door Controls - Overhead Stops and Holders.
.8 ANSI/BHMA A156.10-1999, Power Operated Pedestrian Doors.
.9 ANSI/BHMA A156.12-2005, Interconnected Locks and Latches.
.10 ANSI/BHMA A156.13-2002, Mortise Locks and Latches Series 1000.
.11 ANSI/BHMA A156.14-2002, Sliding and Folding Door Hardware.
.12 ANSI/BHMA A156.15-2006, Release Devices - Closer Holder, Electromagnetic and Electromechanical.
.13 ANSI/BHMA A156.16-2002, Auxiliary Hardware.
.14 ANSI/BHMA A156.17-2004, Self-closing Hinges and Pivots.
.15 ANSI/BHMA A156.18-2006, Materials and Finishes.
.16 ANSI/BHMA A156.19-2002, Power Assist and Low Energy Power - Operated Doors.
.17 ANSI/BHMA A156.20-2006, Strap and Tee Hinges and Hasps.

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

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

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

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

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

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

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

1.4 CLOSEOUT SUBMITTALS

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

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

1.5 MAINTENANCE MATERIALS SUBMITTALS

.1 Extra Stock Materials:
.1 Supply maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
.2 Tools:
.1 Supply 2 sets of wrenches for door closers locksets and fire exit hardware.

1.6 QUALITY ASSURANCE

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

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

1.7 DELIVERY, STORAGE AND HANDLING

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

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

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

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

.5 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials as specified in in accordance with Section 01 74 22 - Construction/Demolition Waste Management and Disposal.

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 ANSI/BHMA A156.2, series 2000 preassembled lock, grade 1 series 4000 bored lock, grade 1, designed for function and keyed as stated in Hardware Schedule.
.2 Interconnected locks and latches: to ANSI/BHMA A156.12, 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, series 1000 mortise lock, grade 1, designed for function and keyed as stated in Hardware Schedule.
.4 Lever handles: plain design. ADA compliant with no return.
.5 Roses Escutcheons: round.
.6 Normal strikes: box type, lip projection not beyond jamb.
.7 Cylinders: key into keying system as directed.
.8 Finished to requirements of hardware schedule.

.2 Butts and hinges:
.1 Butts and hinges: to ANSI/BHMA A156.1, designated by letter A and numeral identifiers, followed by size and finish, listed in Hardware Schedule.
.2 Self-closing hinges and pivots: to ANSI/BHMA A156.17, designated by letter K and numeral identifiers listed in Hardware Schedule, with suffix letter F indicating listed for used on fire doors.
.3 Strap and tee hinges and hasps: to ANSI/BHMA A156.20, designated by letter A and numeral identifiers listed in Hardware Schedule, size listed in Hardware Schedule and in accordance with ANSI/BHMA A156.20, table I, finished to requirements of Hardware schedule.

.3 Exit devices: to ANSI/BHMA A156.3, type, function, grade 1, modern modern-narrow stile design.

.4 Door Closers and Accessories:
.1 Door controls (closers): to ANSI/BHMA A156.4, designated by letter C and numeral identifiers listed in Hardware Schedule, size in accordance with ANSI/BHMA A156.4, table A1.
.2 Door controls - overhead holders: to ANSI/BHMA A156.8, designated by letter C and numeral identifiers listed in Hardware Schedule.

.3 Closer/holder release devices: to ANSI/BHMA A156.15, designated by letter C and numeral identifiers listed in hardware schedule.
.4 Door co-ordinator: concealed for pairs of doors with overlapping astragal.

.5 Door Operators:
.1 Power-operated pedestrian doors: to ANSI/BHMA A156.10.
.2 Power assist and low energy power operated doors: to ANSI/BHMA A156.19.

.6 Auxiliary locks and associated products: to ANSI/BHMA A156.5, designated by letter E and numeral identifiers listed in Hardware Schedule as listed below.
.1 Latch bolt Dead bolt, type, finished to. Key into keying system as noted as directed.
.2 Cylinders: type, finished to, for installation in deadlocks provided with special doors as listed in Hardware Schedule. Key into keying system as directed Departmental Representative.

.7 Architectural door trim: to ANSI/BHMA A156.6, designated by letter J and numeral identifiers listed in Hardware Schedule.
.1 Door protection plates: 1.27 mm thick stainless steel.
.2 Push plates: 1.27 mm thick stainless steel, size.
.3 Push/Pull units: stainless steel..

.8 Auxiliary hardware: to ANSI/BHMA A156.16, designated by letter L and numeral identifiers listed in Hardware Schedule.

.9 Door bottom seal: heavy duty, door seal of extruded aluminum frame and closed cell neoprene seal, recessed in door bottom, closed ends, automatic retract mechanism when door is open, clear anodized finish.

.10 Thresholds: 127 mm wide x full width of door opening, extruded aluminum mill finish, serrated surface, with thermal break of rigid PVC.

.11 Weatherstripping:
.1 Head and jamb seal:
.1 Extruded aluminum frame and closed cell neoprene insert, finish to match finish applied on door.
.2 Adhesive backed neoprene material.
.2 Door bottom seal:
.1 Extruded aluminum frame and closed cell neoprene sweep, finish to match that applied to door.

.12 Barrier Free Pneumatic Door Operator:
.1 Heavy duty pneumatically assisted door closer, capable of multi-door operation, complete with actuators, control boxes, pneumatic tubing and compressed air source.

.2 Self contained control box/compressor combination for independent operation of two door leaves.
.3 Control boxes: complete with electric strike relay.
.4 Mount operators on either push or pull sides of doors as required to place them inside rooms.
.5 Electrical box and actuator: Hardwired low voltage actuator with stainless steel 114 mm round plate, engraved blue filled with handicap symbol. Box 51 mm wide x 102 mm high x 50 mm deep single gang electrical box, flush mounted in wall, locations indicated.
.6 Supply switched line voltage to control box. Locate switch adjacent to box.
.7 Supply low voltage wiring to each actuator and 6 mm diameter air tubing to each operator.
.8 Mount control box in location as directed by Departmental Representative.

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 Doors, padlocks and cabinet locks to be master keyed grand master keyed great grand master keyed as directed. Prepare detailed keying schedule in conjunction with Departmental Representative.

.2 Supply keys in duplicate for every lock in this Contract.

.3 Supply 3 master keys for each master key or grand master key group.

.4 Stamp keying code numbers on keys and cylinders.

.5 Supply construction cores.

.6 Hand over permanent cores and keys to Departmental Representative.

PART 3 - EXECUTION

3.1 INSTALLATION

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

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

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

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

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

.6 Install key control cabinet.

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

.8 Remove construction cores when directed by Departmental Representative.
.1 Install permanent cores and ensure locks operate correctly.

3.2 ADJUSTING

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

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

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

3.3 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.
.2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturer's instructions.
.3 Remove protective material from hardware items where present.
.4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

.2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 22 - Construction/Demolition Waste Management and Disposal.
.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.4 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.

3.5 PROTECTION

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

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

HW1 (Door 101, 102, 103, 104, 207)

3 Hinges	TA714 114X101	26D	McKinney or Equal
1 Lockset	21-8204-LNJ-MKVK	26D	Sargent or Equal
1 Closer	1431-0	EN	Sargent or Equal
1 Wall Stop	S122	26D	SM Hardware or Equal

HW2 (Door 107)

3 Hinges	TA714 114X101	26D	McKinney or Equal
1 Lockset	21-8204-LNJ-MKVK	26D	Sargent or Equal
1 Wall Stop	S122	26D	SM Hardware or Equal

HW3 (Door 200a, 200b)

3 Hinges	TA714 114X101	26D	McKinney or Equal
1 Exit Device	12-8813-ETP-MK-VK	26D	Sargent or Equal
1 Closer	1431-0	EN	Sargent or Equal
1 Wall Stop	S122	26D	SM Hardware or Equal
1 Set Gasketing	S22x Head & Jambs	TAN	KN Crowder or Equal

-Doors are exits
-Doors located in fire rated wall assemblies

HW4 (Door 203)

3 Hinges	TA714 114X101	26D	McKinney or Equal
1 Lockset	21-8205-LNJ-MKVK	26D	Sargent or Equal
1 Set Gasketing	S22x Head & Jambs	TAN	KN Crowder or Equal
1 Auto Bottom	CT52	26D	KN Crowder or Equal
1 Wall Stop	S122	26D	SM Hardware or Equal

HW5 (Door 204)

3 Hinges	TA714 114X101	26D	McKinney or Equal
1 Lockset	21-8265-LNJ-MKVK	26D	Sargent or Equal
1 Wall Stop	S122	26D	SM Hardware or Equal

HW6 (Door 205, 206)

3 Hinges	TA714 114X101	26D	McKinney or Equal
1 Push Plate	K11a 101x406mm	32D	SM Hardware or Equal

1 Pull	K10a	101x406mm	32D	SM Hardware or Equal
1 Wall Stop	S122		26D	SM Hardware or Equal

HW7 (Door 208a)

3 Hinges	A5112	114x101mm	26D	McKinney or Equal
1 Passage Set	8213-LNP		26D	Sargent or Equal
1 Closer	1431-0		EN	Sargent or Equal
1 Head Stop	590S		EN	Sargent or Equal

HW8 (Door 208b)

3 Hinges	TA714	114X101	26D	McKinney or Equal
1 Exit Device	21-8813-ETP-MK-VK		26D	Sargent or Equal
1 Closer	1431-0		EN	Sargent or Equal
1 Wall Stop	S122		26D	SM Hardware or Equal
1 Set Gasketing	S22x Head & Jambs		TAN	KN Crowder or Equal

-Door is a means to an exit

HW9 (Door 201a)

6 Hinges	TA314 NRP 114X101	32D	McKinney or Equal
1 Exit Device	21-8813-ETP-MKVK	32D	Sargent or Equal
1 Exit Device	8810-ETP	32D	Sargent or Equal
1 Electric Strike	9600	32D	HES or Equal
1 Removable Mullion	L980S	FP	Sargent or Equal
1 Cylinder Kit	980C1	32D	Sargent or Equal
1 Cylinder	41-MKVK	32D	Sargent or Equal
1 Operator	SW200i	32D	Besam or Equal
1 Closer	1431-RO	EN	Sargent or Equal
2 Wall Buttons	4” Round w/ Barrier Free Symbol		
1 Set Weatherstripping	W-1 x Head & Jambs		KN Crowder or Equal
1 Astrigal	W-25 x Jambs		KN Crowder or Equal
2 Door Sweeps	W-4 x Width		KN Crowder or Equal
1 Cont. Threshold	CT-45 x Width		KN Crowder or Equal

-Door is an exit

HW10 (Door 201b)

3 Hinges	TA314 NRP 114X101	32D	McKinney or Equal

1 Exit Device	21-8813-ETP-MKVK	32D	Sargent or Equal
1 Closer	1431-RO	EN	Sargent or Equal
1 Set Weatherstripping	W-1 x Head & Jambs		KN Crowder or Equal
1 Door Sweep	W-4 x Width		KN Crowder or Equal
1 Threshold	CT-45		KN Crowder or Equal

-Door is an exit

HW11 (Door 208c)

3 Hinges	TA314 NRP 114X101	32D	McKinney or Equal
1 Exit Device	21-8813-ETP-MKVK	32D	Sargent or Equal
1 Electric Strike	9600	32D	HES or Equal
1 Operator	SW200i	Black	Besam or Equal
2 Wall Button	4” Round w/ Barrier Free Symbol		
1 Set Weatherstripping	W-1 x Head & Jambs		KN Crowder or Equal
1 Door Sweep	W-4 x Width		KN Crowder or Equal
1 Threshold	CT-45		KN Crowder or Equal

-Door is an Exit

HW12 (For use with Side Coiling Grille)

1 Cylinder	41-MKVK	32D	Sargent or Equal

HW13 (For use with Electric Strikes on Doors 201a, 208c)

1 Power Supply	BPS-24-2		Securitron or Equal

END

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 07 92 00 - Joint Sealants

.2 Section 08 11 00 - Metal Doors and Frames

.3 Section 08 14 16 - Flush Wood Doors

.4 Section 10 28 10 - Toilet and Bath Accessories.

1.2 REFERENCES

.1 ASTM International
- .1 ASTM C 542-05, Standard Specification for Lock-Strip Gaskets.
- .2 ASTM D 790-07e1, Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- .3 ASTM D 1003-07e1, Standard Test Method for Haze and Luminous Transmittance of Plastics.
- .4 ASTM D 1929-96(R2001)e1, Standard Test Method for Determining Ignition Temperature of Plastics.
- .5 ASTM D 2240-05, Standard Test Method for Rubber Property - Durometer Hardness.
- .6 ASTM E 84-10, Standard Test Method for Surface Burning Characteristics of Building Materials.
- .7 ASTM E 330-02, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
- .8 ASTM F 1233-08, Standard Test Method for Security Glazing Materials and Systems.

.2 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-12.6-M91, Transparent (One-Way) Mirrors.
- .6 CAN/CGSB-12.8-97, Insulating Glass Units.
- .7 CAN/CGSB-12.8-97 (Amendment), 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.
- .11 CAN/CGSB-12.12-M90, Plastic Safety Glazing Sheets.
- .12 CAN/CGSB-12.13-M91, Patterned Glass.

.3 Environmental Choice Program (ECP)
- .1 CCD-045-95(R2005), Sealants and Caulking Compounds.

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

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for glass, sealants, and glazing accessories and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:
.1 Submit Shop drawings in accordance with section 01 33 00 - Submittal Procedures.

.4 Samples:
.1 Submit for review and acceptance of each unit.
.2 Submit 300 mm size samples of glazing and sealant material.

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

.6 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
.1 Submit testing and analysis of glass under provisions of Section 01 45 00 - Quality Control.
.2 Submit shop inspection and testing for glass.

1.4 CLOSEOUT SUBMITTALS

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

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

1.5 QUALITY ASSURANCE

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

1.6 DELIVERY, STORAGE AND HANDLING

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

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

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

.4 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials as specified in accordance with Section 01 74 22 - Construction/Demolition Waste Management and Disposal.

1.7 AMBIENT CONDITIONS

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

PART 2 - PRODUCTS

2.1 MATERIALS

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

.2 Flat Glass:
.1 Float glass: to CAN/CGSB-12.3, glazing quality, 6 mm thick.
.2 Sheet glass: to CAN/CGSB-12.2, AA-special selected, 6 mm thick.
.3 Safety glass: to CAN/CGSB-12.1, transparent, 6 mm thick.
.1 Type 2-tempered.
.2 Class B-float.
.3 Category 1.
.4 Edge treatment.
.4 Wired glass: to CAN/CGSB-12.11, 6 mm thick.
.1 Type 1-polished both sides (transparent).
.2 Wire mesh styles 1-diamond.

.3 Insulating Glass Units:
.1 Insulating glass units: to CAN/CGSB-12.8, double unit, 24 mm overall thickness.
.1 Glass: to CAN/CGSB-12.3 CAN/CGSB-12.1 CAN/CGSB-12.2 CAN/CGSB-12.4 CAN/CGSB-12.10.
.2 Glass thickness: 6 mm each light.
.3 Inter-cavity space thickness: 12mmwith low conductivity spacers.
.4 Glass coating: surface number 3, low "E" colour.
.5 Inert gas fill: argon.

.4 Plastic Film: Self-Adhesive transluscent type in locations denoted on drawings.

.5 Sealant: in accordance with Section 07 92 00 - Joint Sealants.

2.2 ACCESSORIES

.1 Setting blocks: silicone with 80-90 Shore A durometer hardness to ASTM D 2240, length of 25 mm for each square meter of glazing or minimum 100 mm x width of glazing rabbet space minus 1.5 mm x height to suit glazing method, glass light weight and area.

.2 Spacer shims: neoprene , 50-60 Shore A durometer hardness to ASTM D 2240, 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 D 2240; coiled on release paper; black colour.
.2 Closed cell polyvinyl chloride foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume 2 %, designed for compression of 25 %, to effect an air and vapour seal.

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

.5 Glazing clips: manufacturer's standard type.

.6 Lock-strip gaskets: to ASTM C 542.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for glazing installation in accordance with manufacturer's written instructions.
.1 Verify that openings for glazing are correctly sized and within tolerance.
.2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.
.3 Visually inspect substrate in presence of Departmental Representative .
.4 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
.5 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 PREPARATION

.1 Clean contact surfaces with solvent and wipe dry.

.2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.

.3 Prime surfaces scheduled to receive sealant.

3.3 INSTALLATION: EXTERIOR - DRY METHOD (PREFORMED GLAZING)

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

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

.3 Cut glazing tape and spline to length; install on glazing light. Seal corners by butting tape spline and sealing junctions with sealant.

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

.5 Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.

.6 Install removable stops without displacing glazing tape spline. Exert pressure for full continuous contact.

.7 Trim protruding tape edge.

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

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

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

.3 Place setting blocks at 1/3 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: PLASTIC FILM

.1 Install plastic film with adhesive, applied in accordance with film manufacturer's instructions.

.2 Place without air bubbles, creases or visible distortion.

.3 Fit tight to glass perimeter with razor cut edge.

3.6 CLEANING

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

.2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 22 - Construction/Demolition Waste Management and Disposal.
  .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.7 PROTECTION

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

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

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

END