1 General

1.1 RELATED SECTIONS

.1 Section 07 92 10 - Joint Sealing.

.2 Section 08 34 63 - Detention Doors and Frames.

.3 Section 08 71 10 - Finish Hardware.

.4 Section 08 80 00 - Glazing.

1.2 REFERENCES

.1 ASTM International (ASTM).
- .1 ASTM A653/A653M-13, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.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)
- .1 CSA C22.2 NO. 83.1-07 (R2012), Electrical Metallic Tubing - Steel.
- .2 CSA G40.20/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel / Structural Quality Steel.
- .3 CSA W59-13, Welded Steel Construction (Metal Arc Welding).

.4 Canadian Steel Door Manufacturers' Association (CSDMA)
- .1 CSDMA, Recommended Specifications for Commercial Steel Door and Frame Products 08 11 00, 2006.

.5 National Fire Protection Association (NFPA)
- .1 NFPA 80, Standard for Fire Doors and Other Opening Protectives, 2013 Edition.
- .2 NFPA 252, Standard Method of Fire Tests of Door Assemblies, 2012 Edition.

.6 Underwriters' Laboratories of Canada (ULC)
- .1 CAN/ULC S104-10, Standard Method for Fire Tests of Door Assemblies.
- .2 CAN/ULC-S702-14, Standard for Mineral Fibre Thermal Insulation for Buildings.
- .3 CAN/ULC S704-11, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate, Boards, Faced.

1.3 SYSTEM DESCRIPTION

.1 Design Requirements:
- .1 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.
- .2 Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with CAN4-S104 or NFPA 252 and listed by nationally recognized agency having factory inspection services.

.2 Sound rated assemblies:
- .1 Acoustic Performance: Sound Transmission Class (STC) 50, when tested in accordance with ASTM E90.
- .2 Apply label indicating sound transmission class to door and door frame.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 10 01 - General Requirements.

.2 Shop drawings:

.1 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazing, door grille, arrangement of hardware, fire rating and finishes.

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

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

.3 Samples:

.1 Submit one 300 mm x 300 mm corner sample of each type of frame.

.4 Test Data:

.1 Submit test data indicating compliance with the Sound Transmission Class (STC) requirements. Include laboratory name, test report number, and date of test.

1.5 SUSTAINABLE DESIGN SUBMITTALS

.1 Construction waste management plan.

.1 A Construction Waste Management Plan is in place to divert waste material from landfill. Wherever practical, send waste material for reuse or recycling, and generally document this for the contractor's waste management final report.

.2 Recycled Content.

.1 Refer to Section 01 47 15 - Sustainable Requirements for "List of Products Requiring Recycled Content".

.2 If products within this section are indicated on the "List of Products Requiring Recycled Content", only products with recycled content will be acceptable.

.3 For products not identified on list, source products with highest recycled content available when practical.

.4 Include following information with product data submission.

.1 Percentage of pre-consumer and post-consumer recycled content for each product.

.3 Regional Materials.

.1 Refer to Section 01 47 15 - Sustainable Requirements for "List of Products Required to be Locally Sourced".

.2 If products within this section are indicated on the "List of Products Required to be Locally Sourced", include following information with Product Data submission:

.1 Extraction/Manufacturing location(s): Indicate location of extraction site or manufacturing plant, and indicate distance between extraction site or manufacturing plant and Project site.

.4 Adhesives and Sealants.

.1 Include following information with Product Data submission for materials specified under this section:

.1 Submit manufacturer's certification indicating VOC limits of Products used onsite and within the building envelope. Product shall comply with California's SCAQMD #1168.

.5 Paints and Coatings.
.1 Provide low VOC Products as specified herein and complying with local regulations regarding toxic and hazardous materials.
.2 Ensure primers, paints and coatings used onsite and within building envelope meet or exceed requirements of following standards:
.1 Interior and Exterior Paints: GS-11
.2 Anti-Corrosive Paint: GS-11
.3 Clear Wood Finishes and other coating not covered in GS-11: SCAQMD #1113.
.3 Submit manufacturer's certification indicating VOC limits of Products.

.6 If requesting substitute product, ensure proposed substitution achieves above stated goals.

1.6 MAX. VOC CONTENT FOR SOLVENT CLEANING ACTIVITIES

.1 Following are some of the Maximum allowed VOC Content for following activities, as per SCAQMD Rule 1171-9 (refer to SCAQMD manual for complete list and updates):
.1 Product cleaning during onsite surface preparation for coatings or adhesives application, and repair and maintenance cleaning:
.1 General maximum VOC 25g/L.
.2 Electrical apparatus components and electronic components.
.3 Cleaning of coatings or adhesives application equipment max. VOC 25g/L.
.2 Refer to SCAQMD for additional information and clarification and complete list of applications.
.3 Any discrepancies are to be approved by Departmental Representative. Obtain written approval prior to use on site.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 10 01 - General Requirements.

2 Products

2.1 MATERIALS

.1 Steel doors and frames: commercial quality.
.1 Acceptable Materials: products by current CSDMA member.

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

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

2.2 DOOR CORE MATERIALS

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

.2 Polyurethane core: to CAN/ULC S704, rigid, modified poly/isocyanurate, closed cell board. Density 32 kg/m^3. Thermal value: RSI 1.0.

2.3 PRIMER

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

2.4 ACCESSORIES

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

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

.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 riveted.

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

.7 Sound rated door hardware:
- .1 Threshold: Smooth and flush, to provide a seal for door in closed position.
- .2 Perimeter and bottom acoustic seals: To provide a seal for door in closed position.

.8 Conduit: electrical metallic tubing (EMT); to CSA C22.2 No. 83.1 with couplings.

.9 Batt insulation: mineral fibre, to CAN/ULC S702.

.10 Thermal break: rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19M.

.11 Sound sealant: one-part acrylic as specified in Section 07 92 10 - Joint Sealing.

2.5 AIR / VAPOUR RETARDER INTERFACE SHEET

.1 Provide strip of air / vapour retarder material for tying exterior door frames into wall air / 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 / vapour retarder from interior.

2.6 FABRICATION

.1 General
- .1 Fabricate in accordance with CSDMA specifications.
- .2 Blank, reinforce, drill and tap doors and frames for mortised, templated hardware and electronic hardware using templates provided by finish hardware supplier. Reinforce surface mounted hardware.
- .3 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.
- .4 Do welding in accordance with CSA W59.
- .5 Manufacturer's nameplates are not permitted.
- .6 Conceal fastenings except where exposed fastenings are indicated.
- .7 Labelling:
  - .1 Fire rating: Provide fire labelling for those openings requiring fire protection ratings, as scheduled. Test such products in conformance with CAN4-S104 or NFPA 252 and list by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

.2 Sound rating: Affix permanent metal nameplates to door and frame, or factory emboss information, indicating manufacturer's name, door tag, and STC rating.

.3 Locate labels so as to be clearly visible when door is open; concealed when door is closed.

.2 Frames:

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

.1 Exterior frames: 1.6 mm thermally broken steel. Fabricate thermally broken frames separating exterior parts form interior parts with continuous interlocking thermal break.

.2 Interior frames - regular and secure types: fabricated from 1.6 mm thick sheet steel.

.3 Sound rated frames: Sheet steel faces of thickness to achieve specified STC performance.

.2 Cut-outs and hardware preparation:

.1 Protect mortised cutouts with steel guard boxes for masonry walls/partitions.

.2 Prepare frame for door silencers, three (3) for single door, two (2) at head for double door.

.3 Reinforce inside face of secure door frames, at strike location, with 6.4 mm steel plate.

.3 Insulate exterior frame components with polyurethane insulation.

.4 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 two (2) anchors for rebate opening heights up to 1520 mm and one (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.

.5 Provide 5 mm thick steel mounting plate at secure frame for borrowed lights. Fully weld

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

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

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

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

.9 Weld in two (2) temporary jamb spreaders per frame to maintain proper alignment during shipment.

.10 Fabricate frame products for large openings in sections of maximum practical size. Splice joints for field assembly.

.11 Provide closure plates, to close-off ends of exposed insulation/air cavities.

.3 Doors:

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

.2 Construction:
.1 STC rated doors: of design and core suitable to achieve specified STC performance.
.2 Remainder of doors:
.1 Hollow steel construction, reinforced with vertical stiffeners, securely welded to face sheets at 150 mm on centre maximum.
.2 Fill voids between stiffeners of exterior doors with polyurethane core; mineral fibre core for interior doors.
.3 Face sheets:
.1 Sound rated doors: of thickness to achieve specified STC performance.
.2 Secure doors: 1.6 mm thick sheet steel.
.3 Remainder of doors: 1.2 mm thick sheet steel.
.4 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.
.5 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.
.6 Provide flush PVC top caps to exterior doors. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.
.7 Provide empty 12.5 mm diameter conduit from wire transfer location, between middle and top hinge, extending to back of electric lock. Leave space for wires at back of lock bucket.

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

.1 General
.1 Install labelled steel fire rated doors and frames in accordance with NFPA 80 except where specified otherwise.
.2 Install doors and frames in accordance with CSDMA Installation Guide.
.3 Install and adjust perimeter and bottom acoustic seals on STC rated doors/frames.

.2 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 Install batt insulation in perimeter of STC rated frames and caulk with sound sealant.

.6 Air/vapour retarder to frame connection.

.1 Door frames require connection to air/vapour retarder to maintain continuity of air/vapour retarder assembly. Connection may be achieve by either of the following methods:

.1 Install interface sheet between frame and steel angle. Seal interface sheet to air/vapour retarder membrane or transition sheet as applicable.

.2 If installation of air/vapour retarder or transition membrane permits, extend air/vapour retarder or transition membrane between frame and steel angle.

.3 Door Installation

.1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 10 - Finish 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 and thresholds: 13 mm.

.3 Adjust operable parts for correct function.

3.3 FINISH REPAIRS

.1 Touch up with primer finishes damaged during installation.

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

3.4 SCHEDULES

.1 Refer to Door and Frame Schedule, located on drawings, for sizes and locations.

END OF SECTION

1 General

1.1 RELATED SECTIONS

.1 Section 05 05 13 - Fluoropolymer Coating.

.2 Section 08 50 00 - Aluminum Windows and Curtain Wall: door adapter, aluminum spandrel panels in frames.

.3 Section 08 71 10 - Finish Hardware.

.4 Section 08 80 00 - Glazing.

1.2 REFERENCES

.1 American Architectural Manufacturers Association (AAMA).
- .1 AAMA TIR-A8-08, Structural Performance of Composite Thermal Barrier Framing Systems.

.2 ASTM International (ASTM).
- .1 ASTM A123/A123M-13, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

.3 Canadian Standards Association (CSA).
- .1 CSA G40.20/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel / Structural Quality Steel.
- .2 CAN/CSA-G164-M92 (R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 10 01 - General Requirements.

.2 Product Data:
- .1 Submit manufacturer's printed product literature, specifications and data sheets.
- .2 Submit catalogue details for each type of door illustrating profiles, dimensions and methods of assembly.
- .3 Submit catalogue details for each type of door hardware provided by this section.

.3 Shop Drawings:
- .1 Indicate materials and profiles and provide full-size, scaled details of components for each type of door and frame. Indicate:
  - .1 Elevations of units.
  - .2 Core thicknesses of components.
  - .3 Finish.
  - .4 Each type of door system including location.

.4 Samples:
- .1 Submit one 300 x 300 mm corner sample of each type door and frame.
- .2 Submit sample showing glazing detail, reinforcement and finish.

1.4 SUSTAINABLE DESIGN SUBMITTALS

.1 Construction waste management plan.
- .1 A Construction Waste Management Plan is in place to divert waste material from landfill. Wherever practical, send waste material for reuse or recycling, and generally document this for the contractor’s waste management final report.

.2 Recycled Content.
- .1 Refer to Section 01 47 15 - Sustainable Requirements for "List of Products Requiring Recycled Content".
- .2 If products within this section are indicated on the "List of Products Requiring Recycled Content", only products with recycled content will be acceptable.
- .3 For products not identified on list, source products with highest recycled content available when practical.
- .4 Include following information with product data submission.
  - .1 Percentage of pre-consumer and post-consumer recycled content for each product.

.3 Regional Materials.
- .1 Refer to Section 01 47 15 - Sustainable Requirements for "List of Products Required to be Locally Sourced".
- .2 If products within this section are indicated on the "List of Products Required to be Locally Sourced", include following information with Product Data submission:
  - .1 Extraction/Manufacturing location(s): Indicate location of extraction site or manufacturing plant, and indicate distance between extraction site or manufacturing plant and Project site.

.4 Adhesives and Sealants.
- .1 Include following information with Product Data submission for materials specified under this section:
  - .1 Submit manufacturer's certification indicating VOC limits of Products used onsite and within the building envelope. Product shall comply with California's SCAQMD #1168.

.5 If requesting substitute product, ensure proposed substitution achieves above stated goals.

1.5 MAX. VOC CONTENT FOR SOLVENT CLEANING ACTIVITIES

.1 Following are some of the Maximum allowed VOC Content for following activities, as per SCAQMD Rule 1171-9 (refer to SCAQMD manual for complete list and updates):
- .1 Product cleaning during onsite surface preparation for coatings or adhesives application, and repair and maintenance cleaning:
  - .1 General maximum VOC 25g/L.
  - .2 Electrical apparatus components and electronic components.
  - .3 Cleaning of coatings or adhesives application equipment max. VOC 25g/L.
- .2 Refer to SCAQMD for additional information and clarification and complete list of applications.
- .3 Any discrepancies are to be approved by Departmental Representative. Obtain written approval prior to use on site.

1.6 CLOSEOUT SUBMITTALS

.1 Provide maintenance data for cleaning and maintenance of aluminum finishes for incorporation into manual specified in Section 01 10 01 - General Requirements.

2 Products

2.1 MATERIALS

.1 Aluminum extrusions: Aluminum Association alloy AA6063-T5.

.2 Steel reinforcement: to CSA G40.20/G40.21, grade 300 W.

.3 Fasteners: stainless steel, finished to match adjacent material.

.4 Thermal Break: To AAMA IIR-A8, Glass fibre reinforced polyamide porthole extrusion.

.5 Aluminum panel: factory fabricated, 19 mm Douglas Fir Plywood, faced both sides with 2.5 mm hardboard and 1.0 mm smooth aluminum sheet. Aluminum finish to match door.

2.2 ALUMINUM DOORS

.1 Doors: constructed of porthole extrusions with minimum wall thickness of 3 mm.

.2 Swinging doors:
- .1 Wide stile door - interior locations: minimum sizes of extrusions as follows:
  - .1 Thickness: 45 mm.
  - .2 Stiles: 127 mm. Size to accept mortise lock.
  - .3 Top rail: 127 mm.
  - .4 Bottom rail: 250 mm.
- .2 Thermally broken wide stile door - exterior locations:
  - .1 Thickness: 57 mm.
  - .2 Remainder of components sizes same as wide stile door.

.3 Sliding door at casework:
- .1 Thickness: 45 mm.
- .2 Stiles: 57 mm.
- .3 Top rail: 57 mm.
- .4 Bottom rail: 149 mm.

.4 Reinforce mechanically-joined corners of doors to produce sturdy door unit.

.5 Glazing stops: interlocking snap-in type for dry glazing.

2.3 ALUMINUM FRAMES

.1 Exterior and interior swinging door framing: curtain wall faming specified in Section 08 50 00 - Aluminum Windows and Curtain Wall, complete with flush door adapter.

.2 Framing at sliding door at casework: 45 mm x 114 mm x 3 mm wall thickness, non-thermally broken, flush glazed, to accommodate single glass at centre of frame; complete with snap-in fillers.

2.4 DOOR HARDWARE

.1 Weatherstripping: replaceable metal backed pile.

.2 Swinging doors:
- .1 Remainder of hardware supplied under Section 08 71 10 - Finish Hardware.

.3 Sliding door:
- .1 Top guide: extruded aluminum, 38 mm high x 60 mm deep; complete with replaceable weatherstripping.
- .2 Bottom track: extruded aluminum, recessed application.
- .3 Door carriers: heavy duty, tandem nylon wheels with ball-bearing rollers.
- .4 Deadlock: to ANSI/BHMA A156.5, Type E0231, Grade 1; thumbturn on interior side only; backset to suit, latch bolt size 16 mm x 25 mm with 16 mm throw.
- .5 Pull: manufacturer's standard recessed pull on interior side only.
- .6 Slam lock: self-latching hopper window type lock; brushed chrome/nickel finish.

2.5 FINISHES

.1 Aluminum finish: Finish exposed surfaces of aluminum components with fluropolymer coating as specified in Section 05 05 13 - Fluoropolymer Coating.

.2 Finish steel clips and reinforcing steel with zinc coating in accordance with ASTM A123/A123M.

2.6 FABRICATION

.1 General:
- .1 Shop drawings shall be reviewed before any fabrication begins.
- .2 Take site measurements, and fabricate units to suit site dimensions.
- .3 Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
- .4 Construct doors and framing to sizes as shown and specified.
- .5 Make allowances for deflection of structure. Ensure that structural loads are not transmitted to aluminum work.
- .6 Accurately fabricate and fit components in the shop in accordance with reviewed shop drawings.
- .7 Build unit square, true, accurate to size, free from distortions, waves, twists, buckles and other defects detrimental to appearance and performance.
- .8 When units are too large to handle or ship fully assembled, temporarily assemble unit in shop and mark pieces for reassembly in field. Disassemble unit to allow for shipping and handling.
- .9 Mitre, reinforce and weld corners; mechanical fasteners where approved by Departmental Representative. Conceal welds and fasteners. Connections to have flush, hairline joints.
- .10 Provide internal structural steel reinforcement as required.
- .11 Isolate aluminum from direct contact with dissimilar metals, concrete and masonry.

.2 Door fabrication:
- .1 Reinforce mechanically-joined corners of doors to produce sturdy door unit.
- .2 Provide replaceable weatherstripping on exterior door.
- .3 Mortise, reinforce, drill and tap doors, frames and reinforcements to receive hardware using templates provided under this section and Section 08 71 10 - Finish Hardware.

.3 Pass-Thru door at casework:
- .1 Aluminum panel, complete with four (4) edges capped with aluminum U-trim. Provide two heavy duty hinges and one slam latch per door.

3 Execution

3.1 INSTALLATION

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

.2 Adjust operable parts for correct function.

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

3.2 GLAZING

.1 Check openings before glazing to make certain opening is square, plumb and secure. Seal each butt, and mitre joint of interior with small bead of sealant. Check gasket to ensure it is securely in place.

.2 Thoroughly wipe surfaces receiving glazing materials with a clean cloth dampened with Low VOC cleaner. Wipe dry with a clean, dry cloth.

.3 Place two setting blocks of suitable size on sill at quarter points. Centre unit in opening.

.4 Place glazing unit on setting blocks and against gasket. Install interior gasket and glass stop.

3.3 CLEANING

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

.2 Clean aluminum with damp rag and approved non-abrasive cleaner.

END OF SECTION

1 General

1.1 RELATED SECTIONS

.1 Section 08 71 10 - Finish Hardware.

.2 Section 08 80 00 - Glazing.

.3 Section 09 91 23 - Painting: staining hardwood edges and glass stops.

.4 Section 10 95 00 - Miscellaneous Specialties: door grilles.

1.2 REFERENCES

.1 Window & Door Manufacturers Association (WDMA).
.1 ANSI/WDMA I.S. 1A-04, Architectural Wood Flush Doors.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with section 01 10 01 - General Requirements.

.2 Product Data:
.1 Submit manufacturer's printed product literature, specifications and data sheet.
.2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets. Indicate VOC's:
.1 For caulking materials during application and curing.

.3 Shop Drawings:
.1 Indicate door types, sizes, face veneers, core construction, and cutouts.

.4 Samples
.1 Submit duplicate 50 mm x 50 mm samples of manufacturer's available plastic laminate.
.2 Show door construction, core, and faces.
.3 Manufacturer's Instructions:
.1 Submit manufacturer's installation instructions.

1.4 SUSTAINABLE DESIGN SUBMITTALS

.1 Construction waste management plan.
.1 A Construction Waste Management Plan is in place to divert waste material from landfill. Wherever practical, send waste material for reuse or recycling, and generally document this for the contractor’s waste management final report.

.2 Recycled Content.
.1 Refer to Section 01 47 15 - Sustainable Requirements for “List of Products Requiring Recycled Content”.
.2 If products within this section are indicated on the “List of Products Requiring Recycled Content”, only products with recycled content will be acceptable.
.3 For products not identified on list, source products with highest recycled content available when practical.
.4 Include following information with product data submission.
.1 Percentage of pre-consumer and post-consumer recycled content for each product.

.3 Regional Materials.
.1 Refer to Section 01 47 15 - Sustainable Requirements for “List of Products Required to be Locally Sourced”.

.2 If products within this section are indicated on the "List of Products Required to be Locally Sourced", include following information with Product Data submission:
.1 Extraction/Manufacturing location(s): Indicate location of extraction site or manufacturing plant, and indicate distance between extraction site or manufacturing plant and Project site.

.4 Adhesives and Sealants.
.1 Include following information with Product Data submission for materials specified under this section:
.1 Submit manufacturer's certification indicating VOC limits of Products used onsite and within the building envelope. Product shall comply with California's SCAQMD #1168.

.5 If requesting substitute product, ensure proposed substitution achieves above stated goals.

1.5 QUALITY ASSURANCE

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

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

1.6 MAX. VOC CONTENT FOR SOLVENT CLEANING ACTIVITIES

.1 Following are some of the Maximum allowed VOC Content for following activities, as per SCAQMD Rule 1171-9 (refer to SCAQMD manual for complete list and updates):
.1 Product cleaning during onsite surface preparation for coatings or adhesives application, and repair and maintenance cleaning:
.1 General maximum VOC 25g/L.
.2 Electrical apparatus components and electronic components.
.3 Cleaning of coatings or adhesives application equipment max. VOC 25g/L.
.2 Refer to SCAQMD for additional information and clarification and complete list of applications.
.3 Any discrepancies are to be approved by Departmental Representative. Obtain written approval prior to use on site.

1.7 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.
.4 Store doors away from direct sunlight.

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse/recycling in accordance with authority having jurisdiction.

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

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

1.9 WARRANTY

.1 The warranty period is, with respect to this section of the work, extended from one year to three years.

2 Products

2.1 WOOD FLUSH DOORS

.1 Solid core doors: to ANSI/WDMA I.S. 1A.
- .1 Construction grade: Premium grade; 5-ply hot pressed.
- .2 Performance duty level: extra heavy duty.
- .3 Stiles and rails: bonded to core; size as required to meet performance duty level.
- .4 Core: as described in 2.1.2 below.
- .5 Blocking: provide blocking for locks, exit devices, closer and other hardware.
- .6 Face panels: 1.5 mm plastic laminate on Eucatex hardboard backing.
  - .1 Pattern/Colour: woodgrain pattern as selected by Departmental Representative.
- .7 Edges: hardwood; minimum 11 mm thick.
- .8 Adhesive: Type I (waterproof).

.2 Core:
- .1 Solid particleboard core door:
  - .1 WDMA I.S.1A door descriptor: PC-5.
  - .2 Core: minimum LD-1 particleboard; bonded to stiles and rails.

.3 Wood and adhesive materials used in door construction shall contain no added ureaformaldehyde.

2.2 GLAZING

.1 Glass stops: flush hardwood type with mitred corners, of species to match face laminate.

.2 Glass: 6 mm thick; supplied and factory installed by this section; of types scheduled.

2.3 FABRICATION

.1 Prepare and factory install glass in doors.

.2 Bevel vertical edges of single acting doors as follows:
- .1 Hinge side: 1.5 mm in 50 mm on hinge side.
- .2 Lock side:
  - .1 Single door: no greater than 3 mm in 50 mm.
  - .2 Pair of doors: 1.5 mm in 50 mm.

.3 Finish laminated plastic smooth and flush with stile edges of door and bevel at approximately 20 degrees.

.4 Provide blocking for hardware and at cutouts.

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 ANSI/WDMA I.S. 1A.

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

3.3 CLEANING

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

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

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

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

END OF SECTION

1 General

1.1 RELATED SECTIONS

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

.2 Section 08 71 10 - Finish Hardware: swing door hardware.

1.2 REFERENCES

.1 ASTM International (ASTM).
- .1 ASTM A568/A568M-13ae1, Standard Specification for Steel, Sheet, Carbon, Structural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for.
- .2 ASTM A653/A653M-13, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .3 ASTM F1450-12a, Standard Test Methods for Hollow Metal Swinging Door Assemblies for Detention and Correctional Facilities.

.2 Canadian Standards Association (CSA).
- .1 CSA W47.1-09 (R2014), Certification of Companies for Fusion Welding of Steel.
- .2 CSA W59-13, Welded Steel Construction (Metal Arc Welding).

.3 Canadian Steel Door Manufacturers Association (CSDMA).
- .1 CSDMA, Recommended Specifications for Commercial Steel Door and Frame Products 08 11 00, 2006.

.4 National Association of Architectural Metal Manufacturers (NAAMM).
- .1 HMMA 863-04, Guide Specifications for Detention Security Hollow Metal Doors and Frames, Fifth Edition.

1.3 QUALITY ASSURANCE

.1 Do welding in accordance with CSA W59. Welders duly certified in conformance with CSA W47.1.

.2 Manufacturer shall be current member of the Canadian Steel Door Manufacturers Association (CSDMA).

1.4 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 10 01 - General Requirements.

.2 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, window and food pass openings, arrangement of hardware and finishes.

.3 Indicate each type of frame material, core thickness, reinforcements, location of anchors, reinforcing and finishes.

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

1.5 SUSTAINABLE DESIGN SUBMITTALS

.1 Construction waste management plan.
- .1 A Construction Waste Management Plan is in place to divert waste material from landfill. Wherever practical, send waste material for reuse or recycling, and generally document this for the contractor’s waste management final report.

.2 Recycled Content.
.1 Refer to Section 01 47 15 - Sustainable Requirements for "List of Products Requiring Recycled Content".
.2 If products within this section are indicated on the "List of Products Requiring Recycled Content", only products with recycled content will be acceptable.
.3 For products not identified on list, source products with highest recycled content available when practical.
.4 Include following information with product data submission.
.1 Percentage of pre-consumer and post-consumer recycled content for each product.

.3 Regional Materials.
.1 Refer to Section 01 47 15 - Sustainable Requirements for "List of Products Required to be Locally Sourced".
.2 If products within this section are indicated on the "List of Products Required to be Locally Sourced", include following information with Product Data submission:
.1 Extraction/Manufacturing location(s): Indicate location of extraction site or manufacturing plant, and indicate distance between extraction site or manufacturing plant and Project site.

.4 Adhesives and Sealants.
.1 Include following information with Product Data submission for materials specified under this section:
.1 Submit manufacturer's certification indicating VOC limits of Products used onsite and within the building envelope. Product shall comply with California's SCAQMD #1168.

.5 If requesting substitute product, ensure proposed substitution achieves above stated goals.

1.6 MAX. VOC CONTENT FOR SOLVENT CLEANING ACTIVITIES

.1 Following are some of the Maximum allowed VOC Content for following activities, as per SCAQMD Rule 1171-9 (refer to SCAQMD manual for complete list and updates):
.1 Product cleaning during onsite surface preparation for coatings or adhesives application, and repair and maintenance cleaning:
.1 General maximum VOC 25g/L.
.2 Electrical apparatus components and electronic components.
.3 Cleaning of coatings or adhesives application equipment max. VOC 25g/L.
.2 Refer to SCAQMD for additional information and clarification and complete list of applications.
.3 Any discrepancies are to be approved by Departmental Representative. Obtain written approval prior to use on site.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Store doors and frames under cover on the building site on wood blocks or on floors in a manner to prevent rust and damage.

2 Products

2.1 MATERIALS

.1 Doors and frames: to NAAMM HMMA 863, ASTM F1450 Grade 3.
.1 Approved manufacturers (no substitutions): Apex, Simpsons.

.2 Sheet steel: commercial grade to ASTM A568/A568M, Class 1, hot-dip galvanized to ASTM A653/A653M, coating designation to ASTM A653/A653M, A25 (ZF75), known commercially as 'Colourbond', 'Satincoat', or 'Galvanneal'. Minimum base steel thickness as indicated.

.3 Batt insulation: glass fibre or rock wool type.

.4 Primer: rust inhibitive touch-up only.

.5 Hardware:
- .1 Track:
  - .1 Acceptable materials (no substitutions): Folger Adam #102-3M trackset.
- .2 Sliding door lockset:
  - .1 Acceptable materials (no substitutions): 1030D-1 by Chubb, #32D by Folger Adam, 1030-D1 by Southern Steel, 7030D by RR Brink.

2.2 FABRICATION - GENERAL

.1 Refer to 08 34 63.01 - Detention Doors and Frames - Appendix 'C' for additional construction details and specifications.

.2 Fabricate doors and frames in accordance with drawings, this section and Appendix 'C'.

2.3 FRAME FABRICATION

.1 Fabricate from 2.6 mm all-welded, one-piece construction; flush application on interior side.

.2 Anchorage: Provide appropriate anchorage to floor and wall construction. For rebate opening heights up to and including 1520 mm provide two (2) anchors, and an additional anchor for each additional 760 mm of height or fraction thereof, except as indicated below.

.3 Provide pull handle to aid in closing door.

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

2.4 DOOR FABRICATION

.1 Type: 50 mm thick, flush, sliding and swinging.

.2 Face sheets: minimum 1.9 mm.

.3 Design and construction:
- .1 Hollow steel construction with voids between stiffeners filled with mineral fibre insulation having 48 kg/m^3 density.
- .2 Longitudinal edges to be continuously welded and ground smooth.
- .3 Stiffen doors with continuous vertically formed steel sections, spaced so that vertical interior webs are not more than 100 mm apart and securely fastened to both face sheets by spot welds spaced a maximum of 75 mm o.c. vertically.
- .4 Reinforce vertical edges with continuous steel channel extending full height of door.
- .5 Close top and bottom edges with a continuous steel channel, spot welded to face sheets a maximum of 100 mm o.c. Continuously weld closing end channel to vertical edge reinforcing channel at all four corners producing a fully welded perimeter reinforcing channel.
- .6 Edge profiles: provided on both vertical edges of doors as follows unless hardware dictates otherwise:
  - .1 Swinging doors: beveled 3 mm in 50 mm.

.2 Sliding doors: square profile.

.4 Window:
- .1 Frame: Z-shaped, welded in place so that detainee side is flush with face of door skin.
- .2 Glazing: double glazing, consisting of interior lite (detainee side) of 6 mm thick scratch-resistant polycarbonate, notched to be flush with skin of door; 6 mm thick continuous spacer; 6 mm thick polycarbonate exterior lite.
- .3 Glass stops: 25 mm high.
- .4 Size: nominal 200 mm wide x 500 mm high on detainee side.

.5 Window Shutter:
- .1 Frame: 2.6 mm stainless steel, all four sides of frame to be lined with Teflon; radius exterior edges.
- .2 Shutter: 2.6 mm stainless steel shutter; 64 mm long stainless steel pull mounted with flat-head Torx security screws.

.6 Food pass:
- .1 Door plate: 2.6 mm thick plate, mounted flush with skin of door on detainee side.
- .2 Hinge: continuously welded edges at food pass door and reinforced channel of cell door. Provide 8 mm bar stop at reinforced channel of cell door.
- .3 Bumper: PG C49 by Gripco.
- .4 Locking by means of top mounted latch.
- .5 Size: nominal 315 mm wide x 120 mm high on detainee side.

.7 Hardware reinforcements and preparations:
- .1 Mortise, reinforce, drill and tap at factory for templated hardware; reinforce, drill, tap and weld on-site for non-templated hardware.
- .2 Minimum material thicknesses for steel hardware reinforcements as follows:
  - .1 Full mortise hinges and pivots: 4.2 mm.
  - .2 Surface applied maximum security hinges: 5.4 mm.
  - .3 Strikes: 4.2 mm.
  - .4 Slide device hanger attachment - per device manufacturer's recommendations
  - .5 Lock fronts, concealed holders, or surface mounted closer: 2.3 mm.
  - .6 Other surface applied hardware: 2.3 mm.

3 Execution

3.1 INSTALLATION

.1 Install doors frames and hardware in accordance with manufacturer's instructions.

.2 Set frames plumb, square, level and at correct elevation. Secure anchorages and connections to adjacent construction. Brace rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Remove temporary spreaders after frames are built-in.

.3 Adjust operable parts for correct clearances and function.

.4 Touch up with primer galvanized finish damaged during installation.

END OF SECTION

Detention Doors and Frames - Construction Details and Specifications

Hollow Metal Door & Pressed Steel Frame Shop Drawings

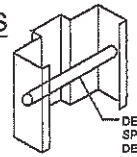
Project: SLIDING AND SWINGING CELL DOORS
LEVEL 3 NAAMM 863-98 ASTM F1450-97 PERFORMANCE CRITERIA

Prepared By: CATRIONA L JOHNSON

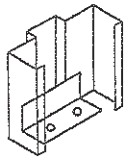
Date: SEPTEMBER 26, 2007

Revision Date : MARCH 30, 2012

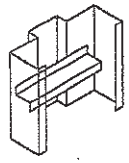
A-3 ANCHOR TYPES



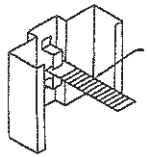
WELDED ROD ANCHOR



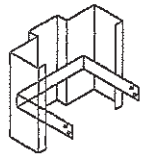
STANDARD FIXED BASE ANCHOR



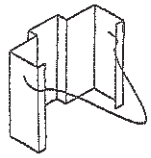
STEEL STUD ANCHOR



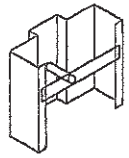
CORRUGATED TAIL ANCHOR



WOOD STUD ANCHOR



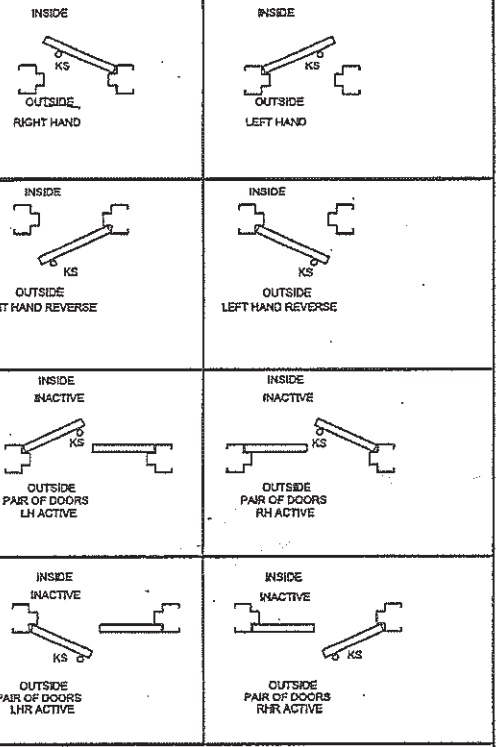
CONCRETE BLOCK WALL WIRE ANCHOR



EXISTING WALL ANCHOR

B-3 DOOR AND FRAME HANDING CHART

TO DETERMINE HAND(SWING) OF DOOR AND FRAME STAND OUTSIDE - FACING DOOR



* KS IS THE KEY SIDE OF DOOR (PLEASE CHECK ALL SWINGS TO ENSURE KEY IS ON PROPER SIDE OF DOOR)

FIRE RATING LABELS

A - 3 HOUR
B - 1 1/2 HOUR
C - 45 MINUTE
20M - 20 MINUTE

DOOR MATERIALS

HM - HOLLOW METAL DOOR - HONEYCOMB
IHM - INSULATED HOLLOW METAL DOOR - POLYSTYRENE
SLH - STEEL STIFFENED (LAMINATED-HONEYCOMB)
SLP - STEEL STIFFENED (LAMINATED-POLYSTYRENE)
SWF - STEEL STIFFENED (WELDED-FIBREGLASS)
SCW - SOLID CORE WOOD DOOR
HCW - HOLLOW CORE WOOD DOOR
PLM - PLASTIC LAMINATED

REMOVABLE STOPS

PL - PULL SIDE OF DOOR
PS - PUSH SIDE OF DOOR

ANCHOR TYPES

SS - STEEL STUD ANCHOR
CT - CORRUGATED TAIL ANCHOR
WS - WOOD STUD ANCHOR
EWA - EXISTING WALL ANCHOR
CB - CONCRETE BLOCK WIRE ANCHOR
BA - BASE ANCHOR
WR- WELDED ROD ANCHOR

HARDWARE

PP - PUSH & PULL
RIM - RIM PANIC
VR - VERTICAL ROD
FB - FLUSH BOLT
R/F - REINFORCE
CVR - CONCEALED VERTICAL ROD

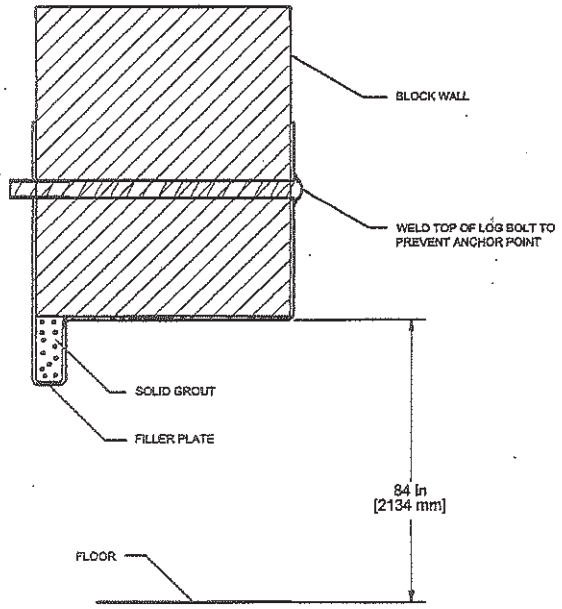
DOOR SWINGS

LH - LEFT HAND
LHR - LEFT HAND REVERSE
RH - RIGHT HAND
RHR - RIGHT HAND REVERSE

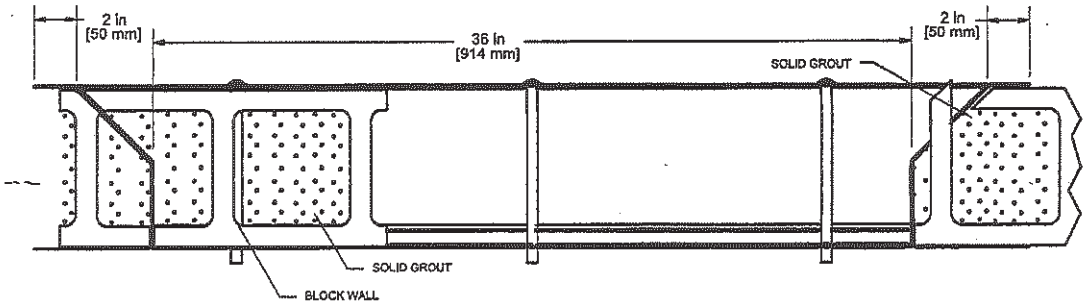
REVISIONS:	NOTES:		JOB:	
REVISION AS PER THE MEETING ON JULY 20, 2006		FINAL	CONTRACTOR:	
			DRAWN BY: CL JOHNSON	DATE: 9/26/2007
			W.O.#:	FILE NUMBER: / PG.#: 3

NOTE: FRAME MUST BE FULLY GROUTED FOR PROPER SLIDING ASSEMBLY INSTALLATION

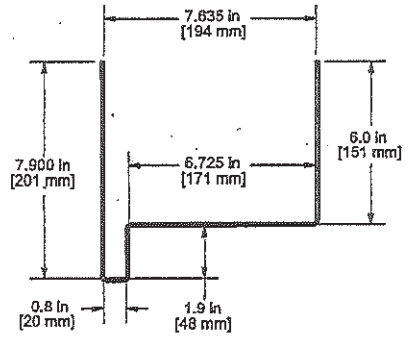
NOTE: OPTIONAL 2" LENGTH X 3/16" [51 x 5 mm] FILLER PLATE CONTINUALLY WELDED TO HEADER AND SIDES OF FRAME.

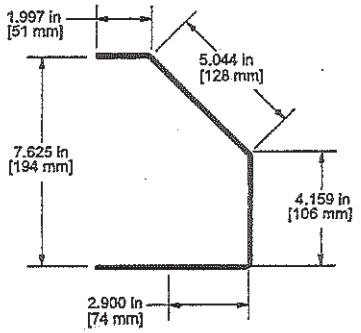


A-5 SECTION THROUGH FRAME



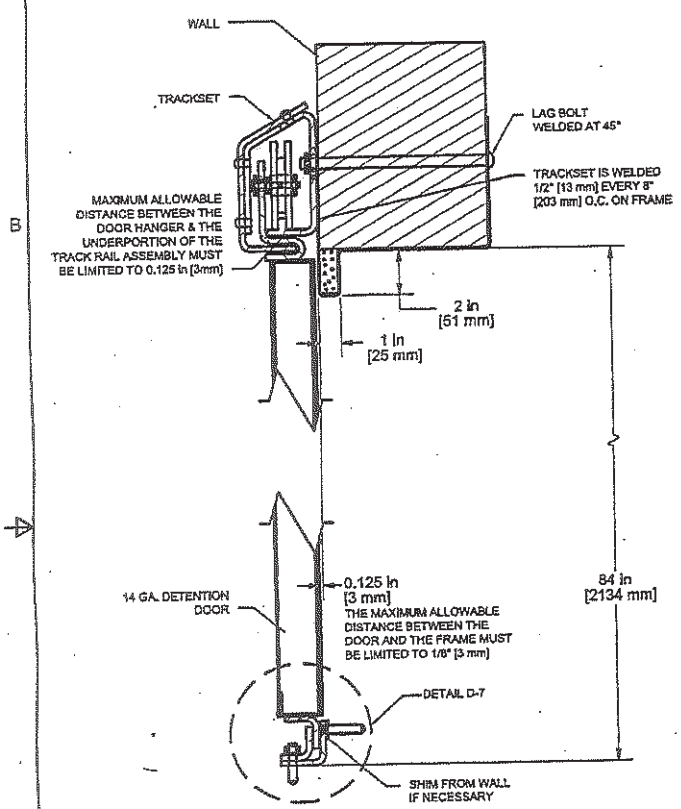
B-5 CROSS SECTION THROUGH JAMBS & HEADER





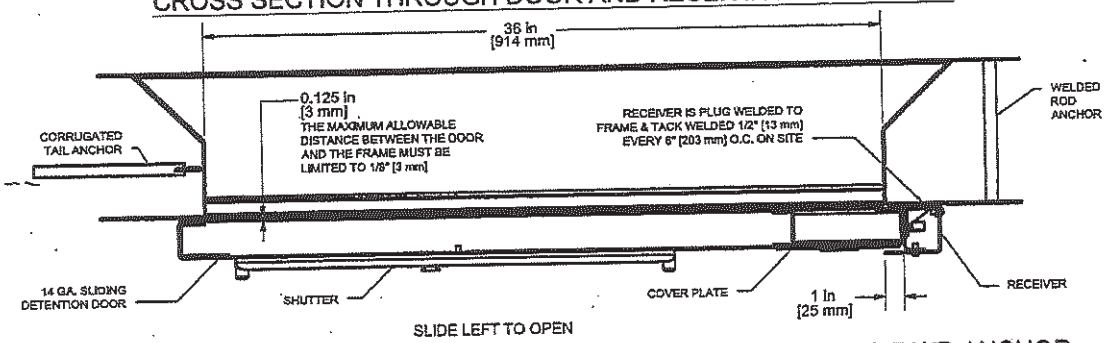
C-5 JAMB PROFILES FOR BENDING

REVISIONS:	NOTES:		JOB:	
REVISION AS PER THE MEETING ON JULY 20, 2006		FINAL	CONTRACTOR:	
			DRAWN BY: CL JOHNSON	DATE: 9/26/2007
			W.O.#:	FILE NUMBER: PG.#: 5



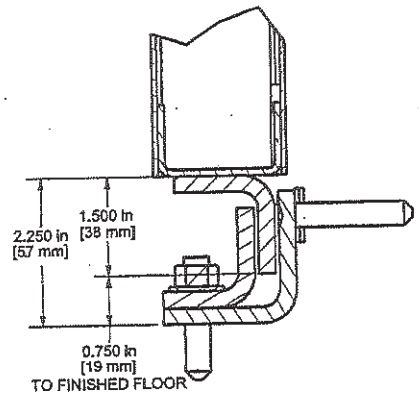
A-7 SECTION THROUGH TRACKSET AND DOOR

CROSS SECTION THROUGH DOOR AND RECEIVING ENCLOSURE

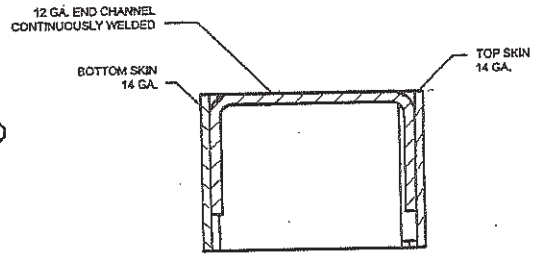


B-7 CT ANCHOR

C-7 WR ANCHOR

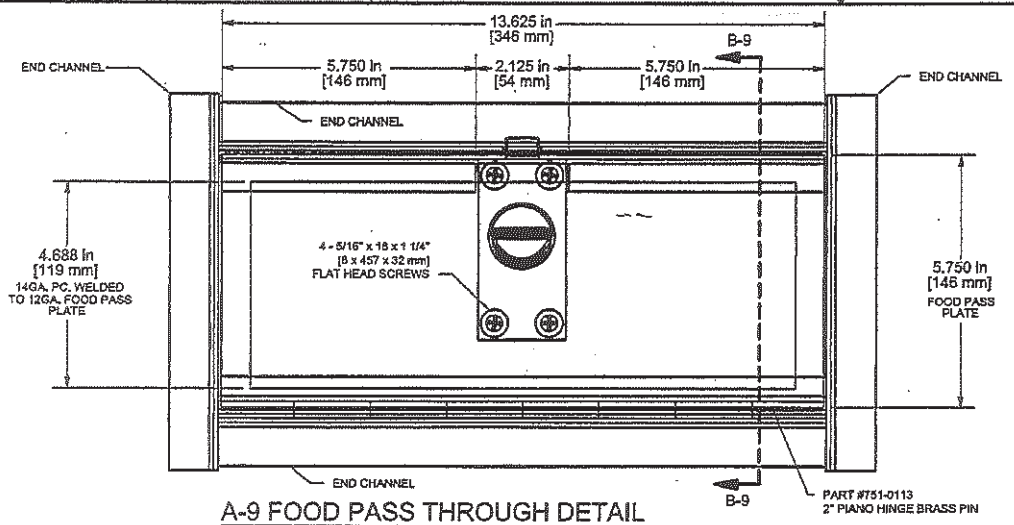


D-7 DETAIL

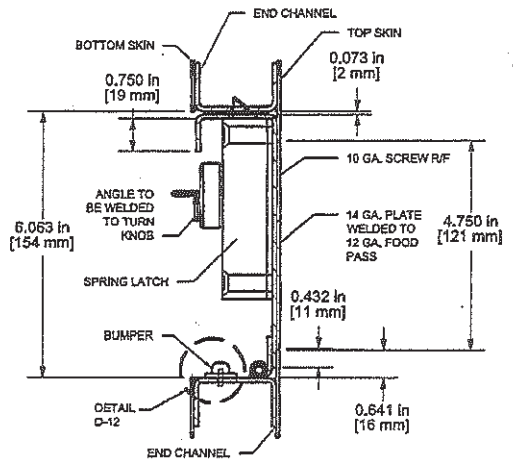


E-7 DETAIL TOP & BOTTOM END CHANNEL

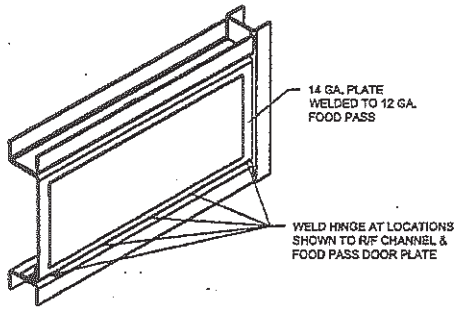
REVISIONS:	NOTES:		JOB:	
REVISION AS PER THE MEETING ON JULY 20, 2006	SEE A-3 FOR ADDITIONAL ANCHOR OPTIONS	FINAL	CONTRACTOR:	
			DRAWN BY: CL JOHNSON	DATE: 9/26/2007
			W.O.#:	FILE NUMBER: PG.#: 7



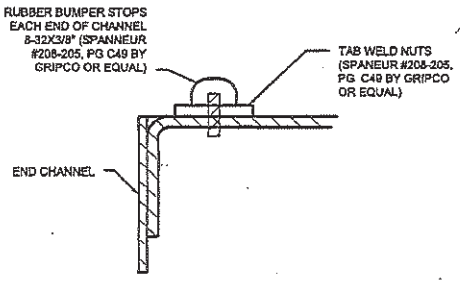
A-9 FOOD PASS THROUGH DETAIL



B-9 SECTION



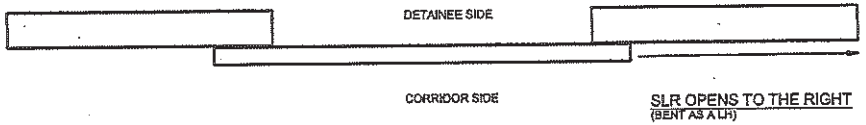
C-9 FOOD PASS THROUGH DETAIL



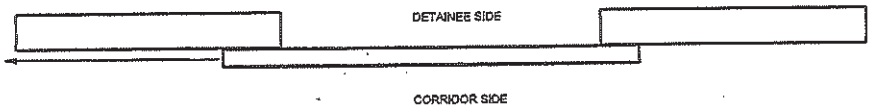
D-12 BUMPER DETAIL

REVISIONS:	NOTES:		JOB:	
REVISION AS PER THE MEETING ON JULY 20, 2006		FINAL	CONTRACTOR:	
			DRAWN BY: CL JOHNSON	DATE: 9/26/2007
			W.O.#:	FILE NUMBER: / PG.#: 9

A-11 SLIDING HANDING SHEET



SLR OPENS TO THE RIGHT
(BENT AS A LH)



SLL OPENS TO THE LEFT
(BENT AS A RH)

REVISIONS:	NOTES:		JOB:	
REVISION AS PER THE MEETING ON JULY 20, 2006		FINAL	CONTRACTOR:	
			DRAWN BY: CL JOHNSON	DATE: 9/26/2007
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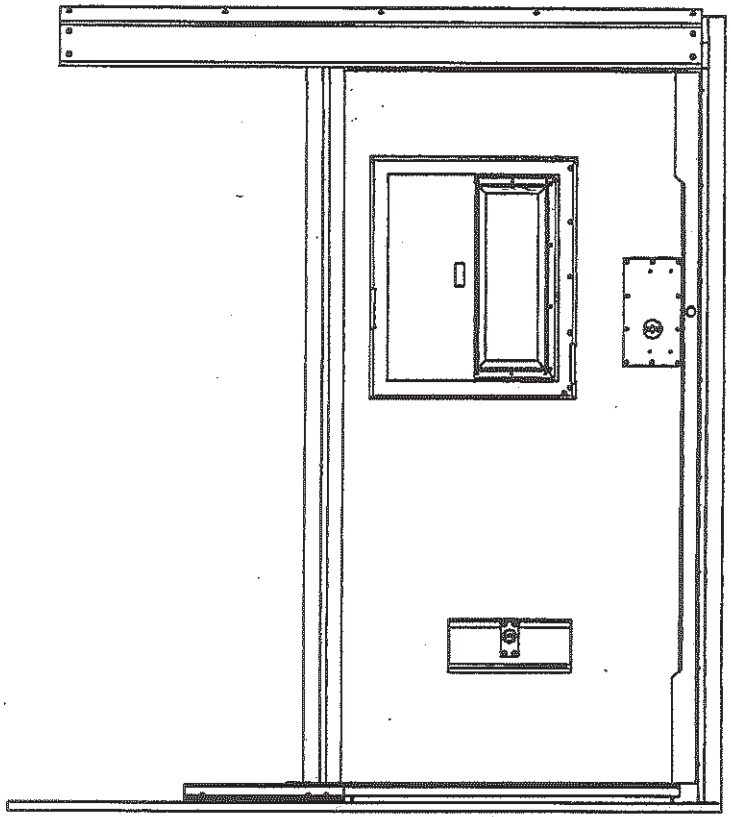
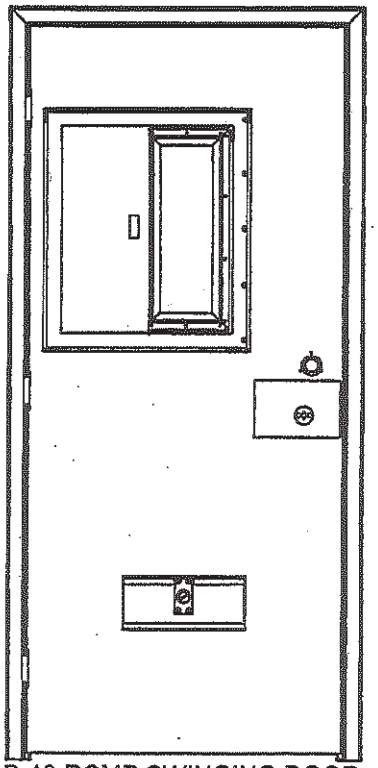


A-13 RCMP SLIDING DOOR



B-13 RCMP SWINGING DOOR

REVISIONS:	NOTES:		JOB:	
REVISION AS PER THE MEETING ON JULY 20, 2006		FINAL	CONTRACTOR:	
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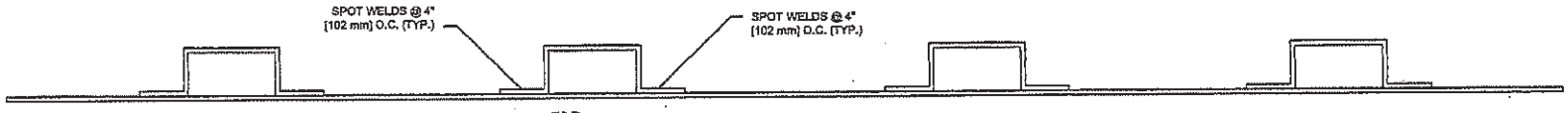
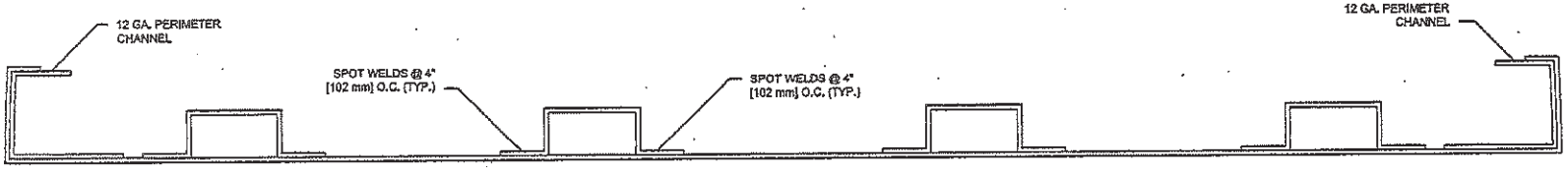
			W.O.#:	FILE NUMBER: / PG.#: 13

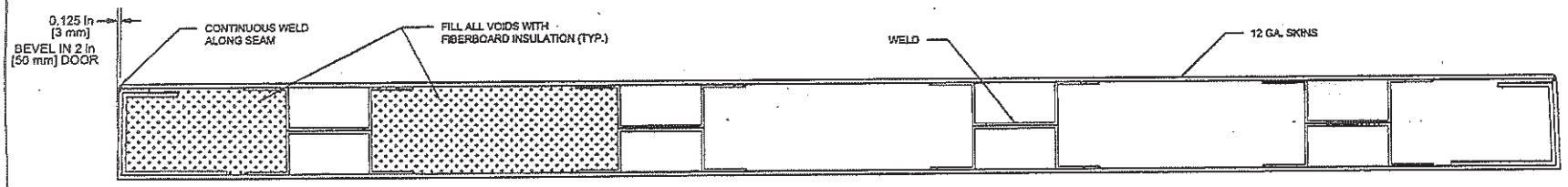
TYPE B CELL DOOR (SWINGING)



A-15 TOP SKIN PROFILE



B-15 BOTTOM SKIN PROFILE



C-15 TOP & BOTTOM SKIN ASSEMBLY PROFILE

REVISIONS:	NOTES:		JOB:	
REVISION AS PER THE MEETING ON JULY 20, 2006		FINAL	CONTRACTOR:	
			DRAWN BY: CL JOHNSON	DATE: 9/26/2007
			W.O.#:	FILE NUMBER: / PG.#: 15

GENERAL NOTES

DOOR FABRICATION

1. Fabricated rigid with 14ga. door skins. Skins to be free of visible seams, defects, pitting and waves.
   Door skins to be continuously welded to framing material.
   All welds are to be finish smooth and unnoticeable.
   Door composite core to be fibreboard insulation.
   Door will be prime painted in shop and touch up primer will be applied on site if necessary.

2. Door frames are to be made of 12 ga. steel.
   Door frames are to have mitred corners and be welded continuously along inside of door frame profile.
   All welds are to be finished smooth.
   Prime paint door frames in shop and touch up primer onsite if necessary.
   Jambs, headings, sills and center rails are to be straight and rigid throughout lengths.
   Frame profile, throat and width are manufactured to suit the location wall construction.
   Field shimming onsite may be necessary to meet desired clearances.

TRACKSET

3. Track sets will be fabricated from 10 ga. steel.
   Completed track sets will be prime painted in shop and then touch up paint will be applied if necessary onsite.
   Track set to be welded every 8" on door frame onsite.
   Distance between door and frame once door is on track set is to be limited to 3mm.

FOOD PASS

4. Food pass will be constructed from 14 ga. steel.
   Foods pass will be fully welded to end channels of pass frame.
   50 mm piano hinge is to be welded to frame.
   Spring latch lock is to be fastened to food pass door plate with four 5/16" flat head screws.
   Rubber bumper stops are to be installed at each end of channel.

DOOR SLIDER (VIEW PORT)

5. Sliding shutter to be fabricated from 12 ga. stainless steel plate.
   Teflon coating is to be applied to top and bottom of slider frame to ease in operation of slider.
   Glazing is to be 6mm margard, then a 6mm spacer finished with 6mm lexan. Spacer is to prevent contact between the two pieces of glazing.
   Margard is to be notched to be flush with the door skin.
   All fasteners to be ¼"-20 security screws.
   Door handle to be stainless steel fabrication, attached with two ¼-20 security screws.

1 General

1.1 RELATED SECTIONS

.1 Section 26 05 00 - Common Work Results for Electrical.

1.2 REFERENCES

.1 ASTM International (ASTM).
- .1 ASTM A123/A123M-13, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- .2 ASTM A653/A653M-13, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .3 ASTM D523-14, Test Method for Specular Gloss.
- .4 ASTM D2247-11, Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
- .5 ASTM D2794-93(2010), Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
- .6 ASTM D3359-09e2, Standard Test Methods for Measuring Adhesion by Tape Test.
- .7 ASTM D3363-05(2011)e2, Standard Test Method for Film Hardness by Pencil Test.
- .8 ASTM D4145-10, Standard Test Method for Coating Flexibility of Prepainted Sheet.
- .9 ASTM D4214-07(2015), Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films.
- .10 ASTM D5402-15, Standard Practice for Assessing the Solvent Resistance of Organic Coatings Using Solvent Rubs.

.2 Canadian General Standards Board (CGSB).
- .1 CAN/CGSB-1.181-99, Ready Mixed Organic Zinc-Rich Coating.

.3 Door & Access Systems Manufacturers' Association (DASMA).
- .1 ANSI/DASMA 102-2004, Specifications for Sectional Doors.

.4 Underwriters Laboratories (UL).
- .1 UL 325-2013, Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems.

1.3 DESIGN REQUIREMENTS

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

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 10 01 - General Requirements.

.2 Product Data:
- .1 Submit manufacturer's printed product literature, specifications and data sheet.

.3 Submit WHMIS MSDS - Material Safety Data Sheets.

.4 Shop Drawings:
.1 Indicate elevations, sizes, service rating, types, materials, operating mechanisms and their location, and details, hardware and accessories, required clearances and electrical requirements.

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

.6 Provide operation and maintenance data for overhead door hardware for incorporation into manual.

1.5 SUSTAINABLE DESIGN SUBMITTALS

.1 Construction waste management plan.
.1 A Construction Waste Management Plan is in place to divert waste material from landfill. Wherever practical, send waste material for reuse or recycling, and generally document this for the contractor's waste management final report.

.2 Recycled Content.
.1 Refer to Section 01 47 15 - Sustainable Requirements for "List of Products Requiring Recycled Content".
.2 If products within this section are indicated on the "List of Products Requiring Recycled Content", only products with recycled content will be acceptable.
.3 For products not identified on list, source products with highest recycled content available when practical.
.4 Include following information with product data submission.
.1 Percentage of pre-consumer and post-consumer recycled content for each product.

.3 Regional Materials.
.1 Refer to Section 01 47 15 - Sustainable Requirements for "List of Products Required to be Locally Sourced".
.2 If products within this section are indicated on the "List of Products Required to be Locally Sourced", include following information with Product Data submission:
.1 Extraction/Manufacturing location(s): Indicate location of extraction site or manufacturing plant, and indicate distance between extraction site or manufacturing plant and Project site.

.4 Adhesives and Sealants.
.1 Include following information with Product Data submission for materials specified under this section:
.1 Submit manufacturer's certification indicating VOC limits of Products used onsite and within the building envelope. Product shall comply with California's SCAQMD #1168.

.5 If requesting substitute product, ensure proposed substitution achieves above stated goals.

1.6 MAX. VOC CONTENT FOR SOLVENT CLEANING ACTIVITIES

.1 Following are some of the Maximum allowed VOC Content for following activities, as per SCAQMD Rule 1171-9 (refer to SCAQMD manual for complete list and updates):
.1 Product cleaning during onsite surface preparation for coatings or adhesives application, and repair and maintenance cleaning:
.1 General maximum VOC 25g/L.
.2 Electrical apparatus components and electronic components.

.3 Cleaning of coatings or adhesives application equipment max. VOC 25g/L.

.2 Refer to SCAQMD for additional information and clarification and complete list of applications.

.3 Any discrepancies are to be approved by Departmental Representative. Obtain written approval prior to use on site.

2 Products

2.1 MATERIALS

.1 Steel sheets: roll-formed from hot-dipped galvanized steel to ASTM A653/A653M, with coating designation of Z275.

.1 Prefinish steel sheets for door construction with silicone modified polyester.

.2 Aluminum extrusions: Aluminum Association alloy AA6063-T6.

.3 Insulation: foamed-in-placed polyurethane; CFC and HCFC-free.

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

2.2 DOORS

.1 Door Assembly: Metal/foam/metal sandwich panel construction; to ANSI/DASMA 102.

.1 Interior and exterior faces: 0.41 mm thick prefinished steel sheet.

.2 Thickness: 50 mm.

.3 End caps: 1.3 mm prefinished steel sheet.

.4 Insulation: Foamed in place polyurethane, fully encapsulated.

.2 Assemble components by means of spot or arc welding or coated rivet system or adhesive and self-tapping screws in accordance with manufacturer's recommendations.

.3 Fabricate doors from prefinished steel sheet.

2.3 HARDWARE

.1 Track: low headroom, fron mount design; 75 mm track fabricated from 2.3 mm core thickness galvanized steel.

.2 Spring counter balance: heavy duty oil tempered torsion spring with manufacturers standard brackets; 20,000 cycle.

.1 Drum: 100 mm diameter.

.2 Shaft: 25 mm diameter, solid, galvanized steel.

.3 Top roller carrier: galvanized steel 2.28 mm thick.

.4 Rollers: full floating grease packed hardened steel, ball bearing, solid steel tire.

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

.6 Hinges: heavy duty, galvanized.

.7 Cable: galvanized steel aircraft cable.

2.4 ACCESSORIES

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

.2 Track Supports: 2.3 mm core thickness, graduated to provide wedge type weathertight closing with continuous angle mounting, and shall be fully adjustable to seal door at jambs.

.3 Track guards: 5 mm thick formed sheet 1500 mm high.

.4 Track hanger crosspiece: steel angle or channel. Size and thickness as required to span distance to structural members and support weight of track and door.

.5 Weather stripping.
- .1 Sills: bulb type full width extruded neoprene weatherstrip.
- .2 Jambs and head: extruded aluminum and arctic grade vinyl weatherstrip to manufacturer's standard.
- .3 Provide vinyl seal between panels.

.6 Finish ferrous hardware items with minimum zinc coating of 300 g/m^2 to ASTM A123/A123M.

2.5 FINISH

.1 Silicone modified polyester.
- .1 Coating thickness: exposed surface 0.025 mm ± 0.002 mm; unexposed surface to have washcoat finish.
- .2 Colour: as selected by Departmental Representative from custom range.
- .3 Specular Gloss: to ASTM D523.
  - .1 20 to 80 at 60°.
- .4 Pencil Hardness: to ASTM D3363.
  - .1 F to 2H.
- .5 Formability: to ASTM D4145.
  - .1 2T to 4T, with no loss of adhesion.
- .6 Cross Hatch Adhesion: to ASTM D3359.
  - .1 No loss of adhesion.
- .7 Reverse Impact: to ASTM D2794.
  - .1 No loss of adhesion.
- .8 Humidity Resistance: to ASTM D2247.
  - .1 No field blisters @ 100% RH 1,000 Hours.
- .9 Colour change: to ASTM D 2244.
  - .1 No more than 5ΔE Hunter units at 90° vertical angle and 7ΔE non vertical at 30 years.
- .10 Chalk: to ASTM D4214.
  - .1 Rating no less than 8 at 90° angle and 6 at non vertical angle at 30 years.
- .11 Dry Film Thickness: to ASTM D 4138.
  - .1 Top coat: 0.018 mm to 0.020 mm
  - .2 Primer: 0.005 mm to 0.007 mm
  - .3 Total system: 0.023 mm to 0.027 mm
- .12 MEK Double Rubs: to ASTM D5402.
  - .1 150 Plus.

2.6 ELECTRICAL OPERATOR

.1 Electrical operator.
- .1 Low headroom lift doors: heavy duty commercial trolley operator.

.2 Electrical motors, controller units, remote pushbutton stations, relays and other electrical components: to CSA approval. Factory remove remote RF function from motor.

.3 Motor: 1/2 hp, 120 V, 3 phase, 60 Hz.

.4 Controller units with integral motor reversing starter, solenoid operated brake, overload protection, and control relays as applicable.

.5 Remote pushbutton stations: surface mounted, in locations indicated, with "OPEN-STOP-CLOSE" designations on pushbuttons.
- .1 Open and stop buttons: momentary contact type.
- .2 Close button: constant pressure type.
- .3 Provide keyswitch to disable controls.

.6 Safety features:
- .1 Safety edge: electro-mechanical type reversing weatherstripping for full length of bottom rail; to reverse door to open position when coming in contact with object on closing cycle.
- .2 Photo eyes: through-beam sensor, watertight and dust-tight; complete with emitter, receiver and mounting brackets.

.7 Release mechanism:
- .1 Spring loaded hook, attached to door bracket; that disengages operator from door.

.8 Door speed: 300 mm per second.

.9 Control transformer: for 24 VAC control voltage.

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

3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

.1 Install doors 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.
- .1 Division 26 is responsible for provision of all wiring and for making electrical connections.

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

.6 Adjust weatherstripping to form a weather tight seal.

.7 Adjust doors for smooth operation.

3.3 ERECTION TOLERANCES

.1 Maximum variation from plumb: 1.5 mm.

.2 Maximum variation from level: 1.5 mm.

.3 Longitudinal or diagonal warp: 3 mm ± in 3 m.

.4 Maintain dimensional tolerances and alignment with adjacent work.

3.4 CLEANING

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

.2 Remove traces of primer and sealant; clean doors and frames.

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

END OF SECTION

1 General

1.1 RELATED SECTIONS

.1 Section 05 05 13 - Fluoropolymer Coating.

.2 Section 07 92 10 - Joint Sealing.

.3 Section 08 11 16 - Aluminum Doors and Frames: aluminum panel in doors.

.4 Section 08 80 00 - Glazing: glass and glazing material.

1.2 REFERENCES

.1 ASTM International (ASTM).
- .1 ASTM A123/A123M-13, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- .2 ASTM B209-10, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- .3 ASTM C920-14, Specification for Elastomeric Joint Sealants.
- .4 ASTM E283-04(2012), Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- .5 ASTM E331-00(2009), Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

.2 Canadian Standards Association (CSA)
- .1 AAMA/WDMA/CSA 101/I.S.2/A440-08 - NAFS - North American Fenestration Standard / Specification for Windows, Doors, and Skylights.

1.3 CURTAIN WALL PERFORMANCE REQUIREMENTS

.1 Design and size components to withstand dead and live loads caused by pressure and suction of wind, acting normal to plane of system as calculated in accordance with National Building Code.

.2 Design and size components to withstand seismic loads and sway displacement as calculated in accordance with National Building Code.

.3 Limit mullion deflection to L/175; with full recovery of glazing materials.

.4 Provide system to accommodate, without damage to components or deterioration of seals:
- .1 Movement within system.
- .2 Movement between system and perimeter framing components.
- .3 Dynamic loading and release of loads.
- .4 Deflection of structural support framing.
- .5 Shortening of building concrete structural columns.
- .6 Creep of concrete structural members.

.5 System to provide for expansion and contraction within system components caused by a cycling temperature range of 95°C over a 12 hour period without causing detrimental effect to system components.

.6 Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to the exterior by a weep drainage network.

.7 Maintain continuous air barrier and vapour retarder throughout assembly, primarily in line with inside pane of glass and heel bead of glazing compound or other method acceptable to Departmental Representative. Position thermal insulation on exterior surface of air barrier and vapour retarder.

.8 Ensure no vibration harmonics, wind whistles, noises caused by thermal movement, thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of system occur.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 10 01 - General Requirements.

.2 Submit shop drawings clearly indicating:
- .1 Materials, dimensions, gauges, profiles, finishes.
- .2 Elevations and dimensions of units.
- .3 Large scale details (half-scale or full-scale) at head, jamb and sill. Include installation and anchorage information. Show actual wall construction for each window installation. Show tie-in with air/vapour retarder systems.
- .4 Complete glazing system including glazing, drain/weep hole locations, heel/toe beads, glazing tapes, gaskets, cap beads.
- .5 Other relevant details and information required for proper installation.

.3 Submit product data for:
- .1 Window frames.
- .2 Operable vent hardware.
- .3 Sun shades.
- .4 Technical data for finishes including thickness.

1.5 TEST REPORTS

.1 Submit test reports from approved independent testing laboratories, certifying compliance with specifications, for:
- .1 Window classifications: as specified below.
- .2 Air tightness.
- .3 Water tightness.
- .4 Wind load resistance.

1.6 MAINTENANCE DATA

.1 Provide operation and maintenance data for windows for incorporation into maintenance manual.

1.7 SUSTAINABLE DESIGN SUBMITTALS

.1 Construction waste management plan.
- .1 A Construction Waste Management Plan is in place to divert waste material from landfill. Wherever practical, send waste material for reuse or recycling, and generally document this for the contractor's waste management final report.

.2 Recycled Content.
- .1 Refer to Section 01 47 15 - Sustainable Requirements for "List of Products Requiring Recycled Content".
- .2 If products within this section are indicated on the "List of Products Requiring Recycled Content", only products with recycled content will be acceptable.
- .3 For products not identified on list, source products with highest recycled content available when practical.

.4 Include following information with product data submission.
.1 Percentage of pre-consumer and post-consumer recycled content for each product.

.3 Regional Materials.
.1 Refer to Section 01 47 15 - Sustainable Requirements for "List of Products Required to be Locally Sourced".
.2 If products within this section are indicated on the "List of Products Required to be Locally Sourced", include following information with Product Data submission:
.1 Extraction/Manufacturing location(s): Indicate location of extraction site or manufacturing plant, and indicate distance between extraction site or manufacturing plant and Project site.

.4 Adhesives and Sealants.
.1 Include following information with Product Data submission for materials specified under this section:
.1 Submit manufacturer's certification indicating VOC limits of Products used onsite and within the building envelope. Product shall comply with California's SCAQMD #1168.

.5 Paints and Coatings.
.1 Provide low VOC Products as specified herein and complying with local regulations regarding toxic and hazardous materials.
.2 Ensure primers, paints and coatings used onsite and within building envelope meet or exceed requirements of following standards:
.1 Interior and Exterior Paints: GS-11
.2 Anti-Corrosive Paint: GS-11
.3 Clear Wood Finishes and other coating not covered in GS-11: SCAQMD #1113.
.3 Submit manufacturer's certification indicating VOC limits of Products.

.6 If requesting substitute product, ensure proposed substitution achieves above stated goals.

1.8 MAX. VOC CONTENT FOR SOLVENT CLEANING ACTIVITIES

.1 Following are some of the Maximum allowed VOC Content for following activities, as per SCAQMD Rule 1171-9 (refer to SCAQMD manual for complete list and updates):
.1 Product cleaning during onsite surface preparation for coatings or adhesives application, and repair and maintenance cleaning:
.1 General maximum VOC 25g/L.
.2 Electrical apparatus components and electronic components.
.3 Cleaning of coatings or adhesives application equipment max. VOC 25g/L.
.2 Refer to SCAQMD for additional information and clarification and complete list of applications.
.3 Any discrepancies are to be approved by Departmental Representative. Obtain written approval prior to use on site.

1.9 WASTE MANAGEMENT AND DISPOSAL

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

.2 Divert unused caulking material from landfill to official hazardous material collections site approved by Departmental Representative.

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

1.10 WARRANTY

.1 Contractor hereby warrants aluminum windows against air leakage, water leakage and for wind load resistance (in accordance with AAMA/WDMA/CSA 101/I.S.2/A440, defects, broken and loose hardware and malfunction under normal usage.

.2 The warranty period is, with respect to this section of the work, extended from one (1) year to five (5) years.

.3 Leaking, fading and discolouration, deforming and faulty operation of hardware shall be judged as defective work.

2 Products

2.1 CURTAIN WALL SYSTEM

.1 Curtain wall system: thermally broken, extruded aluminum, stick-built construction. Design of assembled system permits re-glazing of individual glass and infill panels from exterior without requiring removal of structural mullions.
  .1 Structural silicone glazed where indicated; elsewhere, capped.
  .2 In addition to thermal break, provide thermal barrier gasket between pressure plate and mullion.

.2 Mullions and horizontals: 63 mm face x 73 mm beam size.

.3 Exterior cap: snap-on type, 63 mm high.

.4 Pressure plate: extruded aluminum.

2.2 OPERABLE VENTS

.1 Operable vents: zero sight line structural glazed aluminum frame, projecting awning windows with double glazed insulating glass units and concealed tamperproof fasteners.

.2 Main frame depth: 108 mm.

.3 Hardware:
  .1 Hinge: heavy duty 4-bar type, stainless steel.
  .2 Operator: die-cast zinc, roto-operator with hardened steel gears; painted finish to match window frame.
  .3 Limited opening device: stainless steel, with key release, concealed application. Supply one release key for each room.
  .4 Locks: Provide operating sash with 2 locking claw handles

.4 Screens: to CAN/CGSB-79.1-M, extruded aluminum frame with fibreglass screen cloth. Finish of screen frame to match window frame.

2.3 MATERIALS

.1 Aluminum: Aluminum Association alloy 6063-T5.

.2 Sheet aluminum: to ASTM B209M.

.3 Sheet steel: to ASTM A653/A653M, zinc coated to Z180 designation.

.4 Fasteners: Series 300 stainless steel or 400 series stainless steel, cadmium plated, of sufficient strength to perform the function for which they are intended.

.5 Thermal break: polyvinylchloride.

.6 Weathering and glazing splines: extruded black neoprene of Durometer appropriate for the function.

.7 Glass stops: lock-in screwless type.

.8 Pocket filler: rigid PVC.

.9 Sealant: multi-component urethane to ASTM C920, Type M, Grade NS, Class 25.

.10 Glazing material: as specified in Section 08 80 00 - Glazing.

.11 Insulation: fibreglass batt, expanded polystyrene or foamed-in-place urethane.

.12 Sill: brake-formed from 0.81 mm thick sheet aluminum, profile as indicated.

.13 Spandrel panel:
- .1 Outer face: spandrel glass as specified in Section 08 80 00 - Glazing.
- .2 Core: mineral fibre insulation: to CAN/ULC S702, semi-rigid board, 32 kg/m^3 minimum 35% recycled content.
- .3 Back pan:
  - .1 At concealed locations: Fabricate from 0.76 mm thick zinc coated sheet steel.
  - .2 Where exposed to view: Fabricate from sheet aluminum or from 0.76 mm thick zinc coated sheet steel clad with sheet aluminum. Finish to match aluminum frame.
  - .3 Provide internal reinforcing in back pan as required to suit span.

.14 Sun shades: extruded aluminum construction.
- .1 Style:
  - .1 Outrigger: straight-square.
  - .2 Fascia: rectangular.
  - .3 Blades: planar.
- .2 Finish: to match mullions.
- .3 Provide anchorage as required.

2.4 AIR / VAPOUR RETARDER INTERFACE SHEET

.1 Provide strip of air / vapour retarder material for tying aluminum frames into wall air / 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 / vapour retarder from interior.

2.5 FINISHES

.1 Aluminum finish: Finish exposed surfaces of aluminum components with fluropolymer coating as specified in Section 05 05 13 - Fluoropolymer Coating.

.2 Finish steel clips and reinforcing steel with zinc coating in accordance with ASTM A123/A123M; 600 g/m^2.

.3 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.

2.6 FABRICATION

.1 Shop drawings shall be reviewed before any fabrication begins.

.2 Accurately fabricate and fit components in the shop in accordance with details and reviewed shop drawings.

.3 Build units square, true, accurate to size, free from distortions, waves, twists, buckles and other defects detrimental to appearance and performance.

.4 Accurately machine, fit, assemble and seal joints to provide neat, weathertight joinery.

.5 When units are too large to handle or ship fully assembled, temporarily assemble unit in shop and mark pieces for reassembly in field. Disassemble unit to allow for shipping and handling.

.6 Insulate joints of unlike materials with bituminous paint to prevent electrolytic action or chemical action.

.7 Assemble framing by means of screws driven through the walls and into integrally extruded screw channels of abutting sections.

.8 Provide weep/drain holes to from glazing cavity to outside to provide "rain-screen" system. Quantity of holes as recommended by window manufacturer.

.9 All members shall have thermal break PVC extrusion integrated with inner and outer aluminum extrusion by a roll-crimping process to form a rigidly interconnected assembly without the use of fasteners or other thermal bridging elements.

.10 Prepare frame and sash to accommodate glazing as specified in Section 08 80 00 - Glazing.

.11 All horizontal members must form individually pressure equalized and sealed gutter members.

.12 Provide and design vertical expansion and construction joints for baffled overlaps with a compressed resilient air seal laid in between mullion ends.

.13 Structural anchors for curtain wall shall have three-way adjustment and be welded after curtain wall alignment. Field paint touch-up shall follow welding operation.

.14 Spandrel back pans:

- .1 Fabricate spandrel back pans with edges around perimeter of panel assembly, enabling installation and minor movement of perimeter seal.
- .2 Seal joints at corners to provide air tight joints.
- .3 Reinforce interior surface of exterior panel sheet from deflection caused by wind and suction loads.
- .4 Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.
- .5 Place insulation within panel, adhered to exterior face of interior panel sheet over entire area of sheet with impale fasteners.

.15 Equip each top-project-out unit with the following hardware: two hinges, two locking handles and one operator. Provide two limited opening devices per window. Install limited opening device to limit sash opening to no more than 100 mm.

2.7 PERFORMANCE REQUIREMENTS

.1 Window performance: comply with requirements of AAMA/WDMA/CSA 101/I.S.2/A440, minimum classification as follows:
- .1 Fixed window unit:
  - .1 Air tightness - fixed.
  - .2 Water tightness - B7.
  - .3 Wind load resistance - C5.
- .2 Operable vent:
  - .1 Air tightness - A3.
  - .2 Water tightness - B7.
  - .3 Wind load resistance - C5.
  - .4 Forced Entry: F10.

.2 Curtain wall performance: comply with the following requirements.
- .1 Air in or ex-filtration: maximum of 0.0003 $m^3/s \cdot m^2$ when tested in accordance with ASTM E283, at 75 Pa pressure difference.
- .2 Water infiltration: none, when tested in accordance with ASTM E331, with pressure differential of 480 Pa.
- .3 Thermal performance: no condensation shall form on any interior surface of aluminum before any condensation forms on exposed area of a 25 mm insulating glass unit.

3 Execution

3.1 INSTALLATION

.1 Install work plumb, square, level, free from warp, twist and superimposed loads.

.2 Install shims at quarter points directly below setting blocks. Cut shims back from face to frame to allow installation of backer rod and sealant.

.3 Securely anchor windows to contiguous work. Use concealed fixings where possible; otherwise, use flat-head screws in countersunk holes. Fasten through shims.

.4 Attach screens to interior side using turnclips.

.5 Insulate perimeter frame with either type insulation specified in part 2. Take care when installing insulation to ensure no voids remain.

.6 Air/vapour retarder to frame connection.
- .1 Window and curtain wall frames require connection to air/vapour retarder to maintain continuity of air/vapour retarder assembly.
- .2 Make connection by extending air/vapour retarder or transition membrane into glazing pocket of curtain wall.

.7 Install sill under uniform wash to exterior, level in length, straight in alignment with plumb upstands and faces.

.8 Install aluminum closures.

.9 Site tolerances:
- .1 Maximum variation from plane: 3 mm in 3600 mm of length up to not more than 13 mm in total length, whichever is less.
- .2 Maximum misalignment of two adjoining members abutting in plane: 0.8 mm.
- .3 Maximum sealant space between curtain wall and adjacent construction: 13 mm.

3.2 GLAZING - GENERAL

.1 Check openings before glazing to make certain opening is square, plumb and secure. Seal each butt and mitre joint of interior with small bead of sealant.

.2 Thoroughly wipe surfaces receiving glazing materials with a clean cloth dampened with xylol or MEK. Wipe dry with a clean, dry cloth.

.3 Use setting blocks of suitable size at quarter points.

.4 Ensure glazing unit is centred in opening and that metal surround is not exposed above stop.

.5 Select glazing system in consultation with frame and sealant manufacturer and submit to Departmental Representative for review of shop drawing stage.

.1 Dry/dry application incorporating compression gasket at fixed stop, continuous heel bead of acrylic sealant and dense gasket on removable stop. Cap exterior gasket with silicone if gasket has flat top.

.2 Wet/dry application incorporating preshimmed glazing tape and silicone cap bead at exterior, continuous heel bead of acrylic sealant and dense gasket at interior.

.3 Wet/wet application incorporating preshimmed glazing tape and silicone cap bead at exterior, continuous heel bead of acrylic sealant, continuous spacer shim and silicone cap bead at interior.

.4 Do not place cap bead during winter construction. Only apply cap bead during spring, summer or fall.

3.3 CAULKING

.1 Prepare joint and apply sealant in accordance with Section 07 92 10 - Joint Sealing. Conceal sealant within aluminum work where possible. Fillet joint will not be acceptable.

.2 Caulk joints between members and other non-operating components with sealant to provide weathertight seal at outside and air seal at inside.

END OF SECTION

1 General

1.1 WORK BY OTHERS

.1 Supply and installation of card readers, keypads and associated components.

.2 Supply, installation and connection of wire, relays and other products necessary between devices.

1.2 RELATED SECTIONS

.1 Section 08 11 00 - Steel Doors and Frames: conduit within door.

.2 Section 08 11 16 - Aluminum Doors and Frames.

.3 Section 08 14 16 - Wood Doors.

.4 Division 26 - Electrical.

.5 Division 28 - Electronic Safety and Security.

1.3 REFERENCES

.1 Canadian Steel Door Manufacturer's Association (CSDMA):
  .1 CSDMA, Recommended Dimensional Standards for Commercial Steel Doors and Frames, 2000.

.2 Builders Hardware Manufacturers Association (BHMA)
  .1 ANSI/BHMA A156.2-2003, Bored and Preassembled Locks and Latches.
  .2 ANSI/BHMA A156.1-2006, Butts & Hinges.
  .3 ANSI/BHMA A156.3-2008, Exit Devices.
  .4 ANSI/BHMA A156.4-2008, 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 A156.13-2005, Mortise Locks & Latches, Series 1000.
  .9 ANSI/BHMA A156.15-2006-2006, Release Devices - Closer Holder, Electromagnetic and Electromechanical.
  .10 ANSI/BHMA A156.16-2008, Auxiliary Hardware.

1.4 REQUIREMENTS OF REGULATORY AGENCIES

.1 Use ULC listed and labelled hardware for doors in fire separations and exit doors.

1.5 SAMPLES

.1 Submit samples of each type hardware specified, in accordance with Section 01 10 01 - General Requirements.

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

.3 After review, samples will be returned for incorporation into the Work.

1.6 SHOP DRAWINGS

.1 Submit hardware schedule in accordance with Section 01 10 01 - General Requirements.

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

.3 Cross reference hardware set numbers, listed herein, with shop drawing hardware set numbers.

.4 Submit wiring diagrams for each door opening having electric hardware.

1.7 SUSTAINABLE DESIGN SUBMITTALS

.1 Construction waste management plan.
- .1 A Construction Waste Management Plan is in place to divert waste material from landfill. Wherever practical, send waste material for reuse or recycling, and generally document this for the contractor's waste management final report.

.2 Recycled Content.
- .1 Refer to Section 01 47 15 - Sustainable Requirements for "List of Products Requiring Recycled Content".
- .2 If products within this section are indicated on the "List of Products Requiring Recycled Content", only products with recycled content will be acceptable.
- .3 For products not identified on list, source products with highest recycled content available when practical.
- .4 Include following information with product data submission.
  - .1 Percentage of pre-consumer and post-consumer recycled content for each product.

.3 Regional Materials.
- .1 Refer to Section 01 47 15 - Sustainable Requirements for "List of Products Required to be Locally Sourced".
- .2 If products within this section are indicated on the "List of Products Required to be Locally Sourced", include following information with Product Data submission:
  - .1 Extraction/Manufacturing location(s): Indicate location of extraction site or manufacturing plant, and indicate distance between extraction site or manufacturing plant and Project site.

.4 Adhesives and Sealants.
- .1 Include following information with Product Data submission for materials specified under this section:
  - .1 Submit manufacturer's certification indicating VOC limits of Products used onsite and within the building envelope. Product shall comply with California's SCAQMD #1168.

.5 If requesting substitute product, ensure proposed substitution achieves above stated goals.

1.8 MAINTENANCE DATA

.1 Provide operation and maintenance data for door closers, locksets, and door holders for incorporation into manual specified in Section 01 10 01 - General Requirements.

.2 Brief maintenance staff regarding proper care, cleaning, and general maintenance.

1.9 MAINTENANCE MATERIALS

.1 Supply two sets of wrenches for door closers and locksets.

1.10 PREINSTALLATION MEETING

.1 Arrange meeting prior to installation of hardware, to review methods for installing and adjusting hardware.

.2 Contractor, hardware installers, Departmental Representative and hardware manufacturer's representative shall be in attendance.

1.11 MAX. VOC CONTENT FOR SOLVENT CLEANING ACTIVITIES

.1 Following are some of the Maximum allowed VOC Content for following activities, as per SCAQMD Rule 1171-9 (refer to SCAQMD manual for complete list and updates):
- .1 Product cleaning during onsite surface preparation for coatings or adhesives application, and repair and maintenance cleaning:
  - .1 General maximum VOC 25g/L.
  - .2 Electrical apparatus components and electronic components.
  - .3 Cleaning of coatings or adhesives application equipment max. VOC 25g/L.
- .2 Refer to SCAQMD for additional information and clarification and complete list of applications.
- .3 Any discrepancies are to be approved by Departmental Representative. Obtain written approval prior to use on site.

1.12 DELIVERY AND STORAGE

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

.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 Products

2.1 DOOR HARDWARE

.1 Hinges: to ANSI/BHMA A156.1, type numbers and sizes listed in hardware schedule. Provide non-removal pins (NRP) where indicated.
- .1 Full mortise, ball bearing - 5-knuckle.
  - .1 Standard weight, steel: BHMA Code A8112.
    - .1 Acceptable Materials: BB1279 by Hager, TA2714 by McKinney, FBB179 by Stanley.
  - .2 Heavy weight, brass or bronze: BHMA Code A2111.
    - .1 Acceptable Materials: BB1199 by Hager, T4A3386 by McKinney, FBB199 by Stanley.

.2 Lock and latchsets (mortised): to ANSI/BHMA A156.13, designed for function as stated in schedule, having latch bolt throw of 19 mm and dead bolt throw of 25 mm. Proide box strike for dead bolts.
- .1 Trim: Barrier-free compliant lever trim as selected by Departmental Representative; knob where scheduled.
- .2 Mechanical functions:
  - .1 Passage: BHMA F01.
  - .2 Office: BHMA F04.
  - .3 Storeroom, cylinder one side: BHMA F07.
  - .4 Dormitory: BHMA F13.
  - .5 Storeroom, cylinder two sides: BHMA F14.
  - .6 Deadlock: BHMA F18.

.7 Hotel Guest: BHMA F15.
.8 Dummy trim, no fasteners on opposite side.
.9 Only the following products series will be considered (no substitutions): 8200 Series by Sargent, L9000 Series by Schlage; ML2200 Series by Corbin/Russwin.

.3 Electric functions:
.1 cUL rated for use on fire doors, 12 or 24VDC to suit power supply (provided by others); lever handles, solenoid operated.
.2 Function: similar to BHMA F15, modified as follows:
.1 Lever outside with no power applied remains in locked condition.
.2 Lever inside simultaneously retracts latch and deadbolt.
.3 Access granted by use of credential, unless deadbolt is thrown.
.4 Only the following product will be considered (no substitutions): RX DX 8271 c/w 130KB thumbturn by Sargent.
.3 Wire transfer device: UL listed, spring steel helix having 8 mm internal diameter; housing of stamped 1.5 mm thick steel; length to suit.

.3 Cylinders: to ANSI/BHMA A156.5; construction key system only. Permanent cylinders will be provided by others.

.4 Normal strikes: box type, lip projection not beyond jamb ASA dimensions.

.5 Latch Guard: Fabricated from 2.4 mm thick stainless steel, suitable for ANSI Series 1000 mortise locks and ANSI Series 4000 cylindrical locks, thru-bolted into pins on back of guard - no exposed fasteners on face of unit; 32D finish.

.6 Electric strike:
.1 Construction: Stainless steel, tamper resistant, internal solenoid.
.2 Opening force required: 10.7 kN.
.3 Operation: fail secure.
.4 Electrical requirements: 12 VDC.
.5 Functions: Non-handed, horizontal adjustment, continuous duty.
.6 Mounting: mortise type.
.7 Bolts: strike shall be capable of containing and releasing deadbolts, latch bolts and deadlocking latch bolts as required by lock function.
.8 Face Plates: to suit lock manufacturer, type and function. Finish to match door hardware finish.
.9 Latch guard: stainless steel, thru-bolted with no exposed fasteners on exterior side.
.10 Power supply: 120 V input, 12 VDC output x amperage required.
.11 Only the following product will be considered (no substitutions): Folger Adam 310-3-1 heavy-duty electric strike with deadbolt keeper by HES.

.7 Door closers: to ANSI/BHMA A156.4, modern type, surface application; full cover. Closer to have aluminum or cast-iron case, full plastic covers, adjustable closing power, and back checking action. Silver lacquer finish. Mounting, arms and brackets as listed in schedule.
.1 Wide design (for doors to exterior): top jamb mounting with mounting plate; BHMA Code C02041 with C02191 mounting plate.
.1 Aluminum case:
.1 Acceptable Materials: 351-OZ & 351-B by Sargent.
.2 Cast-iron case:
.1 Acceptable Materials: DC8220 & 754F24 by Corbin/Russwin, 4020 Series & 4020-18 by LCN, 281-OZ & 281-B by Sargent.

.2 Narrow design (for interior doors):
.1 Standard mounting; BHMA Code C02011
.1 Aluminum case:
.1 Acceptable Materials: 1431-O by Sargent.
.2 Cast-iron case:
.1 Acceptable Materials: DC6200 by Corbin/Russwin, 1460-Series by LCN.
.2 Top jamb mounting with mounting plate; BHMA Code C02041 with C02191 mounting plate
.1 Aluminum case:
.1 Acceptable Materials: 1431-OZ & 1431-B by Sargent.
.2 Cast-iron case:
.1 Acceptable Materials: DC6220 by Corbin/Russwin, 1460-Series by LCN.
.3 Parallel arm mounting: BHMA Code C02021; heavy duty arms.
.1 Aluminum case:
.1 Acceptable Materials: 1431-P3/4 by Sargent, PA3301 by Yale.
.2 Cast-iron case:
.1 Acceptable Materials: DC2210 by Corbin/Russwin, 1460-Series by LCN.

.8 Push plates: to ANSI/BHMA A156.6, 89 mm x 381 mm x 1.27 mm thick; BHMA Code J301, unbevelled edges

.9 Door pulls: to ANSI/BHMA A156.6, stainless steel.
.1 With plate: 225 mm pull size, 89 mm x 381 mm x 1.27 mm plate with 25 mm diameter pull, BHMA Code J405.

.10 Cylinder pulls: brass or bronze material, approximately 70 mm x 47 mm, cylinder cut-out size to suit.
.1 Acceptable Materials: 980/980B by Gallery or H407/H408 by Standard Metal.

.11 Kick plates: to ANSI/BHMA A156.6, BHMA Code J102, width less 41 mm on push side of door and 25 mm on pull side of door than width of door x 250 mm high x 1.27 mm thick, unbevelled edges.

.12 Overhead holder/stop: to ANSI/BHMA A156.8, slide action, size to suit door width. Type and function as listed in schedule.
.1 Surface mounted
.1 Heavy duty, stop only function: BHMA Code C02541.
.2 Medium duty, stop only function: BHMA Code C05541.
.3 Heavy duty, hold open function: CGSB Type C02511.
.2 Concealed mounted:
.1 Heavy duty, stop only function: BHMA Code C01541.

.13 Lever extension flush bolts: to ANSI/BHMA A156.16, BHMA Code L04251, cast or extruded brass, fire-rated where required, 300 mm long rod unless noted otherwise, 19 mm backset, including mortised keeper and BHMA Code L04021 dust-proof strike.

.14 Door stop: to ANSI/BHMA A156.16, floor mounted, dome style, classification L02141. Use L02161 in lieu of L02141 when required to suit conditions.

.15 Thresholds: extruded aluminum, mill finish, serrated surface, type and size indicated x full width of door opening.
- .1 Thermally broken type: 125 mm to 133 mm, rigid PVC thermal barrier.
  - .1 Acceptable Materials: CT-45 by K.N. Crowder, DS501TB by DraftSeal, 421S by Hager, 252X3AFG by Pemko.
- .2 Thermally broken modular type: 400 mm wide: modular design, consisting of five (5) pieces joined with PVC thermal breaks. Construct from two 125 mm beveled edge pieces and three 50 mm inner pieces.
- .3 Interlocking: consisting of 12.7 mm high x 108 mm to 127 mm deep extruded aluminum threshold and interlocking hook strip.
  - .1 Acceptable Materials: 604S by Hager, Model 114 by Pemco.
- .4 Fasteners: self-tapping concrete screws; colour matched to threshold.

.16 Weatherstripping:
- .1 To accept closer/overhead stop: clear anodized, extruded aluminum retainer, U-shaped to allow for mounting of closers and overhead holders/stops, 45 mm wide x 7.9 mm thick with bulb seal; length equal to jambs and head.
  - .1 Acceptable Materials: W-20N by K.N. Crowder, DS118 by DraftSeal.

.17 Smoke seals:
- .1 Bulb type: Silicone bulb with self-adhesive backing, black/bronze colour; length equal to jambs and head.
  - .1 Acceptable Materials: W-22 by K.N. Crowder, DSS66 by Draftseal, 726-S by Hager, S88 by Pemko or #188S by Zero.

.18 Door bottom seal: operable and automatic door seal of aluminum frame and vinyl weather seal, closed ends, automatic retract mechanism when door is open, minimum 13 mm drop, full width of door; fully mortised for fire-rated hollow steel doors.
- .1 Acceptable Materials: CT-54 by K.N. Crowder, 420A by Pemko.

.19 Door sweep: extruded aluminum retainer, 32 mm wide with 3 mm thick black solid neoprene; full width. Clear anodized finish, unless noted otherwise in schedule.
- .1 Acceptable Materials: W-13S by K.N. Crowder, DS138C-2 by DraftSeal, 315-Series by Pemko, #39 by Zero.

.20 Viewer: to ANSI/BHMA A156.16, classification L03222; one-way, 180° to 200° viewing angle, solid brass construction, listed or labeled for fire rated applications, polished optical glass lenses.
- .1 Approved product (no substitutions): Loxem 190 by VSI Hardware Industries, 20 R35 by Madison Products Company, U698B3 by Ives, DS238 by ASD Metallic Industries.

.21 Power-Assisted Door Operator:
- .1 Power assist and low energy power operated doors: to ANSI/BMHA A156.19, surface mounted, electro-mechanical. Factory assembled with necessary components for proper operation and switching.
- .2 Cover: full length across head; to provide a seal against dust, dirt and moisture.
- .3 Door activation switch (push button):
  - .1 Wall mounted: 150 mm diameter/square stainless steel push plate, housed in recessed box. Engrave push plate with international handicapped logo. Finish to be satin stainless with blue logo.
    - .1 Provide recessed wall box or, where wall depth is insufficient to accept recessed box, provide surface mounted box with wiring access from the back of the box. Surface mounted box to be complete with stainless steel escutcheon/trim to match button.

.2 Jamb mounted: stainless steel push plate with international handicapped logo. Finish to be satin stainless with blue logo.
.1 Provide recessed box or, where jamb depth is insufficient to accept recessed box, provide surface mounted box with wiring access from the back of the box. Surface mounted box to be complete with stainless steel escutcheon/trim to match button.
.3 Provide push button on each side of door.
.4 Wall mounted key switch (for disabling exterior activation switch).
.1 Provide recessed box or, where jamb depth is insufficient to accept recessed box, provide surface mounted box with wiring access from the back of the box. Surface mounted box to be complete with stainless steel escutcheon/trim to match button.
.5 Wire: provide wires for door activation switches and key switches.

2.2 FASTENINGS

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

.2 Exposed fastening devices to match finish of hardware.

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

3 Execution

3.1 INSTALLATION INSTRUCTIONS

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

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

.3 Install hardware to standard hardware location dimensions in accordance with Recommended Dimensional Standards for Commercial Steel Doors and Frames.

.4 Special mounting instructions:
.1 Door pulls:
.1 Where door pull contacts wall stop, mount the stop at an elevation equal to bottom of pull.
.2 Pull/push plate application: 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.

3.2 SCHEDULE

.1 Hardware Set No. 1

3 hinges	A2111 114 x 101 x NRP x 26D
1 lock set	F13 x 26D
1 electric strike	
1 power-assisted door operator	
1 set weatherstripping	head and jambs
1 door sweep	
1 threshold - thermally broken modular.	

Mode of operation:

- Working hours:	key switch energizes operator push button at exterior. Entering or exiting by pressing either vestibule or exterior operator push button; or manually operating trim.
- After hours:	key switch locks out exterior push button. Restricted entrance; exiting by pressing vestibule operator push button or manually operating trim.

.2 Hardware Set No. 2

3 hinges	A8112 114 x 101 x NRP x 26D
1 lock set	F13 x 26D
1 electric strike	
1 power-assisted door operator	
1 overhead stop	C05541 x 26D.

Mode of operation:

- Working hours:	key switch energizes operator push button in vestibule. Entering or exiting by pressing either interior or vestibule push button; or manually operating trim.
- After hours:	key switch locks out vestibule push button. Restricted entrance; exiting by pressing interior push button or manually operating trim.

.3 Hardware Set No. 3

3 hinges	A8112 114 x 101 x 26D (NRP at reverse swing doors)
1 electric lock	F15 - modified.
1 wire transfer device	
1 closer	C02021
1 floor stop	L02141 x 26D

Card reader and power supply by others.

.4 Hardware Set No. 4

3 hinges	A2111 114 x 101 x 26D
1 lock set	F07 x 26D
1 floor stop	L02141 x 26D

Sound-rated seals, door bottom and threshold by sound-rated door manufacturer.

.5 Hardware Set No. 5

3 hinges	A2111 114 x 101 x 26D (NRP at reverse swing doors)
1 lock set	F15 x 26D
1 closer	C02021 (Door 104A only)
1 closer	C02011 (Door 156B only)
1 floor stop	L02141 x 26D

Sound-rated seals, door bottom and threshold by sound-rated door manufacturer.

.6 Hardware Set No. 6

3 hinges	A8112 114 x 101 x 26D (NRP at reverse swing doors)
1 lock set	F07 x 26D
1 closer	C02011 (inswing doors)
1 closer	C02021 (reverse swing doors)
1 floor stop	L02141 x 26D (inswing doors)
1 overhead stop	C02541 x 26D (reverse swing doors)

1 interlocking threshold (Door 132 only).

.7 Hardware Set No. 7

3 hinges	A8112 114 x 101 x 26D
3 hinges	A2111 114 x 101 x 26D (at STC rated doors only)
1 lock set	F13 x 26D
1 closer	C02041x C02191 mounting plate (outswing doors only)
1 closer	C02011 (inswing doors only)
1 floor stop	L02141 x 26D

Sound-rated seals, door bottom and threshold by sound-rated door manufacturer (at STC rated doors only)

.8 Hardware Set No. 8

3 hinges	A8112 114 x 101 x 26D
1 lock set	F07 x 26D
1 floor stop	L02141 x 26D.

.9 Hardware Set No. 9

3 hinges	A8112 114 x 101 x NRP x 26D
1 lock set	F15 x 26D
1 closer	C02021
1 floor stop	L02141 x 26D.

.10 Hardware Set No. 10

3 hinges	A8112 114 x 101 x 26D (NRP at reverse swing doors)
1 lock set	F04 x 26D
1 floor stop	L02141 x 26D.

.11 Hardware Set No. 11

3 hinges	A8112 114 x 101 x 26D
1 passage set	F01 x 26D
1 closer	C02011
1 floor stop	L02141 x 26D.

.12 Hardware Set No. 12

3 hinges	A8112 114 x 101 x 26D
1 passage set	F01 x 26D
1 floor stop	L02141 x 26D.

.13 Hardware Set No. 13

3 hinges	A8112 114 x 101 x 26D
1 push plate	J301 x 32D
1 door pull	J405 x 32D
1 closer	C02011
1 floor stop	L02141 x 26D
1 kick plate	J102 x 32D

1 power-assisted door operator (Doors 116 & 121).

.14 Hardware Set No. 14

3 hinges	A8112 114 x 101 x 26D
1 lock set	F15 x 26D
1 closer	C02011
1 floor stop	L02141 x 26D.

1 interlocking threshold (not required at Door 141).

.15 Hardware Set No. 15

6 hinges	A8112 114 x 101 x NRP x 26D
1 lock set	F07 x 26D
1 bottom flush bolt	L04251 x 26D
1 top flush bolt	L04251 x 600 mm x 26D
2 floor stops	L02141 x 26D.

.16 Hardware Set No. 16

3 hinges	A2111 114 x 101 x 26D
1 electric lock	F15 - modified
1 wire transfer device	
1 closer	C02021
1 floor stop	L02141 x 26D

Sound-rated seals, door bottom and threshold by sound-rated door manufacturer.
Card reader and power supply by others.

.17 Hardware Set No. 17

3 hinges	A2111 114 x 101 x 26D
1 lock set	F15 x 26D
1 latch guard	
1 closer	C02041 x C02191 mounting plate
1 overhead stop	C02541 x 26D
1 set weatherstripping	head and jambs
1 door sweep	
1 threshold thermally-broken.	

.18 Hardware Set No. 18

3 hinges	A2111 114 x 101 x NRP x 26D
1 electric lock	F15 - modified.
1 latch guard	
1 wire transfer device	
1 closer	C02041 x C02191 mounting plate
1 overhead stop	C02541 x 26D
1 set weatherstripping	head and jambs
1 door sweep	
1 threshold - thermally broken	

Card reader and power supply by others.

.19 Hardware Set No. 19

3 hinges	A2111 114 x 101 x NRP x 26D
1 lock set	F14 x 26D
1 closer	C02021
2 door viewers	L03221 x 26D
1 floor stop	L02141 x 26D
1 set smoke seals	head and jambs
1 door bottom.	

.20 Hardware Set No. 20

3 hinges	A2111 114 x 101 x 26D
1 lock set	F14 x 26D
1 closer	C02021
1 floor stop	L02141 x 26D

Sound-rated seals, door bottom and threshold by sound-rated door manufacturer.

.21 Hardware Set No. 21

3 hinges	A2111 114 x 101 x NRP x 26D
1 lock set	F14 x 26D
1 latch guard	
1 closer	C02021
1 overhead stop	C02541 x 26D
1 set weatherstripping	head and jambs
1 door sweep	
1 threshold - thermally broken.	

.22 Hardware Set No. 22

Hardware by door supplier.

.23 Hardware Set No. 23

3 hinges	A8112 114 x 101 x NRP x 26D
1 deadlock	F18 x 26D
1 cylinder pull.	

.24 Hardware Set No. 24

3 hinges	A2111 114 x 101 x NRP x 26D
1 deadlock	F18 x 26D
1 dummy trim	outside only
1 concealed stop	C01541 x 26D.

.25 Hardware Set No. 25

3 hinges	A2111 114 x 101 x NRP x 26D
1 lock set	F15 x 26D
1 latch guard	
1 closer	C02041 x C02191 mounting plate
1 overhead holder	C02511 x 26D
1 set weatherstripping	head, jambs and sill.

.26 Hardware Set No. 26

6 hinges	A2111 114 x 101 x NRP x 26D
1 lock set	F15 x 26D
1 latch guard	
1 closer	C02041 x C02191 mounting plate
1 bottom flush bolt	L04251 x 26D
1 top flush bolt	L04251 x 600 mm x 26D
2 overhead stops	C12541 x 26D
1 set weatherstripping	head and jambs
1 astragal	flat bar w/weatherstripping type
2 door sweeps	
1 threshold - thermally broken.	

END OF SECTION

1 General

1.1 RELATED SECTIONS

.1 Section 07 92 10 - Joint Sealing.

.2 Section 08 11 16 - Aluminum Doors and Frames: installation of glass.

.3 Section 08 50 00 - Aluminum Windows and Curtain Wall: installation of glass.

.4 Section 10 28 10 - Washroom Accessories: framed mirrors.

1.2 REFERENCES

.1 American National Standards Institute (ANSI).
- .1 ANSI Z97.1-2009, Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test.

.2 ASTM International (ASTM).
- .1 ASTM C920-14, Specification for Elastomeric Joint Sealants.
- .2 ASTM C1184-14, Standard Specification for Structural Silicone Sealants.

.3 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-12.1-M90, Tempered or Laminated Safety Glass.
- .2 CAN/CGSB-12.3-M91, Flat, Clear Float Glass.
- .3 CAN/CGSB-12.5-M86, Mirrors, Silvered.
- .4 CAN/CGSB-12.6-M91, Transparent (One-Way) Mirrors.
- .5 CAN/CGSB-12.8-97, Insulating Glass Units.
- .6 CAN/CGSB-12.9-M91, Spandrel Glass.
- .7 CAN/CGSB-12.11-M90, Wired Safety Glass.
- .8 CAN/CGSB 19-GP-5M, Sealing Compound, One Component, Acrylic Base, Solvent Curing.

1.3 QUALITY ASSURANCE

.1 Insulating glass unit manufacturer shall be a current member of the Insulated Glass Manufacturers Association of Canada (IGMAC).

1.4 PERFORMANCE REQUIREMENTS

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

.2 Utilize inner light of multiple light sealed units for continuity of air/vapour retarder.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 10 01 - General Requirements.

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

.3 Samples:
- .1 Submit for review and acceptance of each unit.

.2 Submit duplicate 300 mm x 300 mm size samples of Low-E coating, heat absorbing glass, translucent glazing, spandrel glass, one-way mirror and security film.

.3 Labeling: Label each sample with following information:

.1 Single pane of glass: Glass type and thickness, coating, colours.

.2 Insulating glass unit:

.1 Product information: Glass type and thickness, coating, colours, spacer type and overall thickness.

.2 Performance information: Shading coefficient, solar heat gain, visible light transmittance, winter U-Value.

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

.5 Provide certification that structural silicone glazing components are compatible.

1.6 SUSTAINABLE DESIGN SUBMITTALS

.1 Construction waste management plan.

.1 A Construction Waste Management Plan is in place to divert waste material from landfill. Wherever practical, send waste material for reuse or recycling, and generally document this for the contractor's waste management final report.

.2 Recycled Content.

.1 Refer to Section 01 47 15 - Sustainable Requirements for "List of Products Requiring Recycled Content".

.2 If products within this section are indicated on the "List of Products Requiring Recycled Content", only products with recycled content will be acceptable.

.3 For products not identified on list, source products with highest recycled content available when practical.

.4 Include following information with product data submission.

.1 Percentage of pre-consumer and post-consumer recycled content for each product.

.3 Regional Materials.

.1 Refer to Section 01 47 15 - Sustainable Requirements for "List of Products Required to be Locally Sourced".

.2 If products within this section are indicated on the "List of Products Required to be Locally Sourced", include following information with Product Data submission:

.1 Extraction/Manufacturing location(s): Indicate location of extraction site or manufacturing plant, and indicate distance between extraction site or manufacturing plant and Project site.

.4 Adhesives and Sealants.

.1 Include following information with Product Data submission for materials specified under this section:

.1 Submit manufacturer's certification indicating VOC limits of Products used onsite and within the building envelope. Product shall comply with California's SCAQMD #1168.

.5 If requesting substitute product, ensure proposed substitution achieves above stated goals.

1.7 PROTECTION

.1 Protection of glass during shipping, storage and installation shall be the responsibility of this trade. After installation and acceptance of glass and glazing work by the Departmental Representative, the Contractor shall be responsible for protection and replacement of glass.

1.8 MAINTENANCE INSTRUCTIONS

.1 Provide maintenance data for cleaning of glass for incorporation into manual specified in Section 01 10 01 - General Requirements.

1.9 MAX. VOC CONTENT FOR SOLVENT CLEANING ACTIVITIES

.1 Following are some of the Maximum allowed VOC Content for following activities, as per SCAQMD Rule 1171-9 (refer to SCAQMD manual for complete list and updates):
- .1 Product cleaning during onsite surface preparation for coatings or adhesives application, and repair and maintenance cleaning:
  - .1 General maximum VOC 25g/L.
  - .2 Electrical apparatus components and electronic components.
  - .3 Cleaning of coatings or adhesives application equipment max. VOC 25g/L.
- .2 Refer to SCAQMD for additional information and clarification and complete list of applications.
- .3 Any discrepancies are to be approved by Departmental Representative. Obtain written approval prior to use on site.

1.10 WARRANTY

.1 Contractor hereby warrants insulating glass units for five (5) years against:
- .1 Dusting or film formation on the internal glass surfaces caused by failure of hermetic seal other than through glass breakage.
- .2 Glass breakage due to improper installation.

2 Products

2.1 GLASS

.1 Glass: to applicable standard listed below.
- .1 Label each glass lite in accordance with applicable CGSB standard.

.2 Safety glass: to CAN/CGSB-12.1-M, Type 1 - laminated; Type 2 - tempered.

.3 Float glass: to CAN/CGSB-12.3-M.

.4 Heat absorbing glass: to CAN/CGSB-12.4-M.
- .1 Style 2 - medium light transmittance.
- .2 Grade B - medium shading coefficient.
- .3 Tint - colour as selected by Departmental Representative.
- .4 Glass type: as specified in glazing schedule.

.5 Mirror: to CAN/CGSB-12.5-M, Type 1A; one-piece, height indicated x full width of counter top x 5 mm thick. When mirrors extend from corner to corner of wall, maximum tolerance permitted is 13 mm.
- .1 Accessories: butyl tape; top and bottom concealed stainless steel mounting clips.
- .2 Provide one set of mounting clips for each 800 mm of mirror length; minimum two (2) sets per mirror.

.6 One-way glazing: to CAN/CGSB-12.6-M, Type 2 - Tinted, Class C - Tempered; 5 mm thick.

.7 Insulating glass unit: to CAN/CGSB-12.8.

.8 Spandrel glass: to CAN/CGSB-12.9-M,
- .1 Type: 2 (heat strengthened).
- .2 Class: A (float glass) heat absorbing glass to match 2.1.4.
- .3 Style: 1 (ceramic) on surface #2. Colour of coating to provide overall colour match with adjacent vision glass units.
- .4 Form: M (monolithic).

.9 Fire-rated glass:
- .1 Wired glass: to CAN/CGSB-12.11-M, polished georgian square wire.

.10 Low-E glass: Glass type as specified in glazing schedule.
- .1 Metallic coating: soft, sputtered.
- .2 Properties (base upon two 6 mm lites clear glass, argon fill, Low-E coating on 2nd surface).
  - .1 Light transmittance: 69% ± 1%.
  - .2 Shading coefficient: 0.45 ± 0.01.
  - .3 Solar heat gain coefficient: 0.39 ± 0.01.
  - .4 U-Value (night time/winter): 0.24 ± 0.01.
  - .5 Acceptable Materials: LoĒ^2-272 by Cardinal Glass, Comfort TiAC40 by AGC, Solarban 60 by PPG.

.11 Security glass: laminated glass, consisting of two layers 6 mm thick clear tempered glass laminated using 0.030 PVB interlayer.

2.2 BETWEEN GLASS BLINDS

.1 Blinds: Horizontal louver type.
- .1 Slats: 6010-T8 aluminum alloy, 16 mm wide x 0.2 mm thick x length to suit, crowned profile.
  - .1 Colour: as selected by Departmental Representative from manufacturer's full colour range.
- .2 Tilt mechanism: fully bonded knob operator; mounted on interior side of room.
- .3 Units containing between glass blinds shall have an STC rating of 46.

2.3 GLAZING AND MISCELLANEOUS MATERIALS

.1 Acrylic sealant: to CAN/CGSB 19-GP-5M.

.2 Silicone sealant: to ASTM C920, Type S, Grade NS, Class 50, Use NT, G, M, A, O.

.3 Structural silicone sealant: to ASTM C1184, Use G and O.

.4 Glazing tape:
- .1 General: polyisobutylene; shimmed or unshimmed.
- .2 Structural silicone applications: Use tape compatible with structural silicone sealant.

.5 Security film: to ANSI Z97.1, 0.18 mm thick.
- .1 Properties:
  - .1 Tensile strength: 28,000 psi.
  - .2 Peel strength: 8 lbs./inch
  - .3 Visible light transmittance: 92%
  - .4 UV rejection: 99%.

.5 Solar energy
.1 Transmitted: 82%.
.2 Reflected: 10%
.3 Absorbed: 8%.
.6 Shading coefficient: 94%.
.7 Solar energy rejected: 17%.
.2 Approved product (no substitutions): 100 Series, SF7 Clear by Ace Security Laminates.

.6 Speaker port: fabricated from 3 mm thick stainless steel, 127 mm diameter. Offset slots between front and interior plates. Provide with cork gaskets and pin-type tamper-resistant screws.
.1 Approved product (no substitutions): SST5 by C.R. Laurence.

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 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
.4 Proceed with installation only after unacceptable conditions have been remedied.

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 HOLLOW STEEL INSTALLATION

.1 Check opening before glazing to make certain it is square, plumb and secure.

.2 Thoroughly wipe surface receiving glazing materials with a cloth dampened in xylol to assure a clean surface. Wipe dry with clean cloth.

.3 Install unshimmed glazing tape on fixed stop, and press glass firmly into place.

.4 Butter removable stop with acrylic sealant, and fasten in place. Remove excess from glass and stop before it sets.

3.4 CLEANING

.1 Remove labels from glass at time of installation, except as specified below.

.2 Have Departmental Representative review labels on Low-E glass, heat absorbing glass and translucent glazing before removing labels.

.3 Progress Cleaning: clean in accordance with Section 01 10 01 - General Requirements.
.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 10 01 - General Requirements.

3.5 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.

3.6 SCHEDULE

.1 Aluminum doors and entrance framing:
.1 Exterior locations: insulating glass unit consisting of 6 mm thick, heat absorbing tempered, Low-E exterior lite; 13 mm air space; and 6 mm thick clear tempered interior lite. Security film applied to surface #4.
.2 Interior aluminum doors: 6 mm clear tempered glass, with security film on surface #2.

.2 Aluminum windows:
.1 Insulating glass units: consisting of 6 mm thick, heat absorbing Low-E exterior lite, 13 mm air space, and 6 mm thick clear interior lite.
.2 Insulating glass units - sound rated window: consisting of 6 mm thick, heat absorbing Low-E exterior lite, 13 mm air space, and 6 mm thick clear laminated interior lite.
.3 Spandrel glass where indicated.

.3 Steel and wood doors and frames:
.1 Nonfire-rated: 6 mm thick tempered glass.
.2 Fire-rated: 6 mm polished georgian wired glass.
.3 Insulating glass unit with between glass blinds: where indicated.
.4 Refer to Door and Frame Schedule, and elevations for door and frame type, glass type and fire ratings used for this project.

.4 Mirrors: Refer to drawings for Washroom Accessory item WA5 for frameless mirror sizes and locations.

.5 One-way glazing: Room 111.

.6 Security glazing: Entry Counter. Install speaker port.

END OF SECTION