

**PART 1 - GENERAL**

**1.1 GENERAL REQUIREMENTS**

- .1 Comply with requirements of Division 1.

**1.2 RELATED SECTIONS**

- .1 Section 07 92 00: Joint Sealing.
- .2 Section 08 71 00: Door Hardware.
- .3 Section 08 80 00: Glazing.
- .4 Section 09 91 00: Painting.
- .5 Division 26 - Electrical: power to electric door operators and associated door hardware items.
- .6 Division 28 - Electrical Safety and Communications: door contacts and signal devices.

**1.3 REFERENCES**

- .1 Canadian Standards Association (CSA).
  - .1 CSA A101, Thermal Insulation, Mineral Fibre, for Buildings.
  - .2 CAN/CSA-G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
  - .3 CSA W59, Welded Steel Construction (Metal Arc Welding).
- .2 Canadian General Standards Board (CGSB).
  - .1 CAN/CGSB-1.181, Ready-Mixed Organic Zinc-Rich Coating.
- .3 American Society for Testing and Materials (ASTM).
  - .1 ASTM A653/653M, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - .2 ASTM E 152, Methods for Fire Tests of Door Assemblies.
- .4 Underwriters' Laboratories of Canada (ULC).
  - .1 CAN4-S104, Standard Method for Fire Tests of Door Assemblies.
  - .2 CAN4-S105, Standard Specification for Fire Door Frames Meeting the Performance Required by CAN 4-S104.
  - .3 CAN/ULC-S702, Standard for Thermal Insulation, Mineral Fiber for Buildings.
  - .4 CAN/ULC-S704, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.
- .5 Canadian Steel Door Manufacturers' Association, (CSDMA).
  - .1 CSDMA, Recommended Specifications for Commercial Steel Doors and Frames.
  - .2 CSDMA, Selection and Usage Guide for Commercial Steel Doors.
- .6 National Fire Protection Association (NFPA).
  - .1 NFPA 80, Standard for Fire Doors and Fire Windows.
  - .2 NFPA 252, Standard Methods of Fire Tests of Door Assemblies.

#### **1.4 DESIGN REQUIREMENTS**

- .1 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35°C to 35°C.

#### **1.5 SHOP DRAWINGS**

- .1 Submit shop drawings in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of anchors and exposed fasteners, openings, glazed, louvred, arrangement of hardware and fire rating.
- .3 Indicate each type of frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and finishes.
- .4 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

#### **1.6 REQUIREMENTS OF REGULATORY AGENCIES**

- .1 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4 S104M for ratings specified or indicated. Fire rated doors, frames and sidelights shall bear ULC labels.
- .2 Provide fire labelled frame products for those openings requiring fire protection ratings, as scheduled. Test products in strict conformance with CAN4-S104, ASTM E152 or NFPA 252 and list by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers. Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.
- .3 Listing labels are to be installed on doors and frames at place of manufacture and not on site. Stamped listings will not be acceptable due to the fact the stampings are obscured by painting and difficult to verify. Factory applied labels must not be covered by paint.

#### **1.7 PRODUCT HANDLING**

- .1 Tag doors and frames at shop with identification marks indicating proper location for installation.
- .2 Deliver, store and handle components so as to prevent damage, distortion and corrosion. Store components off the ground and under cover in a dry protected area. Stack doors and frames to prevent twisting. Do not enclose components in plastic covers without venting.

#### **1.8 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 74 22 – Construction/Demolition Waste Management and Disposal.

- .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard and packaging material in appropriate on site bins for recycling in accordance with Waste Management Plan.
- .4 Fold up metal banding, flatten and place in designated area for recycling.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- .1 Hot dipped galvanized steel sheet: Hot dipped galvanized steel sheet: commercial quality to ASTM A 653M, minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.
- .2 Reinforcement: to CAN/CSA-640.20/G40.21, Type 44W, coating designation to ASTM A653M, ZF75.
- .3 Sheet steel: cold rolled, commercial quality to ASTM A366, with matt finish.
- .4 Doors and Frames:
  - .1 Acceptable products:
    - .1 Apex Machine Works Limited
    - .2 Baron Metal Industries Ltd.
    - .3 Artek Door (1985) Ltd.
    - .4 S.W. Fleming Ltd.
    - .5 Ali-Porte Manufacturers of Steel Frames and Metal Doors, St. Laurent, Que.
    - .6 or approved equal
  - .5 Doors:
    - .1 Door face sheets 1.6 mm base thickness.
  - .6 Door Core Materials:
    - .1 Honeycomb construction (interior doors): Structural small cell, 24.5 mm maximum kraft paper 'honeycomb', weight: 36.3 kg per ream minimum, density: 16.5 kg/m<sup>3</sup> minimum sanded to required thickness.
    - .2 Insulated Core (exterior doors):
      - .1 Fibreglass: to CAN/ULC-S702, semi-rigid type, density 24 kg/m<sup>3</sup>.
      - .2 Expanded polystyrene: CAN/ULC-S701, density 16 to 32 kg/m<sup>3</sup>.
      - .3 Polyurethane: to CAN/ULC-S704 rigid, modified poly/isocyanurate, closed cell board. Density 32 kg/m<sup>3</sup>.
    - .3 Fire rated doors: in accordance with CAN4-S104, ASTM E 152 or NFPA 252, covering standard Method of Tests of Door Assemblies and listed by ULC or Warnock Hersey.
  - .7 Frames: Steel frames 1.6 mm base thickness.

- .8 Provide other door and frame components in accordance with CSDMA requirements.
- .9 Touch-up Primer: to CAN//CGSB-1.181.
- .10 Adhesives:
  - .1 Honeycomb cores and steel components: heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement..
  - .2 Polystyrene and polyurethane cores: heat resistant, epoxy resin based, low viscosity, contact cement, low VOC.
  - .3 Lock-seam doors: fire resistant, resin reinforced polychloroprene, high viscosity, sealant/adhesive, low VOC.
- .11 Accessories:
  - .1 Door silencers: single stud rubber/neoprene type.
  - .2 Top and bottom caps (exterior and interior doors): rigid polyvinyl chloride extrusion conforming to CGSB 41-GP-19Ma.
  - .3 Glazing stops: formed channel, minimum 1.5 mm thick x 16 mm height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws. Glazing stops at outside of exterior doors and frames shall be rendered non-removable.
  - .4 Metallic paste filler: to manufacturer's standard.
  - .5 Fire labels: metal, riveted.
- .12 Glazing: As specified in Section 08 80 00 – Glazing.

## **2.2 FRAME FABRICATION – GENERAL**

- .1 Fabricate frames to Canadian Steel Door Manufacturers' Association, (CSDMA) Canadian Manufacturing Specifications for Steel Doors and Frames; except where specified otherwise.
- .2 Fabricate frames to profiles and maximum face sizes as indicated.
- .3 Exterior frames: 1.6 mm, welded, thermally broken type construction.
- .4 Interior frames: 1.6 mm, welded type construction.
- .5 Reinforce frames to suit hardware requirements specified Section 08 71 00 - Door Hardware. Blank, reinforce, drill and tap frames for mortised templated hardware, using templates provided by door hardware supplier. Reinforce frames for surface mounted hardware.
- .6 Protect mortised cutouts with steel guard boxes.
- .7 Prepare frames for door silencers, 3 for single door, 2 at head for double door.
- .8 Manufacturer's nameplates on frames and screens are not permitted.
- .9 Conceal fastenings except where exposed fastenings are indicated.

- .10 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.
- .11 Insulate exterior frame components with fibreglass insulation.
- .12 Where electrified hardware is specified on the approved hardware schedule, steel door and frame product shall be provided with ElectroLynx™ System consisting of CSA approved conduit, junction boxes and wire harnesses complete with modular plugs for coordinated connection directly to electrified hardware.
  - .1 Refer to Section 08 71 00 – Door Hardware for openings that require electrified hardware.
  - .2 Coordinate with Division 26 – Electrical for requirements for cutouts to accommodate power to electrified hardware or door opening devices.
- .13 Coordinate with Division 28 – Electrical Safety and Communications for requirements for door alarm contacts, door bells and buzzers.

### **2.3 FRAME ANCHORAGE**

- .1 Provide appropriate anchorage to floor and wall construction.
- .2 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.
- .3 Provide 2 anchors for rebate opening heights up to 1520 mm and 1 additional anchor for each additional 760 mm of height or fraction thereof.
- .4 Locate anchors for frames in existing openings not more than 150 mm from top and bottom of each jambs and intermediate at 660 mm o.c. maximum.

### **2.4 FRAMES: WELDED**

- .1 Welding in accordance with CSA W59.
- .2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile.
- .3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.
- .4 Grind welded corners and joints to flat plane, fill with metallic paste filler and sand to uniform smooth finish.
- .5 Securely attach adjustable floor anchors to inside of each jamb profile for fixing at floor.
- .6 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.
- .7 Make provision for glazing as indicated and provide necessary glazing stops.

## 2.5 DOOR FABRICATION – GENERAL

- .1 Fabricate doors to Canadian Steel Door Manufacturers' Association, (CSDMA) Canadian Manufacturing Specifications for Steel Doors and Frames; except where specified otherwise. Reinforce doors to suit hardware requirements specified Section 08710 - Door Hardware.
- .2 Doors: swing type, flush, with provision for glass and/or louvre openings as indicated. Make provision for glazing as indicated and provide necessary glazing stops.
- .3 Exterior doors: insulated hollow steel construction.
- .4 Interior doors (non-rated): honeycomb construction.
- .5 Fabricate doors with longitudinal edges locked seamed. Seams: fill with metallic paste filler and sand to a uniform smooth finish. Construct rail and stile doors in same manner as flush doors. Construct matching panels in same manner as doors.
- .6 Blank, reinforce, drill doors and tap for mortised, templated hardware and electronic hardware.
- .7 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation. Reinforce doors where required, for surface mounted hardware. Hardware reinforcements shall be minimum 3.42 mm (10 Ga.) thick.
- .8 Provide flush, inverted, PVC top caps extending full width of door at interior doors. Provide inverted, flush, steel, spot welded channels to top and bottom of exterior doors.
- .9 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.
- .10 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in strict conformance with CAN4-S104, ASTM E 152 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.
- .11 Manufacturer's nameplates on doors are not permitted.
- .12 Where electrified hardware is specified on the approved hardware schedule, steel door and frame product shall be provided with ElectroLynx™ System consisting of CSA approved conduit, junction boxes and wire harnesses complete with modular plugs for coordinated connection directly to electrified hardware.
  - .1 Refer to Section 08 71 00 – Door Hardware for openings that require electrified hardware.
  - .2 Coordinate with Division 26 – Electrical for requirements for cutouts to accommodate power to electrified hardware or door opening devices.

- .13 Coordinate with Division 28 – Electrical Safety and Communications for requirements for door alarm contacts, door bells and buzzers.

## **2.6 DOORS: HONEYCOMB CORE CONSTRUCTION**

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

## **2.7 DOORS: HOLLOW STEEL CONSTRUCTION**

- .1 Form each face sheet for exterior doors from 1.6 mm sheet steel. Form sheets for interior doors from 1.6 mm sheet steel.
- .2 Reinforce doors with vertical stiffeners, securely welded to each face sheet at 150 mm on centre maximum.
- .3 Fill voids between stiffeners of exterior doors with fibreglass core.
- .4 Fill voids between stiffeners of interior doors with honeycomb core or temperature rise rated core at fire rated doors where indicated on drawings.

## **2.8 THERMALLY BROKEN DOORS AND FRAMES**

- .1 Fabricate thermally broken doors by using insulated core and separating exterior parts from interior parts with continuous interlocking thermal break.
- .2 Thermal break: rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19Ma.
- .3 Fabricate thermally broken frames separating exterior parts from interior parts with continuous interlocking thermal break.
- .4 Apply insulation.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION – GENERAL**

- .1 Install labelled steel fire rated doors and frames in accordance with National Fire Protection Association (NFPA) 80 except where specified otherwise.
- .2 Install doors and frames to Canadian Steel Door Manufacturers' Association, (CSDMA) Installation Guide.

### **3.2 FRAME INSTALLATION**

- .1 Set frames plumb, square, level and at correct elevation. Secure anchorages and connections to adjacent construction.
- .2 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.

- .3 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.
- .4 Coordinate installation of door frames with Division 26 – Electrical requirements for provision of power to doors and frames with electrified door hardware and other devices. Ensure wiring for electrified door devices is not damaged during installation of frames.
- .5 Caulk perimeter of frames between frame and adjacent material.
- .6 Install door silencers.
- .7 Maintain continuity of air barrier and vapour retarder.

### **3.3 DOOR INSTALLATION**

- .1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 00 - Door Hardware.
- .2 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows:
  - .1 Hinge side: 1.0 mm.
  - .2 Latchside and head: 1.5 mm.
  - .3 Finished floor noncombustible sill and thresholds: 13 mm.
- .3 Adjust operable parts for correct function.
- .4 Coordinate door installation with work of Section 08 71 00 – Door Hardware and Division 26 and 28. Correct function of door includes correct function of associated electrified door hardware and other devices, such as but not limited to door security alarm contacts, door bells, buzzers, etc.

### **3.4 GLAZING**

- .1 Install glazing for doors and frames in accordance with Section 08 80 00 - Glazing.

### **3.5 FINISH REPAIRS**

- .1 Touch up with primer galvanized finish damaged during installation.
- .2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.
- .3 Protect installed doors and frames from damage by other trades until completion of the Work.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 GENERAL REQUIREMENTS**

- .1 Comply with requirements of Division 1.

### **1.2 RELATED WORK**

- .1 Section 05 50 00: Metal Fabrications.
- .2 Section 08 71 00: Door Hardware.
- .3 Section 09 91 00: Painting.
- .4 Division 23 – Mechanical: for air curtains at selected O/H doors
- .5 Division 26 - Electrical: for power to electric operators, air curtains.
- .6 Division 28 - Electrical Safety and Communications: door contacts and signal devices.

### **1.3 DESIGN REQUIREMENTS**

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

### **1.4 SHOP DRAWINGS**

- .1 Submit shop drawings in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Indicate manufacturer's name, model number, sizes, thickness, material and finish, component location and details of track, door construction and operating mechanisms, coordination with air curtain, service ratings, hardware and accessories, required clearances and electrical connections.

### **1.5 MAINTENANCE DATA**

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

### **1.6 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 74 22 – Construction / Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard and packaging material in appropriate on site bins for recycling in accordance with Waste Management Plan.
- .4 Fold up metal banding, flatten and place in designated area for recycling.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- .1 Galvanized steel sheet: commercial quality to Z275 zinc coating.
- .2 Steel sheet: commercial quality to ASTM A1008/A1008M unexposed (U), with galvanized finish.

### **2.2 DOORS**

- .1 Insulated sections fabricated from prepainted, hot dip galvanized, sheet steel, with polyurethane insulation core, CFC -11 free, face sheet stucco embossed and rib reinforced. Sections thermally broken, steel-polurethane-steel sandwich form by continuous process. Sections formed with shiplapped joint.
- .2 Fabricate panel frames in a continuous box frame with vertical stiffeners at 300 mm centres.
- .3 Door panel lights: 6 mm thick, clear plastic safety glazing to CAN/CGSB-12.12-M90, double-glazed w/ rubber mould frame.
- .4 Door Type:
  - .1 Section thickness 50 mm (2"), insulation: RSI 3.2 (R18.5).  
Standard of Acceptance:
    - .1 Richards-Wilcox Thermatite ADV 200 MR,
    - .2 equal product by CanDoor Overhead Doors Ltd.
    - .3 equal product by Barron Equipment Company Ltd.
    - .4 or other equal product by other manufacturers accepted by Departmental Representative during tendering period.

### **2.3 HARDWARE**

- .1 Track: standard headroom lift heavy duty hardware with 75 mm size minimum 2.66 mm (12 Ga.) galvanized steel track, for torsion spring lifting and include ancillary hardware items, with track stops.
- .2 Track Supports: 2.66 mm (12 Ga.) core thickness continuous galvanized steel angle track supports, 50 x 75 mm. Angle and clip style not acceptable.
- .3 Track Hangers: 38 x 38 x 3 mm galvanized steel angle.
- .4 Spring counter balance: heavy duty oil tempered torsion spring with manufacturers standard brackets.
  - .1 Drum: to match lift requirements as per manufacturer's recommendations.
  - .2 Shaft: 25 mm diameter, galvanized steel.
  - .3 Rating: 80,000 cycles.
- .5 Top roller carrier: galvanized steel, minimum 2.28 mm thick, adjustable.
- .6 Rollers: full floating, grease packed, hardened steel, ball bearing, size 75 mm diameter solid steel tire w/ 10-8 mm ball bearings, 11 mm shaft.
- .7 Roller brackets: adjustable, minimum 2.5 mm galvanized steel.

- .8 Hinges: Heavy duty, minimum 1.9 mm thick, stainless steel, bolted on, 4 per section @ 750 mm approximately o.c., as recommended by manufacturer.
- .9 Cable: 3 mm or 4.8 mm diameter galvanized steel aircraft cable.
- .10 Accessories:
  - .1 Limit switches all doors indicating door down.
  - .2 Track guards: 5 mm thick, formed sheet, 1500 mm high track guards, prime painted.
  - .3 Pusher springs: to manufacturer's standard.
  - .4 Pull handles: provide two pull handles on inside.
  - .5 Lockbolts: two horizontal sliding lock bolts on interior.
  - .6 Weather stripping:
    - .1 Sills: extruded neoprene bulb, full width.
    - .2 Jamb and head: extruded aluminum and arctic grade vinyl weatherstrip to manufacturer's standard.
  - .7 Door Step Plates: to interior side of doors, to manufacturer's standard.
  - .8 Finish ferrous hardware items with minimum zinc coating of 300 g/m<sup>2</sup> to CSA G164.

## 2.4 ELECTRICAL OPERATORS

- .1 Electrical motors, controller units, remote pushbutton stations, relays and other electrical components: to CSA approval with CSA enclosure type C22.2, Class 1, Group A.
- .2 Power supply: 208/230 V, 3 phase, 2.1A, 60 Hz.
- .3 Controller units with integral motor reversing starter, overload protection, including pushbuttons and control relays as applicable.
- .4 Operation:
  - .1 Manaras-Opera MTBH, ½ hp, drawbar type remote pushbutton station: surface mounted, in location, with "OPEN-STOP-CLOSE" designations on pushbuttons in English. Key operated.
- .5 Safety switch: combination roll rubber with limit switches for full length of bottom rail of bottom section of door, to reverse door to open position when coming in contact with object on closing cycle.
- .6 Manual safety release for push-pull operator: operable from floor level with a chain hoist on doors. Power must be cut-off to operator by a cut-off switch.
- .7 Door speed: 300 mm per second.
- .8 Control transformer: for 24 V Ac control voltage.
- .9 Mounting brackets: galvanized steel, size and gauge to suit conditions.

## **2.5 PREFINISHED STEEL SHEET**

- .1 Prefinished steel with factory applied silicone modified polyester.
  - .1 Class: F1S.
  - .2 Colour: Custom colour to be selected by Departmental Representative.
  - .3 Specular gloss: 30 units +/- 5 in accordance with ASTM D 523.
  - .4 Coating thickness: not less than 25 micrometres.
  - .5 Resistance to accelerated weathering for chalk rating of 8, colour fade 5 units or less and erosion rate less than 20 % to ASTM D 822 as follows:
    - .1 Outdoor exposure period 1000 hours.
    - .2 Humidity resistance exposure period 1000 hours.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- .1 Install doors and hardware in accordance with manufacturer's instructions.
- .2 Rigidly support rail and operator and secure to supporting structure.
- .3 Install operator including electrical motors, controller units, pushbutton stations, relays and other electrical equipment required for door operation.
- .4 Installation includes electrical wiring from power supply located near door opening, and coordination and correct functioning of door with air curtain where air curtains are indicated.
- .5 Lubricate springs and adjust door operating components to ensure smooth opening and closing doors.
- .6 Adjust weatherstripping to form a weathertight seal.
- .7 Adjust doors for smooth operation.

### **3.2 CLEANING**

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt. Remove traces of primer, caulking; clean doors and frames.
- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment.

### **3.3 FINISH REPAIRS**

- .1 Touch up with primer galvanized finish damaged during installation.
- .2 Protect installed overhead doors from damage by other trades until completion of the Work.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 RELATED REQUIREMENTS**

- .1 Section 07 46 19: Preformed Metal Wall Cladding.
- .2 Section 07 62 00: Sheet Metal Flashing and Trim.
- .3 Section 07 92 00: Joint Sealing.
- .4 Section 08 80 00: Glazing.

### **1.2 REFERENCES**

- .1 Aluminum Association (AA)
  - .1 AA DAF 45-03(R2009), Designation System for Aluminum Finishes.
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-1.40-97, Anticorrosive Structural Steel Alkyd Primer.
  - .2 CAN/CGSB-79.1-M91, Insect Screens.
- .3 CSA International
  - .1 CSA-A440-00/A440.1-00(R2005), A440-00, Windows / Special Publication A440.1-00, User Selection Guide to CSA Standard A440-00, Windows.
  - .2 CAN/CSA-A440.2-09, Fenestration Energy Performance.
  - .3 CAN/CSA-Z91-02(R2008), Health and Safety Code for Suspended Equipment Operations.

### **1.3 ACTION AND INFORMATION SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data: Submit manufacturer's instructions, printed product literature and data sheets for windows and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of New Brunswick, Canada.
  - .2 Indicate materials and details in full size scale for head, jamb and sill, profiles of components, interior and exterior trim, junction between combination units, elevations of unit, anchorage details, location of isolation coating, description of related components and exposed finishes fasteners, and caulking. Indicate location of manufacturer's nameplates.
- .4 Samples:
  - .1 Submit for review and acceptance of each unit.
  - .2 Samples will be returned for inclusion into work.
  - .3 Submit one representative model complete full size window sample of each type window.
  - .4 Include frame, sash, sill, glazing and weatherproofing method, surface finish and colour. Show location of manufacturer's nameplates.
  - .5 Include 150 mm long samples of head, jamb, sill, meeting rail mullions to indicate profile.

- .5 Test and Evaluation Reports:
  - .1 Submit test reports from approved independent testing laboratories, certifying compliance with specifications, for:
    - .1 Windows classifications.
    - .2 Anodized finish, weathering characteristics.
    - .3 Air tightness.
    - .4 Water tightness.
    - .5 Wind load resistance.
    - .6 Condensation resistance.
    - .7 Sash strength and stiffness - operable casement projecting.
    - .8 Ease of operation - windows with operable lights.
    - .9 Forced entry resistance.
    - .10 Mullion deflection - combination and composite windows.

#### **1.4 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for windows for incorporation into manual.

#### **1.5 QUALITY ASSURANCE**

- .1 Certifications: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .2 Qualifications:
  - .1 Manufacturer Qualifications: Company specializing in manufacturing products specified in this section.
  - .2 Installer: experienced in performing work of this Section and approved by window manufacturer.
- .3 Mock ups:
  - .1 Construct mock ups in accordance with Section 01 45 00 - Quality Control.
  - .2 Construct mock up panel of exterior wall assembly 1800 x 1800 mm incorporating window.
  - .3 Mock-up will be used:
    - .1 To judge workmanship, substrate preparation, operation of equipment and material application.
    - .2 For testing to determine compliance with performance requirements.
- .4 Construct mock up where directed by the Departmental Representative.
- .5 Allow 48 hours for inspection of mock-up by Departmental Representative before proceeding with Work of this Section.
- .6 When accepted by Departmental Representative, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of finished work.

## **1.6 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect windows from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

## **1.7 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 74 22 - Construction / Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard and packaging material in appropriate on site bins for recycling in accordance with Waste Management Plan.
- .4 Place materials defined as hazardous or toxic in designated containers.
- .5 Fold up metal banding, flatten and place in designated area for recycling.

## **1.8 WARRANTY**

- .1 At no cost to Departmental Representative remedy any defects in work of this section due to faults in materials and/or workmanship for a period of five (5) years from date of Substantial Performance.
- .2 At no cost to Departmental Representative replace any window unit whose finish shows any defects such as delamination, blisters or excessive fading within five (5) years of Substantial Performance.

## **PART 2 - PRODUCTS**

### **2.1 SYSTEMS**

- .1 Window frame: fixed type, to CAN/CSA-A440, extruded aluminum, thermally broken with double glazed sealed insulated glass with 50 mm exterior nose and 89 mm back section. Acceptable products:
  - .1 Series 518 "Isoport" (150 mm deep perimeter frame and mullions) windows by Kawneer Company Canada Ltd.
  - .2 Series 970 (150 mm deep perimeter frame and mullions) by Alumicor Limited.
  - .3 Series 20-500 (150 mm deep perimeter frame and mullions) Insulated Window Framing System by Prevost.
- .2 All windows by same manufacturer.

## 2.2 WINDOW TYPE AND CLASSIFICATION

- .1 Type: Fixed
  - .1 Classification rating: to CAN/CSA-A440:
  - .2 Air tightness: A3
  - .3 Water tightness: B4
  - .4 Wind load resistance: C3
  - .5 Condensation resistance: Temperature Index, I-51
  - .6 Forced Entry: F2
  - .7 Glazing: G2

## 2.3 MATERIALS

- .1 Framing Components:
  - .1 Aluminum extrusions: AA 6063-T6 alloy, minimum 1.6 mm thick.
  - .2 Aluminum plate and sheet: AA 1100 alloy.
  - .3 Screws, bolts, nuts, washers, rivets and other fasteners incorporated into aluminum sections: aluminum or ANSI Series 300 stainless steel, or hot dip galvanized steel.
  - .4 Anchoring devices: aluminum, non-magnetic stainless steel or hot dip galvanized steel.
- .2 Glass and glazing materials: Double glazed, sealed insulating glass as specified in Section 08 80 00 - Glazing.
- .3 Caulking and sealants: as specified in Section 07 92 00 – Joint Sealing. VOC limit 250 G/L maximum to SCAQMD rule 1168.
- .4 Isolation coating: alkali resistant bituminous paint.
- .5 Exterior sills: extruded aluminum of type and size as detailed to suit job conditions; minimum 2.5 mm thick, complete with joint covers, jamb drip deflectors, chairs, anchors, and extruded aluminum end caps. Colour to match windows.

## 2.4 FABRICATION

- .1 Fabricate windows in accordance with CAN/CSA A440 supplemented as follows:
- .2 Window framing shall consist of thermally broken tubular sections with planted stop on exterior side, and snap-in glass stops on interior side. Use either closed tubular mullion sections at window frame perimeter locations or fill perimeter frame with rigid insulation.
- .3 Fabricate units square and true with maximum tolerance of plus or minus 1.5 mm for units with a diagonal measurement of 1800 mm or less and plus or minus 3 mm for units with a diagonal measurement over 1800 mm.
- .4 Face dimensions detailed are maximum permissible sizes.
- .5 Brace frames to maintain squareness and rigidity during shipment and installation.
- .6 Finish steel clips and reinforcement with shop coat primer to CAN/CGSB-1.40 380 g/m2 zinc coating to ASTM A123/A123M.

- .7 Aluminum components shall be extruded sections and shapes unless otherwise specified.
- .8 Size units to allow for structural deflection of surrounding construction.
- .9 Design work so that it will not be distorted, nor fasteners overstressed, from expansion and contraction of metal.
- .10 Fastenings shall be concealed.
- .11 Assemble all joints in main window frame and sash, neatly, in weathertight manner and secure by means of screws anchored into integral screw ports. Mechanically joined sections shall have hairline joints. Deburr and make smooth all sharp edges and corners. Fabricate entire window in a manner that will allow easy replacement of any defective, damaged or worn components, hardware or weather-stripping.
- .12 Removable glazing stops shall be fabricated in sections not exceeding length of the pane of glass being restrained.
- .13 Double weather-strip window units at all sash perimeters. Install all weather-stripping in specially extruded ports and secure to prevent shrinkage or movement.
- .14 Make provisions to drain to exterior any moisture entering or forming inside systems while preventing passage of air, dirt or insects to the interior.
- .15 Closures, covers and trim shall be extruded or formed to profiles shown and unless otherwise shown, minimum 2 mm thick.

## **2.5 ALUMINUM FINISHES**

- .1 Finish exposed surfaces of aluminum windows and aluminum components in accordance with Aluminum Association Designation System for Aluminum Finishes.
  - .1 Clear anodized finish designation AA-M12 C22A44, Class 1, with a minimum coating thickness of 0.7 mils.
- .2 Formed components such as sills, closures, trim shall be formed prior to finishing.

## **2.6 ISOLATION COATING**

- .1 Primers Paints Coatings: in accordance with manufacturer's recommendations for surface conditions.
  - .1 Primer: VOC limit 100 g/L maximum to GS-11
  - .2 Coating: VOC limit 100 250 275 g/L maximum to GS-11
  - .3 Paint: VOC limit 50 150 g/L maximum to GS-11
- .2 Isolate aluminum from following components, by means of isolation coating:
  - .1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.
  - .2 Concrete, mortar and masonry.
  - .3 Wood.

## 2.7 GLAZING

- .1 Glaze windows in accordance with CSA-A440 / A440.1.
- .2 Double glazed insulating unit: as described in Section 08 80 00 Glazing.
- .3 Glazing to be site installed, removable.

## 2.8 AIR BARRIER AND VAPOUR RETARDER

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

## PART 3 - EXECUTION

### 3.1 EXAMINATION

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

### 3.2 INSTALLATION

- .1 Window installation:
  - .1 Install in accordance with CSA-A440/A440.1.
  - .2 Arrange components to prevent abrupt variation in colour.
- .2 Sill installation:
  - .1 Install aluminum sills with uniform wash to exterior, level in length, straight in alignment with plumb upstands and faces. Use one piece mm lengths at each location.
  - .2 Cut sills to fit 12mm longer than window opening.
  - .3 Secure sills in place with anchoring devices located at ends joints of continuous sills and evenly spaced 600 mm on centre in between.
  - .4 Fasten expansion joint cover plates and drip deflectors with self-tapping stainless steel screws.
  - .5 Maintain 6 to 9 mm space between butt ends of continuous sills. For sills over 1200 mm in length, maintain 3 to 6 mm space at each end.

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

### **3.3 ACCEPTANCE**

- .1 Manufacturer to replace any glazed units broken, chipped or otherwise damaged during transport to site.
- .2 Replacement units to be to same specification as that for original, damaged units.

### **3.4 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning. Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 22 - Construction / Demolition Waste Management and Disposal.

### **3.5 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by window installation.

**END OF SECTION**

**PART 1 GENERAL**

**1.1 GENERAL REQUIREMENTS**

- .1 Comply with requirements of Division 1.
- .2 Furnish and deliver all finish hardware necessary for all doors. Also hardware as specified herein and as enumerated in "Set Numbers" and as indicated and requested by actual conditions of the building. The hardware shall include the furnishing of all necessary screws, special screws, bolts, special bolts, expansion shields, drop plates and all other devices necessary for the proper installation of the hardware.
- .3 The Departmental Representative's approval of the schedule will not be construed as certifying that the list is complete. Acceptance of the Hardware Schedule does not relieve the supplier of responsibility of errors or omissions.
- .4 Hardware should not be ordered unless a corrected copy of the shop drawings is reviewed and returned from the specification writer and bearing the approval of the Departmental Representative.
- .5 Aluminum Door hardware is to be ordered immediately after approval of shop drawings and shipped directly to the Aluminum Door supplier.
- .6 Furnish, deliver and install all finish hardware necessary for all doors, also hardware as specified herein and as enumerated in hardware group indicated by actual conditions at the project site.
- .7 The electrical hardware shall include the furnishing of plug in connections and final connections of low voltage wiring at the door opening.
  - .1 Electrical hardware devices to be installed by section 08 71 00 with all final connection with termination above the frame.
  - .2 Electric hardware devices for the proper operation and application of the hardware noted by connection notes in the hardware schedule.
  - .3 Power, conduit, low voltage wire to junction box above the frame. Connection of the power wiring by Division 25.
- .8 Division 25 to provide power wiring and conduit to the door opening or power supplies including conduit to hardware locations.

**1.2 REFERENCES**

- .1 American National Standards Institute (ANSI) A117.1 Specification
  - .1 ANSI/BHMA A156.1-2006, Butts and Hinges.
  - .2 ANSI/BHMA A156.26-2006, Continuous Hinges.
  - .3 ANSI/BHMA A156.13-2005, Mortise Locks and Latches.
  - .4 ANSI/BHMA A156.3-2001, Exit Devices.
  - .5 ANSI/BHMA A156.4-2000, Door Controls (Closers)
  - .6 ANSI/BHMA A156.5-2001, Auxiliary Locks and Associated Products.
  - .7 ANSI/BHMA A156.6-2005, Architectural Door Trim.
  - .8 ANSI/BHMA A156.7-2003, Template Hinge Dimensions.
  - .9 ANSI/BHMA A156.8-2005, Door Controls - Overhead Holders.
  - .10 ANSI/BHMA A156.15-2006, Closer/ Holder Release Device.
  - .11 ANSI/BHMA A156.16-2002, Auxiliary Hardware.
  - .12 ANSI/BHMA A156.18-2006, Materials and Finishes.

- .13 ANSI/BHMA A156.19-2007, Power Assist and Low Energy Power Operated Doors.
- .14 ANSI/BHMA A156.21-2006, American National Standards for Thresholds.
- .15 ANSI/BHMA A156.22-2005, Door Gasketing and Edge Seal Systems.
- .16 ANSI/BHMA A156.24-2003, Delayed Egress Locks.
- .17 ANSI/BHMA A156.25-2002, Electrified Locking Devices.
- .18 ANSI/BHMA A156.29-2001, American National Standards for Exit Locks, Exit Locks with Alarms, Exit Alarms, Alarms for Exits.
- .19 ANSI/BHMA A156.30-2003, American National Standards for High Security Cylinders.
- .20 ANSI/BHMA A156.31-2001, American National Standards for Electric Strikes and Frame Mounted Actuators.
  
- .2 Canadian Standards Association (CSA)
  - .1 CAN/CSA-B651-04. Accessible Design for the Built Environment.
  
- .3 Canadian Steel Door Manufacturer's Association (CSDMA).
  - .1 Standard Hardware Locations in Accordance with the Canadian Steel Door and Frame Association Guidelines.
  - .2 Recommended locations for Architectural Hardware for Wood Flush Doors.
  
- .4 National Fire Protection Agency (NFPA)
  - .1 NBC - National Building Code (1995)
  - .2 NFPA-80 - 2007 - Standard for Fire Doors and Windows.
  - .3 NFPA101 - Life Safety Code (2000)
  - .4 NFPA-105 - Smoke and Draft Control

### 1.3 ABBREVIATIONS

- .1 The following abbreviations are applicable to this section:
  - .1 AHC Architectural Hardware Consultant
  - .2 ALD ALF Aluminum Door and Frame
  - .3 ATMS/STMS Arm/Strike to Template with Machine Screws
  - .4 BB or FBB Ball Bearing Hinges
  - .5 BC Back Check
  - .6 BTB Back to Back
  - .7 B3E or B4E Bevel 3 or 4 sides
  - .8 C to C, C/L Centerline to Centerline
  - .9 CDC Certified Door Consultant
  - .10 CMK Construction Masterkeyed
  - .11 CSC Construction Specifications Canada
  - .12 CSK Countersunk Screw Holes.
  - .13 Cyl. Cylinder of a lock
  - .14 Deg. Degree of opening
  - .15 DEL Delay Action
  - .16 DHI Door and Hardware Institute
  - .17 DR Door
  - .18 FC Full Cover
  - .19 FS Fail Safe
  - .20 FSE Fail Secure
  - .21 FTMS Full template machine screws
  - .22 ½ TMS Half template machine screws
  - .23 GMK Grand Masterkeyed

.24	KA/KD	Keyed Alike, Keyed Different
.25	HMD/PSF	Hollow Metal Door, Pressed Steel Frame
.26	LH/RH	Left Hand, Right Hand
.27	LHR/RHR	Left Hand Reverse, Right Hand Reverse
.28	MK or MKD	Master Keyed
.29	NBC	National Building Code
.30	NRP	Non removable pin
.31	TB/SB	Thru Bolts, Sex Bolts
.32	TJ	Top Jamb
.33	ULC	Underwriters Laboratories Canada
.34	WD	Wood Door

#### 1.4 SUBMITTALS

- .1 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications and data sheets in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Samples:
  - .1 Upon Departmental Representative's request submit samples of door hardware in accordance with Section 01 33 00 – Submittal Procedures.
  - .2 Identify each sample by label indicating applicable specification paragraph number, brand name and number, finish and hardware package number.
  - .3 After approval samples will be returned for incorporation in the Work.
- .3 Hardware List:
  - .1 Submit detailed hardware list and keying schedule in accordance with Section 01 33 00 – Submittal Procedures.
  - .2 Hardware Schedule is to be submitted as per DHI vertical format which is in the "Sequence and Format for Hardware Schedules".
  - .3 Indicate specified hardware including make, model, material, function, size, finish and other pertinent information.
  - .4 Furnish other Sections with templates required for hardware preparation and installation. Issue templates when requested so as not to cause any delays but not before hardware list has received final review by Departmental Representative.
  - .5 Keying Schedule to be in accordance with DHI manual "Keying Systems Names and Nomenclature". Key schedule is not to hold up the processing of the hardware list.
  - .6 Wiring Diagrams will only be supplied after the final approval of the Hardware Schedule. Submit wiring diagrams as requested for proper installation of electrical, electrical-mechanical and electrical-magnetic products.
- .4 Manufacturer's Instructions: Submit manufacturer's installation instructions.
- .5 Closeout Submittals: Provide operation and maintenance data for door closers, locksets, door holders, electrified hardware and fire exit hardware for incorporation into Operations and Maintenance Manuals specified in Section 01 78 00 – Closeout Submittals.

**1.5 WARRANTY**

- .1 Provide guarantee.
  - .1 Closers 10 year
  - .2 Mortise Locks 10 year mechanical / 2 year electrical
  - .3 Electronic Closer 2 year
  - .4 Exit Device 3 years
  - .5 Hinges Lifetime of Building
  - .6 All other Hardware 1 year

**1.6 QUALITY ASSURANCE**

- .1 Regulatory Requirements: hardware for doors in fire separations and exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada.
- .2 Meet requirements of National Building Code of Canada and other applicable regulations.
- .3 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .4 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .5 Pre-installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.
- .6 Upon completion of finish hardware installation, hardware supplier shall inspect work and shall certify in writing that all items and their installation are in accord with requirements of Contract Documents and are functioning properly.

**1.7 PRODUCT DELIVERY, HANDLING & STORAGE**

- .1 Packing, Shipping, Handling and Unloading:
  - .1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 – Common Product Requirements.
  - .2 Package each item of hardware including fastenings, separately or in like groups of hardware, with necessary screws, keys, instructions and installation templates.
  - .3 All items of hardware should be itemized and tagged as per the approved Finish Hardware Schedule.
  - .4 Hardware for doors to be shipped directly to the supplier. Door finish hardware to be ordered immediately after approval of shop drawings. Delays in ordering finish hardware are not acceptable.
  - .5 Shortages will not delay installation.
  - .6 Items damaged in shipment will be replaced properly with proper material.
  - .7 All Hardware shall be handled in a manner to avoid damage, marking and scratching.

- .8 Hardware is to be inventoried on site and confirmed by the Contractor and Hardware Supplier.
- .2 Storage and Protection:
  - .1 Store hardware in locked, clean and dry area.

#### 1.8 WASTE DISPOSAL AND MANAGEMENT

- .1 Separate and recycle waste materials in accordance with Section 01 74 22.
- .2 Collect and separate metal, plastic, paper packing and corrugated cardboard and deposit in appropriate on site recycling bins.
- .3 Dispose of corrugated cardboard, plastic packaging material in appropriate on-site bin for recycling in accordance with site waste management program.

#### 1.9 MAINTENANCE

- .1 Provide maintenance materials in accordance with Section 01 78 00.
- .2 Provide three sets of maintenance tools for closers, locks and exit devices as well as a complete set of installation instructions.
- .3 After the building is occupied, arrange for an appointment with the owner to instruct them of proper use, service, adjusting and maintenance of the hardware furnished in this section.
- .4 Extra Material if required.

#### 1.10 INSPECTION

- .1 The hardware supplier shall arrange at least four visits to the job site.
  - .1 Visit project at time of delivery of hardware and inspect the personnel who will be looking after the installation and issuing of hardware at the job site. Delivered hardware to be received, sorted and itemized at the jobsite with contractor.
  - .2 Second visit will be required for key meeting with the Departmental Representative at a location at their request.
  - .3 Third visit will take place when about sixty percent of hardware is installed.
  - .4 Check all hardware on site and correct any errors or shortages. Coordinate with contractor to determine proper time for visit.
  - .5 Fourth visit shall take place just prior to building turnover. All hardware shall be checked for proper installation and adjustment. Any errors shall be corrected and adjustments made. Check the key system and furnish a report along with maintenance manuals detailing any errors found.
  - .6 Cost of this service will be included as part of this Section and is not covered by any allowance amount.

**PART 2 PRODUCTS**

**2.1 HARDWARE ITEMS**

- .1 Only locksets and latchsets listed are acceptable for use on this project.
- .2 Use one manufacturer's products only for all similar items.
- .3 Manufacturer's Listed:
  - .1 Hinges
    - .1 McKinney – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
  - .2 Continuous Hinges
    - .1 McKinney – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
  - .3 Locks
    - .1 Sargent – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
  - .4 Exit Devices
    - .1 Sargent – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
  - .5 Closers
    - .1 Sargent – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
  - .6 Power Operators
    - .1 Besam Entrance Solutions, Royal Door Ltd., 105 Henri Dunant Street, Moncton, NB, E1E 1E4.
  - .7 Flush Bolts
    - .1 Rockwood Manufacturing – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
  - .8 Overhead Stops
    - .1 Sargent – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
  - .9 Flatware
    - .1 Rockwood Manufacturing – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
  - .10 Floor/Wall Stops
    - .1 Rockwood Manufacturing – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
  - .11 Weatherstrip/Thresholds
    - .1 Pemko – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
  - .12 Key Cabinet
    - .1 Telkee, 60 Starlifter Ave. Dover Delaware 19901-9254.
  - .13 Electromagnetic Locks
    - .1 Securitron – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan Ontario, L4H 4T9.
  - .14 Power Supplies
    - .1 Securitron – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan Ontario, L4H 4T9.
  - .15 Electric Strikes
    - .1 HESS – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan Ontario, L4H 4T9.

**2.2 DOOR HARDWARE**

- .1 All fasteners to come complete with the hardware as described. Hardware supplier must be Advised immediately if required fasteners are not enclosed with hardware.
- .2 Hardware must be installed with fasteners supplied by the manufacturer.
- .3 Hinges Butts and hinges: to ANSI/BMHA A156.1, as listed in Hardware Schedule.
  - .1 Non removable pins (NRP) for all exterior and out swinging secure doors.
  - .2 Exterior hinges and hinges in wet areas of stainless steel, brass or bronze.
  - .3 Interior hinges of plated steel, unless otherwise noted.
  - .4 Size and quantity to be as the manufacturers hinge selection guide.
  - .5 Unless otherwise scheduled, supply (1) hinge for every 762mm of door height.
  - .6 The width of hinges shall be sufficient to clear all trim.
  - .7 All hinges to be five-knuckle design and ball bearing.
  - .8 All electric hinges to be supplied with Electrolynx QC plug in connectors as specified.
  - .9 Finish to Dull Chrome 26D.
  - .10 Acceptable Products:
 

.1	Specified	Acceptable Alternates	
.2	<u>McKinney</u>	<u>Hager</u>	<u>Stanley</u>
.3	TA2714	BB1279	FBB179
.4	TA2314	BB1191	FBB191
.5	TA3786	BB1168	FBB168
.6	TA3386	BB11699	FBB199
- .4 Continuous Geared Hinges: to ANSI/BMHA A156.26.
  - .1 Provide continuous hinges of the type and style noted in the Hardware legend.
  - .2 To be non-handed and completely reversible.
  - .3 Material: Extruded tempered aluminium.
  - .4 Material Standard: 6063-T6 Alloy.
  - .5 Configuration: Three interlocking extrusions in pinless assembly, installed to full height of door.
  - .6 Type: Full Mortise: 45mm for extra heavy duty weights.
  - .7 Length: Full height less 25mm.
  - .8 Strength: Heavy Duty – 27 bearings each leaf for 2108mm, minimum door weight 245 kg.
  - .9 Mortise Fasteners: TEK, #12 x ¾" inch, FHUC, Philips head screws.
  - .10 Size to suite door height complete with installation aids and fasteners to suit door an frame conditions.
  - .11 All electric hinges to be supplied with Electrolynx QC plug in connectors as specified.
  - .12 Finish to Anodized Aluminum US28.
  - .13 Acceptable Products:
 

.1	Specified	Acceptable Alternates	
.2	<u>McKinney</u>	<u>Pemko</u>	<u>Hager (Roton)</u>
.3	MCK-12HD	CFM83SLFHD	780-112HD

- .5 Bored locks and Preamsembled Locks and Latches:
  - .1 Bored locks and latches: Locks shall exceed the requirements of ANSI/BHMA A156.2 -2003, series 4000 bored lock, grade 1, designed for function as stated in Hardware Schedule. Exceeds 1.5 times A156.2 Grade 1 requirements.
  - .2 Locks shall be non-handed with bi-directional lever operation, except the "G" and "Y" lever designs.
  - .3 Through-bolt mounting shall be adaptable to fit a variety of standard cylindrical lock preps.
  - .4 Locks shall comply with UL10C and UBC 7-2 positive pressure requirements.
  - .5 Locks required for fire doors shall be listed by Underwriters Laboratories for ratings of 3 hours (A label) and less, for doors up to 4'0" (1.2m) x 10'0" (3.0m) and pairs of doors 8'0" (2.4m) x 10'0" (3.0m). Lock levers shall be made of solid material.
  - .6 Lock shall be available in a minimum of six different lever designs.
  - .7 Locks shall have a 2-3/4 inch (70mm) backset standard.
  - .8 Strikes shall be non-handed with a curved lip. Provide wrought boxes with strikes.
  - .9 Locks shall have brass 6-pin cylinder standard.
  - .10 Provide two nickel silver keys with each lock.
  - .11 Finished to 26D.
  - .12 Acceptable products:
 

.1	Specified	Acceptable Alternates			
.2	<u>Sargent</u>	<u>Corbin</u>	<u>Yale</u>	<u>BEST</u>	<u>Schlage</u>
.3	10 Line	CL3300	5400LN	93K	ND-Series
  
- .6 Mortise locks and latches: to ANSI/BMHA A156.13, Series 1000 mortise lock, grade 1, designed for function as stated in Hardware Schedule.
  - .1 Locks shall meet or exceed the requirements of ANSI/BHMA A156.13 Series 1000, Operational Grade 1, and Security Grade 1 with all standard trims.
  - .2 Meets or exceeds impact requirements of ASTM F1577-95b Detention Locks for Swinging Doors.
  - .3 Locks shall be easily re-handed without opening the lock body.
  - .4 Multi-functional lock body to make it easy to change functions in the field.
  - .5 Locks shall comply with UL10C and UBC.
  - .6 Construction: Lock functions shall be manufactured in a single-sized case formed from 2.6mm steel minimum.
  - .7 Locks shall have field adjustable, beveled, armored front, with a 3mm thickness minimum.
  - .8 Locks shall have a one piece, 19mm throw anti-friction stainless steel latch.
  - .9 Deadbolts, where specified, shall be full one inch 25mm throw made of one-piece hardened stainless steel.
  - .10 Locks shall have a 70mm backset, standard.
  - .11 Electrical functions Fail Safe and Fail Secure, Voltage 12VDC or 24VDC Regulated. Full wave rectification installed inside the lockbody. Current .25 at 24VDC and .5 at 12VDC. UL and CUL listed for use on fire doors. Operating temperature: Max 66 (C) degrees and Min. -35(C) degrees.

- .12 Strikes shall be non-handed with a curved lip. Strikes for pairs of doors to be supplied with short lip strike (82-0229). Not to extend beyond the face of the door.
- .13 To ensure proper alignment, trim, knobs or levers, shall be through-bolted and fully interchangeable between rose and escutcheon.
- .14 Lever handles: "LNL" design.
- .15 Roses: round.
- .16 Finished to 26D.
- .17 Acceptable products:
  - .1 Specified                      Acceptable Alternates
  - .2 Sargent                      Corbin                      Yale                      BEST                      Schlage
  - .3 8200 – Series                      ML2200                      8800                      45H                      L9000
  
- .7 Door controls (closers): to ANSI/BMHA A156.4 as listed in Hardware Schedule.
  - .1 Modern type, surface applied.
  - .2 All closers for both interior and exterior doors shall be the product of one manufacturer and be matched in style.
  - .3 Surface closers shall be adjustable to provide sizes 1 through 6 and comply with ADA.
  - .4 Full rack and pinion construction.
  - .5 Closing speed, latching speed and backcheck shall be controlled by key operated valves.
  - .6 Captivated valves.
  - .7 Delayed action feature shall be available and controlled by a separate valve.
  - .8 Delayed action shall be available in addition to, not in lieu of, backcheck.
  - .9 The one piece closer body shall be of die cast aluminum alloy with 14% silicon minimum content. An increase of 15% in closing power shall be provided by means of adjustment of the arm leverage at the foot connection. (Standard Arm).
  - .10 All arms shall be finely finished with heavy duty forged steel main arm.
  - .11 Two mounting positions of the closer shall meet all requirements. Standard mountings shall provide 120° door opening and alternate mounting 180° door opening.
  - .12 All closers shall be suitable for standard, top jamb, parallel arm and track type applications when provided with proper brackets and arms.
  - .13 Closer covers shall be of high impact plastic material of flame retardant grade.
  - .14 Secured by machine screws.
  - .15 Spring power shall be continuously adjustable over the full range of closer sizes and allow for reduced opening force for the physically handicapped. Hydraulic regulation shall be tamper proof, non-critical valves. Closers shall have separate adjustment for latch speed, general speed and backcheck.
  - .16 All closer to have a forged steel main arm and forged forearm for parallel arm closers.
  - .17 Finish to Aluminum 689.

- .7 Door controls (closers) – continued:
- .18 Acceptable products:
- |    |                |                        |               |            |
|----|----------------|------------------------|---------------|------------|
| .1 | Specified      | Acceptable Alternates: |               |            |
| .2 | <u>Sargent</u> | <u>Norton</u>          | <u>Corbin</u> | <u>LCN</u> |
| .3 | 1431           | 8500                   | DC6200        | 1460-FC    |
| .4 | 351            | 7500                   | DC3000        | 4040       |
| .5 | 421            | 2800ST                 |               |            |
- .8 Auxiliary locks and associated products: to ANSI/BHMA A156.5, as listed in Hardware Schedule.
- .1 Cylinders: Rim and Mortise, length to suite, cam to suite.
- .2 Small Case Mortise Deadbolt, classroom function.
- .3 Finished to Dull Chrome 626.
- .4 Acceptable products:
- |    |                |                        |             |  |
|----|----------------|------------------------|-------------|--|
| .1 | Specified      | Acceptable Alternates: |             |  |
| .2 | <u>Sargent</u> | <u>Corbin</u>          | <u>Yale</u> |  |
| .3 | 4800           | DL4000 300             |             |  |
- .9 Architectural door trim: to ANSI/BHMA A156.6, as listed in Hardware Schedule, finished to stainless steel 32D.
- .1 Door protection plates: kickplates type, 1.3 mm thick stainless steel, 203mm high, unbevelled edges, width less 40mm push side, width less 25mm on pull side for single doors. Width less 25mm for pairs. Finished to stainless steel 630.
- .1 Acceptable products:
- |    |                 |                       |             |              |
|----|-----------------|-----------------------|-------------|--------------|
| .1 | Specified       | Acceptable Alternates |             |              |
| .2 | <u>Rockwood</u> | <u>Standard Metal</u> | <u>Ives</u> | <u>Hager</u> |
| .3 | K1050           | K10A                  | 8400        | 190S         |
- .2 Push plates: 1.3 mm thick stainless steel, size 89mm x 381mm, finished to stainless steel 630.
- .1 Acceptable products:
- |    |                 |                       |             |  |
|----|-----------------|-----------------------|-------------|--|
| .1 | Specified       | Acceptable Alternates |             |  |
| .2 | <u>Rockwood</u> | <u>Standard Metal</u> | <u>Ives</u> |  |
| .3 | 70RC            | K14A                  | 8200RC      |  |
- .3 Door Pulls: 19mm round pull, 228.6mm center to center pulls, with 76mm x 305mm protection plate, mount type 1, finished to stainless steel 630.
- .1 Acceptable products:
- |    |                 |                       |             |  |
|----|-----------------|-----------------------|-------------|--|
| .1 | Specified       | Acceptable Alternates |             |  |
| .2 | <u>Rockwood</u> | <u>Standard Metal</u> | <u>Ives</u> |  |
| .3 | 111 x 73CL      | K14 x 2409-1(RC)      | 8303        |  |
- .4 Door Pulls: 32mm Round Offset Pull, mount type 1, 1220mm center to center, mounting to be with a security bolt (#4B) for single application and (#5) for back to back, finished to stainless steel 630.
- .1 Acceptable products: Standard Metal D-352 x Mnt.
- .1 Specified Acceptable Alternates
- |    |                 |                       |             |            |
|----|-----------------|-----------------------|-------------|------------|
| .2 | <u>Rockwood</u> | <u>Standard Metal</u> | <u>Ives</u> | <u>CBH</u> |
| .3 | BF159           | 3018-2                | 8190-18     | 2018-1     |

- .10 Door controls - overhead stop: to ANSI/BMHA A156.8, heavy duty construction, BHMA Grade 1 Certified, heavy duty architectural bronze construction.
- .1 UL Classified: The 590 and 690 stops are UL 10B and UL 10C classified as miscellaneous fire door accessories.
  - .2 Corrosion resistance: Brass construction provides corrosion resistance in a variety of conditions.
  - .3 Holder Selector: 590 and 690 series holders are equipped with a turn knob to activate and deactivate the hold open function
  - .4 Thru bolts capture channel and end caps.
  - .5 Heavy duty shock spring absorbs load and gradually stops door.
  - .6 Blade shim required for all Aluminum Doors.
  - .7 Sized as per manufacturer's guidelines. Take into account other hardware mounted on doors.
  - .8 Finishes
    - .1 Exterior to stainless steel, 26D.
    - .2 Interior to steel sprayed finish, EN.
  - .9 Acceptable products:
 

.1 Specified	Acceptable Alternates		
.2 <u>Rixson</u>	<u>Sargent</u>	<u>Glynn Johnson</u>	
.3 #1 (Concealed)	690	100	
.4 #9 (Surface)	590	90	
.5 #2 (Concealed)	1530	410	
.6 #10 (Surface)	1540	450	
- .11 Closer/Holder Release Device: to ANSI/BMHA A156.15.
- .1 Designed for use with self-closing fire and smoke barrier doors.
  - .2 When de-activated, helps control the spread of fire and smoke by automatically releasing doors from an open position for simultaneous closing.
  - .3 Fail-safe device: When electrical power fails, doors will release to close automatically.
  - .4 Conforms to devices outlined in National Fire Protection Agency Standards Nos. 80 and 101.
  - .5 Recommended vertical location is on top rail of door – within 150mm of lock stile edge.
  - .6 When applications will not allow wall or floor magnets, consult manufacturer's FireGuard catalog for our line of Electronic Closer Holders.
  - .7 Fits standard outlet box.
  - .8 Holding force – 35 lbs typical.
  - .9 Voltage and Current: 120 VAC, 60 Hz., .020 amp, 24 VAC/DC, 60 Hz., .020 amp, 12 VDC, .040 amp.
  - .10 Finish – EN.
  - .11 UL – UL Listed to U.S. and Canadian safety standards.
  - .12 25mm extension included standard to increase armature projection to 67mm.
  - .13 Acceptable products: Sargent 1560 and 1561.
 

.1 Specified	Acceptable Alternates:			
.2 <u>Sargent</u>	<u>Rixson</u>	<u>Dorma</u>	<u>LCN</u>	
.3 1561	997/998	EM504/505	SEM 7840/7850	

- .12 Door Stops and Holders and Auxiliary hardware: to ANSI/BMHA A156.16 designated by letter L and numeral identifiers as listed in Hardware Schedule finished to 26D.
- .1 Floor stops dome style classification. Low dome or High dome. Die cast brass. Stops to be sized according to door clearances, thresholds or undercuts as noted in the Door Schedule. Fasteners to suite floor conditions.
- .1 Acceptable products:
- |    |                 |                       |             |  |
|----|-----------------|-----------------------|-------------|--|
| .1 | Specified       | Acceptable Alternates |             |  |
| .2 | <u>Rockwood</u> | <u>Standard Metal</u> | <u>Ives</u> |  |
| .3 | 441             | S101                  | FS13        |  |
| .4 | 443             | S103                  | FS17        |  |
| .5 | 483             | S110                  | FS441       |  |
- .2 Wall stops classification, convex or concave, cast brass or bronze. Fasteners to suite wall conditions.
- .1 Acceptable products:
- |    |                 |                       |             |  |
|----|-----------------|-----------------------|-------------|--|
| .1 | Specified       | Acceptable Alternates |             |  |
| .2 | <u>Rockwood</u> | <u>Standard Metal</u> | <u>Ives</u> |  |
| .3 | 406             | S121                  | WS406CV     |  |
| .4 | 409             | S123                  | WS406CC     |  |
- .3 Flush Bolts classification. Meets ANSI/BMHA A156.16. Bolt tip is 13mm Diameter with 19mm throw and bolt backset of 19mm. To be supplied with F68 Dust Proof Strike.
- .1 Acceptable products:
- |    |                 |                       |            |             |
|----|-----------------|-----------------------|------------|-------------|
| .1 | Specified       | Acceptable Alternates |            |             |
| .2 | <u>Rockwood</u> | <u>Standard Metal</u> | <u>DCI</u> | <u>Ives</u> |
| .3 | 557             |                       | 790        | FB358       |
| .4 | 555             | F65                   | 780        | FB458       |
| .5 | 570             | F68                   | 80         | DP2         |
| .6 | 1840            | 840                   | 840        | FB31        |
| .7 | 1940            | 940                   | 940        | FB41        |
- .13 Power assist and low energy power operated doors: to ANSI/BMHA A156.19.
- .1 Automatic operators shall be complete with all components including Operator Housing, Power Operator, Electronic Control, Soft Start, Switching Networks and all Connecting Hardware.
- .2 Size and type to be as indicated in Hardware Groups.
- .3 Operator Housing shall be complete with finished end caps prepared for mounting to door frame.
- .4 Operator shall be factory assembled with all necessary components for proper operation and switching. Relays, wiring harness and other components shall be plug-in type.
- .5 Operator controls shall include adjustable time delay, safe-swing circuit as well as provision for accessories as detailed in Hardware Groups.
- .6 All wiring shall be of the shielded type with proper number of conductor wires to install all components specified.
- .7 Operator shall include sufficient power supplies to operate all hardware and accessory items as detailed in Hardware groups. In the event additional power supplies are required it shall be added at no increase in contract price.
- .8 Complete unit shall be mounted with provisions for easy servicing or replacement without removing the door or frame.
- .9 Confirm frame detail and if necessary provide a suitable mounting plate to install operator properly.

- .10 Acceptable products:
- |    |              |                       |  |
|----|--------------|-----------------------|--|
| .1 | Specified    | Acceptable Alternates |  |
| .2 | <u>Besam</u> | <u>Stanley</u>        |  |
| .3 | Powerswing   | Magic Force           |  |
- .14 Thresholds and Weatherstripping Thresholds: to ANSI/BMHA A156.21.
- .1 Saddle threshold 152.4 mm wide x full width of door opening, extruded aluminum mill finish, serrated surface, with thermal break of rigid PVC.
- .2 Panic threshold 93.7 mm wide x full width of door opening, extruded aluminum mill finish, serrated surface, with lip and vinyl door seal insert.
- .3 Acceptable products:
- |    |              |                       |              |
|----|--------------|-----------------------|--------------|
| .1 | Specified    | Acceptable Alternates |              |
| .2 | <u>PEMKO</u> | <u>KN Crowder</u>     | <u>Hager</u> |
| .3 | 179AP        | CT-39P                | 552W         |
| .4 | 252 x 3AFG   | CT45A                 | 421S         |
| .5 | 251 x 226AFG | CT49A                 | 515S         |
- .15 Door Gasketing and Edge Seal Systems: to ANSI/BMHA A156.22.
- .1 Head and Jamb seal:
- .1 Extruded aluminum frame and neoprene insert, clear anodized finish.
- .2 Surface overhead stops and exit device strikes to mount on top of weatherstrip to provide continuous seal.
- .3 Adhesive backed black "Santoprene" to provide smoke, light and sound control. Fire labeled 1 1/2hrs.
- .4 Acceptable products:
- |    |              |                       |              |
|----|--------------|-----------------------|--------------|
| .1 | Specified    | Acceptable Alternates |              |
| .2 | <u>PEMKO</u> | <u>KN Crowder</u>     | <u>Hager</u> |
| .3 | 319S         | W-14S                 | 878S         |
| .4 | 290APK       | W20N                  | 881S         |
| .5 | 2891AS       | W20S                  | 881S         |
| .6 | S88B         | W22                   | 726S         |
| .7 | 288B         | W21                   | 726S         |
- .2 Door bottom seal:
- .1 Extruded Aluminum frame and nylon brush sweep, clear anodized finish.
- .2 Heavy duty, door seal of extruded aluminum frame and solid closed cell neoprene weather seal, recessed in door bottom, closed ends, automatic retract mechanism when door is open, clear anodized finish.
- .3 Acceptable products:
- |    |              |                       |              |
|----|--------------|-----------------------|--------------|
| .1 | Specified    | Acceptable Alternates |              |
| .2 | <u>PEMKO</u> | <u>KN Crowder</u>     | <u>Hager</u> |
| .3 | 3452CNB      | W35-1                 | 770SB        |
| .4 | 18100CNB     | W24S                  | 801SB        |
| .5 | 4301         | CT-52                 | 747S         |
- .3 Astragal:
- .1 Flat overlapping extruded aluminum by door height with pile insert.
- .2 Meeting astragal extruded aluminum frame with brush insert by each door by door height, clear anodized finish.

.3	Astragal (continued):		
.3	Acceptable products:		
.1	Specified	Acceptable Alternates	
.2	<u>PEMKO</u>	<u>KN Crowder</u>	<u>Hager</u>
.3	357CS	W8S	835S
.4	18061CNB	W-25S	802SB
.5	3672A	W8P	835

- .16 Key Switches:
- .1 Mortise Keyswitch – MKA Series.
  - .2 Standard with 12 or 24 VDC bi-color LED
  - .3 Backing bracket permits integration with any 32mm or 28mm mortise cylinder (Not Included)
  - .4 Additional switch position on backing bracket allows another switch to be activated by turning the key in the opposite direction 5 Amp rated plunger switch UL Listed.

- .17 Door Status Switch:
- .1 Monitors door position remotely.
  - .2 SPDT concealed switch (3 wire).
  - .3 Contacts rated .25 Amp @24 VDC, requires 25mm diameter hole.
  - .4 Acceptable products:
 

.1	Specified	Acceptable Alternates
.2	<u>Sargent</u>	<u>Securitron</u>
.3	3287	DPS W/M

**2.3 FASTENINGS**

- .1 Use only fasteners provided by manufacturer. Failure to comply may void warranties and applicable licensed labels.
- .2 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.
- .3 Exposed fastening devices to match finish of hardware.
- .4 Where pull is scheduled on one side of door and push plate on other side, supply fastening devices, and install so pull can be secured through door from reverse side. Install push plate to cover fasteners.
- .5 Use fasteners compatible with material through which they pass.

**2.4 FINISHES**

.1	<u>Description</u>	<u>Material</u>	<u>BMHA</u>
.2	Exterior Hinges	Stainless Steel Metal, Satin	630
.3	Interior Hinges	Satin Chromium Plated	626
.4	Locks	Stainless Steel Metal, Satin	630
.5	Exit Devices	Satin Chromium Plated	626
.6	Closers	Aluminum Powder Coated	689
.7	Flatware	Stainless Steel Metal, Satin	630
.8	All other items	Satin Chromium Plated	626

## 2.5 KEYING

- .1 All keying shall be completed by the Institution. Provide blank keys and cylinders shipped direct to the CSC Representative.
- .2 All locks to be masterkeyed to the existing BEST factory registered masterkey system. All locks to be masterkeyed as per the Institution's requirements.
- .3 All locks to have 7-Pin Interchangeable Core to High Security Kaba Peaks, complete with control keys.
- .4 All locks and cylinders to be visually keyed.
- .5 Consult with the Departmental Representative and the Institution and secure written approval of the complete keying layout prior to placing lock order with the factory.
- .6 Grand masterkeys and masterkeys shall be delivered in a sealed container directly to the Institution's designated Representative by registered mail, return receipt if requested.
- .7 Supply:
  1. Grand Masterkeys 3
  2. Masterkeys 3 per group
  3. Change Keys/Lock 3
  4. Construction Masterkeys 10
  5. Construction Core Control Keys 5
  6. Permanent Core Control Keys 5
  7. Key Blanks 50

## 2.6 KEY CONTROL

- .1 Provide a key control system, including envelopes, labels with self-locking clips, receipt forms, 3-way visible card index, temporary markers and permanent markers and standard metal cabinet. Allow for 150% of the number of locks required on the project.
- .2 Provide complete cross index system set up by the Hardware Supplier and place keys on markers and hooks in the key cabinet as determined by the final key schedule.
- .3 Install and give instruction to owner on how the system is to be used.
- .4 Provide hinged-panel type cabinet for wall mounting.
- .5 Acceptable products: TCR-123-S.

## PART 3 - EXECUTION

### 3.1 MANUFACTURER'S INSTRUCTIONS

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

- .2 Furnish metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.
- .3 Furnish manufacturers' instructions for proper installation of each hardware component.
- .4 Wiring Diagrams: Provide any special information, voltage requirements and wiring diagrams to other trades requiring such information.

### **3.2 INSTALLATION**

- .1 Install door hardware in accordance with manufacturer's instructions, using special tools and jigs. Fit accurately and apply securely. Ensure that hardware is installed correctly. Issue instructions if required to Sections concerned.
- .2 Install hardware to standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door Manufacturers' Association.
- .3 Installation is to be done by a qualified tradesman, if technical assistance is required contact the hardware supplier.
- .4 Where door stop contacts door pulls, mount stop to strike bottom of pull.
- .5 Install key control cabinet.
- .6 Use only manufacturer's supplied fasteners. Failure to comply may void manufacturer's warranties and applicable licensed labels. Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.
- .7 Remove construction cores and locks when directed by Contractor; install permanent cores and check operation of locks.
- .8 Hardware should not be installed until all finishing is complete.
- .9 All hardware to be installed level plumb and true.
- .10 All operating parts to work freely and smoothly.
- .11 Exterior thresholds to be set in exterior sealants.
- .12 Install Power Operators as per manufacturer's instructions and by a qualified installer.
- .13 Access control to be installed by a certified installer.
- .14 Power wiring by Division 25. Low voltage wiring by access control supplier.

### **3.3 ADJUSTING**

- .1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.
- .2 Lubricate hardware, operating equipment and other moving parts.

- .3 Adjust door hardware to provide tight fit at contact points with frames.
- .4 All defective or damaged hardware will have to be repaired or replaced at the contractor's expense.

### 3.4 **CLEANING**

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturer's instructions.
- .3 Remove protective material from hardware items where present.
- .4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

### 3.5 **DEMONSTRATION**

- .1 Keying System Setup and Cabinet:
  - .1 Set up key control system with file key tags, duplicate key tags, numerical index, alphabetical index and key change index, label shields, control book and key receipt cards.
  - .2 Place file keys and duplicate keys in key cabinet on their respective hooks.
  - .3 Lock key cabinet and turn over key to Departmental Representative.
- .2 Maintenance Staff Briefing:
  - .1 Brief maintenance staff regarding:
  - .2 Proper care, cleaning, and general maintenance of projects complete hardware.
  - .3 Description, use, handling, and storage of keys.
  - .4 Use, application and storage of wrenches for door closers, locksets and fire exit hardware.
- .3 Demonstrate operation, operating components, adjustment features, and lubrication requirements.

### 3.6 **PROTECTION**

- .1 Protect all products and finishes until completion of the Work and acceptance by Departmental Representative.

3.7 HARDWARE SCHEDULE

Heading #1

1 Single door X100

1000 x 2150 x 45 - HM Ins DR x PSF-TB FR

1	Continuous Hinge	Pemko CFM83SLFHD1	C
1	Classroom Lockset	Sargent 72-8237 LNL	US26D
2	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
1	Electric Strike	HES 1006-24VDC-LBM KM x Elect Lynx Adapter 2004	630-LBM
1	Smart Pac III	HES 2005M3	
1	Plug-in AC Transformer	HES 2002P-24	
1	Power Operator	Besam POWERSWING	US28
1	Mounting Plate	Besam MOUNTING PLATE x FULL HEADER	US28
1	Backing Plate	Besam BACKING PLATE x FULL HEADER	US28
1	O/H Stop - Concealed	Rixson 1-426 (967mm -1092mm)	630
1	Kick Plate	Rockwood K1050 900mm x 50mm LDW (Push Side)	US32D
1	Kick Plate	Rockwood K1050 355mm x 50mm LDW	US32D
1	Threshold - Saddle	Pemko 1715A x Width	AFG
1	Rigid Jamb Weatherstrip	Pemko 2891AS x 3 Sides	A
1	Door Bottom Sweep	Pemko 3452CNB x Width	C
2	Escutcheon	Bea 10ESCUTCHEON45	US32D
2	Wall Actuator	Bea 10PBR451 - WALL MOUNT ACTUATOR	US32D
1	Door Position Switch	Securitron DPS-M-BK (HM Doors)	
1	Mortise Cyl. (Straight Cam)	Sargent 41 13-0097 (Key Switch)	US26D
1	Keyswitch, DPDT	Securitron (CAD) MKA2 x MKSA2 (Key Switch)	
1	Push Button	Securitron PB2	
1	Wiring Harness	McKinney (CAD) 93998-QC-1500P-QC12-12 Wires W/Pins-15'0	
1	Wiring Diagrams	Sargent (CAD) Wiring Diagrams (Elevations & Point to Point)	

REQUIRES 120VAC POWER TO POWER OPERATOR LOCATION BY ELECTRICAL SUPPLIER.  
 REQUIRES 120VAC POWER TO POWER SUPPLY LOCATION BY ELECTRICAL SUPPLIER.  
 REQUIRES LOW VOLTAGE FROM POWER OPERATOR TO POWER SUPPLY LOCATION.  
 REQUIRES LOW VOLTAGE FROM POWER OPERATOR TO ELECTRIC STRIKE LOCATION.  
 REQUIRES LOW VOLTAGE FROM POWER OPERATOR TO ACTUATOR BUTTON LOCATION.  
 REQUIRES CONDUIT TO BE SUPPLIED AND INSTALLED BY ELECTRICAL SUPPLIER.  
 REQUIRES WIRE AND WIRE PULL BY ELECTRICAL SUPPLIER.

MODE OF OPERATION:

MORTISE LOCK TO BE UNLOCKED BY THE KEY DURING THE DAY. EXTERIOR ACTUATOR TO BE ACTIVATED BY THE KEYSWITCH ON THE WALL. DOOR TO BE OPENED MANUALLY OR AUTOMATICALLY BY THE POWER OPERATOR. WHEN OPENED BY THE POWER OPERATOR THE EXTERIOR ACTUATOR BUTTON WILL BE DEPRESSED, SIMUNTAINEOUSLY ACTIVATING THE POWER OPERATOR AND ELECTRIC STRIKE. AFTER NORMAL HOURS THE MORTISE LOCK IS TO BE LOCKED BY THE KEY AND THE POWER OPERATOR EXTERIOR ACTUATOR BUTTON IS DEACTIVATED BY KEY SWITCH ON THE WALL. DEPRESSING THE INTERIOR ACTUATOR BUTTON WILL SIMUNTAINEOUSLY ACTIVATING THE POWER OPERATOR AND ELECTRIC STRIKE. DOOR CAN BE REMOTELY RELEASED FROM PUSH BUTTON IN THE OFFICE.  
 ENTRY BY KEY. FREE EXIT AT ALL TIMES.

Heading #2

1 Single door 108

1000 x 2150 x 45 - HM DR x PSF FR

1	Continuous Hinge	Pemko CFM83SLFHD1	C
1	Storeroom Lockset	Sargent 72-8204 LNL	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
1	Electric Strike	HES 1006-24VDC-LBM KM x Elect Lynx Adapter 2004	630-LBM
1	Smart Pac III	HES 2005M3	
1	Plug-in AC Transformer	HES 2002P-24	
1	Power Operator	Besam POWERSWING	US28
1	Mounting Plate	Besam MOUNTING PLATE x FULL HEADER	US28
1	Backing Plate	Besam BACKING PLATE x FULL HEADER	US28
1	Kick Plate	Rockwood K1050 900mm x 50mm LDW (Push Side)	US32D
1	Kick Plate	Rockwood K1050 355mm x 50mm LDW	US32D
1	O/H Stop - Concealed	Rixson 1-436 (967mm - 1092mm)	630
1	Rigid Jamb Weatherstrip	Pemko 2891AS x 3 Sides	A
1	Door Bottom Sweep	Pemko 18100CNB x Width	C
2	Wall Actuator	Bea 10PBR451 - WALL MOUNT ACTUATOR	US32D
2	Escutcheon	Bea 10ESCUTCHEON45	US32D
1	Push Button	Securitron PB2	
1	Wiring Harness	McKinney (CAD) 93998-QC-1500P-QC12-12 Wires W/Pins-15'0	
1	Wiring Diagrams	Sargent (CAD) Wiring Diagrams (Elevations & Point to Point)	

REQUIRES 120VAC POWER TO POWER OPERATOR LOCATION BY ELECTRICAL SUPPLIER.  
 REQUIRES 120VAC POWER TO POWER SUPPLY LOCATION BY ELECTRICAL SUPPLIER.  
 REQUIRES LOW VOLTAGE FROM POWER OPERATOR TO POWER SUPPLY LOCATION.  
 REQUIRES LOW VOLTAGE FROM POWER OPERATOR TO ELECTRIC STRIKE LOCATION.  
 REQUIRES LOW VOLTAGE FROM POWER OPERATOR TO ACTUATOR BUTTON LOCATION.  
 REQUIRES CONDUIT TO BE SUPPLIED AND INSTALLED BY ELECTRICAL SUPPLIER.  
 REQUIRES WIRE AND WIRE PULL BY ELECTRICAL SUPPLIER.

MODE OF OPERATION:

MORTISE LOCK TO BE SECURED AT ALL TIMES. ENTRY BY KEY OR BY THE POWER OPERATOR.  
 POWER OPERATOR TO BE REMOTELY ACTIVATED BY PUSH BUTTON. DEPRESSING THE INTERIOR  
 ACTUATOR BUTTON WILL SIMUNTAINEOUSLY ACTIVATING THE POWER OPERATOR AND ELECTRIC STRIKE.  
 ENTRY BY KEY. FREE EXIT AT ALL TIMES.

Heading #3

1 Single door 101A

1000 x 2150 x 45 - HM DR x PSF FR

1	Continuous Hinge	Pemko CFM83SLFHD1	C
1	Storeroom Lockset	Sargent 72-8204 LNL	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
1	Electric Strike	HES 1006-24VDC-LBM KM x Elect Lynx Adapter 2004	630-LBM
1	Smart Pac III	HES 2005M3	
1	Plug-in AC Transformer	HES 2002P-24	
1	Power Operator	Besam POWERSWING	US28
1	Mounting Plate	Besam MOUNTING PLATE x FULL HEADER	US28
1	Backing Plate	Besam BACKING PLATE x FULL HEADER	US28
1	O/H Holder - Concealed	Rixson 1-426 (967mm -1092mm)	630
1	Kick Plate	Rockwood K1050 900mm x 50mm LDW (Push Side)	US32D
1	Kick Plate	Rockwood K1050 355mm x 50mm LDW	US32D
1	Rigid Jamb Weatherstrip	Pemko 2891AS x 3 Sides	A
1	Door Bottom Sweep	Pemko 18100CNB x Width	C
2	Wall Actuator	Bea 10PBR451 - WALL MOUNT ACTUATOR	US32D
2	Escutcheon	Bea 10ESCUTCHEON45	US32D
1	Push Button	Securitron PB2	
1	Wiring Harness	McKinney (CAD) 93998-QC-1500P-QC12-12 Wires W/Pins-15'0	
1	Wiring Diagrams	Sargent (CAD) Wiring Diagrams (Elevations & Point to Point)	

REQUIRES 120VAC POWER TO POWER OPERATOR LOCATION BY ELECTRICAL SUPPLIER.  
 REQUIRES 120VAC POWER TO POWER SUPPLY LOCATION BY ELECTRICAL SUPPLIER.  
 REQUIRES LOW VOLTAGE FROM POWER OPERATOR TO POWER SUPPLY LOCATION.  
 REQUIRES LOW VOLTAGE FROM POWER OPERATOR TO ELECTRIC STRIKE LOCATION.  
 REQUIRES LOW VOLTAGE FROM POWER OPERATOR TO ACTUATOR BUTTON LOCATION.  
 REQUIRES CONDUIT TO BE SUPPLIED AND INSTALLED BY ELECTRICAL SUPPLIER.  
 REQUIRES WIRE AND WIRE PULL BY ELECTRICAL SUPPLIER.

MODE OF OPERATION:

MORTISE LOCK TO BE SECURED AT ALL TIMES. ENTRY BY KEY OR BY THE POWER OPERATOR.  
 POWER OPERATOR TO BE REMOTELY ACTIVATED BY PUSH BUTTON. DEPRESSING THE INTERIOR  
 ACTUATOR BUTTON WILL SIMUNTAINEOUSLY ACTIVATING THE POWER OPERATOR AND ELECTRIC STRIKE.  
 ENTRY BY KEY. FREE EXIT AT ALL TIMES.

Heading #4

1 Single door 101B

1000 x 2150 x 45 - HM DR x PSF FR

1	Continuous Hinge	Pemko CFM83SLFHD1	C
1	Storeroom Lockset	Sargent 72-8204 LNL	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
1	Electric Strike	HES 1006-24VDC-LBM KM x Elect Lynx Adapter 2004	630-LBM
1	Smart Pac III	HES 2005M3	
1	Plug-in AC Transformer	HES 2002P-24	
1	Power Operator	Besam POWERSWING	US28
1	Mounting Plate	Besam MOUNTING PLATE x FULL HEADER	US28
1	Backing Plate	Besam BACKING PLATE x FULL HEADER	US28
1	O/H Holder - Concealed	Rixson 1-426 (967mm -1092mm)	630
1	Kick Plate	Rockwood K1050 900mm x 50mm LDW (Push Side)	US32D
1	Kick Plate	Rockwood K1050 355mm x 50mm LDW	US32D
1	Wall Actuator	Bea 10PBR451 - WALL MOUNT ACTUATOR	US32D
1	Escutcheon	Bea 10ESCUTCHEON45	US32D
1	Wiring Harness	McKinney (CAD) 93998-QC-1500P-QC12-12 Wires W/Pins-15'0	
1	Push Button	Securitron PB2	
1	Wiring Diagrams	Sargent (CAD) Wiring Diagrams (Elevations & Point to Point)	

REQUIRES 120VAC POWER TO POWER OPERATOR LOCATION BY ELECTRICAL SUPPLIER.  
 REQUIRES 120VAC POWER TO POWER SUPPLY LOCATION BY ELECTRICAL SUPPLIER.  
 REQUIRES LOW VOLTAGE FROM POWER OPERATOR TO POWER SUPPLY LOCATION.  
 REQUIRES LOW VOLTAGE FROM POWER OPERATOR TO ELECTRIC STRIKE LOCATION.  
 REQUIRES LOW VOLTAGE FROM POWER OPERATOR TO ACTUATOR BUTTON LOCATION.  
 REQUIRES CONDUIT TO BE SUPPLIED AND INSTALLED BY ELECTRICAL SUPPLIER.  
 REQUIRES WIRE AND WIRE PULL BY ELECTRICAL SUPPLIER.

MODE OF OPERATION:

MORTISE LOCK TO BE SECURED AT ALL TIMES. ENTRY BY KEY OR BY THE POWER OPERATOR.  
 POWER OPERATOR TO BE REMOTELY ACTIVATED BY PUSH BUTTON. DEPRESSING THE INTERIOR  
 ACTUATOR BUTTON WILL SIMUNTAINEOUSLY ACTIVATING THE POWER OPERATOR AND ELECTRIC STRIKE.  
 ENTRY BY KEY. FREE EXIT AT ALL TIMES.

Heading #5

1 Single door X104A

900 x 2400 x 45 - HM Ins DR x PSF-TB FR

1	Continuous Hinge	Pemko CFM95SLFHD1	C
1	Storeroom Lockset	Sargent 72-8204 LNL	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
1	Surface Closer	Sargent 421 PCTB (PUSH SIDE)	EN
1	Drop Plate	Sargent 1431D	EN
1	O/H Holder - Concealed	Rixson 1-326 (839mm - 965mm)	630
1	Kick Plate	Rockwood K1050 900mm x 50mm LDW (Push Side)	US32D
1	Threshold - Saddle	Pemko 1715A x Width	AFG
1	Rigid Jamb Weatherstrip	Pemko 2891AS x 3 Sides	A
1	Door Bottom Sweep	Pemko 3452CNB x Width	C
1	Door Position Switch	Securitron DPS-M-BK (HM Doors)	

WEATHERSEAL NOT TO BE BROKEN. MOUNT HARDWARE TO THE SURFACE OF THE WEATHERSEAL.

Heading #6

1 Single door X122A

900 x 2400 x 45 - HM Ins DR x PSF-TB FR

1	Continuous Hinge	Pemko CFM95SLFHD1	C
1	Storeroom Lockset	Sargent 72-8204 LNL	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
1	Surface Closer	Sargent 421 PCTB (PUSH SIDE)	EN
1	Drop Plate	Sargent 1431D	EN
1	O/H Holder - Concealed	Rixson 1-326 (839mm - 965mm)	630
1	Kick Plate	Rockwood K1050 900mm x 50mm LDW	US32D
1	Threshold - Saddle	Pemko 1715A x Width	AFG
1	Rigid Jamb Weatherstrip	Pemko 2891AS x 3 Sides	A
1	Door Bottom Sweep	Pemko 3452CNB x Width	C
1	Door Position Switch	Securitron DPS-M-BK (HM Doors)	

WEATHERSEAL NOT TO BE BROKEN. MOUNT HARDWARE TO THE SURFACE OF THE WEATHERSEAL.

Heading #7

1 Single door X129

1000 x 2150 x 45 - HM Ins DR x PSF-TB FR

1	Continuous Hinge	Pemko CFM83SLFHD1	C
1	Storeroom Lockset	Sargent 72-8204 LNL	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
1	Surface Closer	Sargent 421 PCTB (PUSH SIDE)	EN
1	Drop Plate	Sargent 1431D	EN
1	O/H Holder - Concealed	Rixson 1-426 (967mm -1092mm)	630
1	Kick Plate	Rockwood K1050 900mm x 50mm LDW (Push Side)	US32D
1	Threshold - Saddle	Pemko 1715A x Width	AFG
1	Rigid Jamb Weatherstrip	Pemko 2891AS x 3 Sides	A
1	Door Bottom Sweep	Pemko 3452CNB x Width	C
1	Door Position Switch	Securitron DPS-M-BK (HM Doors)	

WEATHERSEAL NOT TO BE BROKEN. MOUNT HARDWARE TO THE SURFACE OF THE WEATHERSEAL.

Heading #8

1 Single door X133

900 x 2150 x 45 - HM Ins DR x PSF-TB FR

1	Continuous Hinge	Pemko CFM83SLFHD1	C
1	Storeroom Lockset	Sargent 72-8204 LNL	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
1	Surface Closer	Sargent 421 PCTB (PUSH SIDE)	EN
1	Drop Plate	Sargent 1431D	EN
1	O/H Holder - Concealed	Rixson 1-326 (839mm - 965mm)	630
1	Kick Plate	Rockwood K1050 900mm x 50mm LDW (Push Side)	US32D
1	Threshold - Saddle	Pemko 1715A x Width	AFG
1	Rigid Jamb Weatherstrip	Pemko 2891AS x 3 Sides	A
1	Door Bottom Sweep	Pemko 3452CNB x Width	C
1	Door Position Switch	Securitron DPS-M-BK (HM Doors)	

WEATHERSEAL NOT TO BE BROKEN. MOUNT HARDWARE TO THE SURFACE OF THE WEATHERSEAL.

Heading #9

1 Single door X136

900 x 2150 x 45 - HM Ins DR x PSF-TB FR

1	Continuous Hinge	Pemko CFM83SLFHD1	C
1	Storeroom Lockset	Sargent 72-8204 LNL	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
1	Surface Closer	Sargent 421 PCTB (PUSH SIDE)	EN
1	Drop Plate	Sargent 1431D	EN
1	O/H Holder - Concealed	Rixson 1-326 (839mm - 965mm)	630
1	Threshold - Saddle	Pemko 1715A x Width	AFG
1	Rigid Jamb Weatherstrip	Pemko 2891AS x 3 Sides	A
1	Door Bottom Sweep	Pemko 3452CNB x Width	C
1	Door Position Switch	Securitron DPS-M-BK (HM Doors)	

WEATHERSEAL NOT TO BE BROKEN. MOUNT HARDWARE TO THE SURFACE OF THE WEATHERSEAL.

Heading #10

1 Single door X137

900 x 2150 x 45 - HM Ins DR x PSF-TB FR - 45 Min

1	Continuous Hinge	Pemko CFM83SLFHD1	C
1	Storeroom Lockset	Sargent 72-8204 LNL	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
1	Surface Closer	Sargent 421 PCTB (PUSH SIDE)	EN
1	Drop Plate	Sargent 1431D	EN
1	O/H Stop - Concealed	Rixson 1-336 (839mm - 965mm)	630
1	Threshold - Saddle	Pemko 1715A x Width	AFG
1	Rigid Jamb Weatherstrip	Pemko 2891AS x 3 Sides	A
1	Door Bottom Sweep	Pemko 3452CNB x Width	C
1	Door Position Switch	Securitron DPS-M-BK (HM Doors)	

WEATHERSEAL NOT TO BE BROKEN. MOUNT HARDWARE TO THE SURFACE OF THE WEATHERSEAL.

Heading #11

1 Pair of doors X002

900, 1200 x 2750 x 45 - HM Ins DR x PSF-TB FR

2	Continuous Hinge	Pemko CFM x Height x SLFHD1	C
1	Flush Bolts	Rockwood 555 x Rod 914mm	US26D
1	Flush Bolts	Rockwood 555	US26D
1	Dust Proof Strike	Rockwood 570	US26D
1	Astragal, With S Insert	Pemko 355CS x Height	C
1	Storeroom Lockset	Sargent 72-8204 LNL x Lip Strike (82-0229)	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
1	O/H Holder - Concealed	Rixson 1-326 (839mm - 965mm)	630
1	O/H Holder - Concealed	Rixson 1-526 (1093mm - 1219mm)	630
1	Threshold - Saddle	Pemko 1715A x Width	AFG
1	Rigid Jamb Weatherstrip	Pemko 2891AS x 3 Sides	A
2	Door Bottom Sweep	Pemko 3452CNB x Width	C
1	Removeable Mullion		

WEATHERSEAL NOT TO BE BROKEN. MOUNT HARDWARE TO THE SURFACE OF THE WEATHERSEAL.

Heading #12

1 Single door 125A

1000 x 2150 x 45 - HM DR x PSF FR

1	Continuous Hinge	Pemko CFM83SLFHD1	C
1	Passage Latchset	Sargent 8215 LNL	US26D
1	Surface Closer	Sargent 421 CTB (PULL SIDE)	EN
1	Drop Plate	Sargent 1431D	EN
1	O/H Holder - Concealed	Rixson 1-426 (967mm -1092mm)	630
1	Kick Plate	Rockwood K1050 900mm x 50mm LDW	US32D
1	Kick Plate	Rockwood K1050 355mm x 50mm LDW	US32D

Heading #13

1 Single door 111

900 x 2150 x 45 - HM DR x PSF FR

3	Standard Hinge	McKinney TA2714 114 x 101	US26D
1	Classroom Lockset	Sargent 72-8237 LNL	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
1	Mop Plate	Rockwood K1050 150mm x 50mm LDW	US32D
1	Wall Stop	Rockwood 406 (Convex HD)	US26D
1	Weatherstripping	Pemko 319CS x 3 Sides	AI
1	Automatic Door Bottom	Pemko 420APKL x Door Width	

Heading #14

1 Single door 103

900 x 2150 x 45 - HM DR x PSF FR

3	Standard Hinge	McKinney TA2714 114 x 101 (NRP)	US26D
1	Classroom Lockset	Sargent 72-8237 LNL	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
1	Mop Plate	Rockwood K1050 150mm x 50mm LDW	US32D
1	O/H Stop - Concealed	Rixson 1-336 (839mm - 965mm)	630
1	Weatherstripping	Pemko 319CS x 3 Sides	AI
1	Automatic Door Bottom	Pemko 420APKL x Door Width	

Heading #15

1 Single door 112

900 x 2150 x 45 - HM DR x PSF FR

3	Standard Hinge	McKinney TA2714 114 x 101 (NRP)	US26D
1	Classroom Lockset	Sargent 72-8237 LNL	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
1	Mop Plate	Rockwood K1050 150mm x 50mm LDW	US32D
1	O/H Stop - Concealed	Rixson 1-336 (839mm - 965mm)	630
1	Weatherstripping	Pemko 319CS x 3 Sides	AI
1	Automatic Door Bottom	Pemko 420APKL x Door Width	

Heading #16

1 Single door 102

1000 x 2150 x 45 - HM DR x PSF FR

1	Continuous Hinge	Pemko CFM83SLFHD1	C
1	Storeroom Lockset	Sargent 72-8204 LNL	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
1	Surface Closer	Sargent 421 PCTB (PUSH SIDE)	EN
1	Drop Plate	Sargent 1431D	EN
1	Kick Plate	Rockwood K1050 900mm x 50mm LDW (Push Side)	US32D
1	Kick Plate	Rockwood K1050 355mm x 50mm LDW	US32D
1	Wall Stop	Rockwood 406 (Convex HD)	US26D

Heading #17

1 Single door 118B

900 x 2150 x 45 - HM DR x PSF FR

1	Continuous Hinge	Pemko CFM83SLFHD1	C
1	Classroom Lockset	Sargent 72-8237 LNL	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
1	Surface Closer	Sargent 421 CTB (PULL SIDE)	EN
1	Drop Plate	Sargent 1431D	EN
1	O/H Stop - Concealed	Rixson 1-336 (839mm - 965mm)	630
1	Kick Plate	Rockwood K1050 900mm x 50mm LDW (Push Side)	US32D
1	Kick Plate	Rockwood K1050 355mm x 50mm LDW	US32D
1	Weatherstripping	Pemko 319CS x 3 Sides	AI
1	Door Bottom Sweep	Pemko 18100CNB x Width	C

Heading #18

1 Pair of doors 123

900, 900 x 2150 x 45 - HM DR x PSF FR

2	Continuous Hinge	Pemko CFM83SLFHD1	C
2	Combination Flush Bolts	Rockwood 2845 (Hollow Metal)	US32D
1	Dust Proof Strike	Rockwood 570	US26D
1	Door Coordinator	Rockwood 2672	Black Prime
1	Overlapping Astragal	Pemko 357C x Height	C
1	Storeroom Lockset	Sargent 72-8204 LNL x Lip Strike (82-0229)	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
2	Surface Closer	Sargent 421 CTB (PULL SIDE)	EN
2	Drop Plate	Sargent 1431D	EN
2	O/H Stop - Concealed	Rixson 1-336 (839mm - 965mm)	630
2	Kick Plate	Rockwood K1050 900mm x 50mm LDW	US32D
1	Weatherstripping	Pemko 319CS x 3 Sides	AI
1	Threshold	Pemko 271A x Width	A
2	Door Bottom Sweep	Pemko 18100CNB x Width	C

Heading #19

1 Pair of doors 125B

900, 900 x 2150 x 45 - HM DR x PSF FR

2	Continuous Hinge	Pemko CFM83SLFHD1	C
2	Combination Flush Bolts	Rockwood 2845 (Hollow Metal)	US32D
1	Dust Proof Strike	Rockwood 570	US26D
1	Door Coordinator	Rockwood 2672	Black Prime
1	Overlapping Astragal	Pemko 357C x Height	C
1	Classroom Lockset	Sargent 72-8237 LNL x Lip Strike (82-0229)	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
2	Surface Closer	Sargent 421 CTB (PULL SIDE)	EN
2	Drop Plate	Sargent 1431D	EN
2	O/H Stop - Concealed	Rixson 1-336 (839mm - 965mm)	630
2	Kick Plate	Rockwood K1050 900mm x 50mm LDW	US32D
1	Weatherstripping	Pemko 319CS x 3 Sides	A
1	Threshold	Pemko 271A x Width	A
2	Door Bottom Sweep	Pemko 18100CNCB x Width	C

Heading #20

1 Pair of doors 121B

900, 900 x 2150 x 45 - HM DR x PSF FR

2	Continuous Hinge	Pemko CFM83SLFHD1	C
2	Combination Flush Bolts	Rockwood 2845 (Hollow Metal)	US32D
1	Dust Proof Strike	Rockwood 570	US26D
1	Overlapping Astragal	Pemko 357C x Height	C
1	Classroom Lockset	Sargent 72-8237 LNL x Lip Strike (82-0229)	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
2	Surface Closer	Sargent 421 CTB (PULL SIDE)	EN
2	Drop Plate	Sargent 1431D	EN
2	O/H Holder - Concealed	Rixson 1-326 (839mm - 965mm)	630
2	Kick Plate	Rockwood K1050 900mm x 50mm LDW (Push Side)	US32D
2	Kick Plate	Rockwood K1050 355mm x 50mm LDW	US32D
1	Rigid Jamb Weatherstrip	Pemko 2891AS x 3 Sides	A
1	Threshold	Pemko 271A x Width	A
2	Door Bottom Sweep	Pemko 18100CNCB x Width	C

Heading #21

1 Pair of doors 119

900, 900 x 2150 x 45 - HM DR x PSF FR

6	Standard Hinge	McKinney TA2714 114 x 101 (NRP)	US26D
2	Combination Flush Bolts	Rockwood 2845 (Hollow Metal)	US32D
1	Dust Proof Strike	Rockwood 570	US26D
1	Overlapping Astragal	Pemko 357C x Height	C
1	Classroom Lockset	Sargent 72-8237 LNL x Lip Strike (82-0229)	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
2	Surface Closer	Sargent 421 PCTB (PUSH SIDE)	EN
2	Drop Plate	Sargent 1431D	EN
2	O/H Holder - Concealed	Rixson 1-326 (839mm - 965mm)	630
2	Kick Plate	Rockwood K1050 900mm x 50mm LDW (Push Side)	US32D
2	Kick Plate	Rockwood K1050 355mm x 50mm LDW	US32D

Heading #22

1 Single door 134

900 x 2150 x 45 - HM DR x PSF FR

3	Double Acting Hinge	McKinney 9001 8"	US26D
2	Push Plate	Rockwood 70RCF (203mm x 406mm)	US32D
1	O/H Stop - Concealed	Rixson 1-336 (839mm - 965mm)	630
2	Kick Plate	Rockwood K1050 900mm x 50mm LDW (Push Side)	US32D

Heading #23

1 Pair of doors 121A

900, 900 x 2150 x 45 - HM DR x PSF FR

6	Double Acting Hinge	McKinney 9001 8"	US26D
4	Push Plate	Rockwood 70RCF (203mm x 406mm)	US32D
2	O/H Stop - Concealed	Rixson 1-336 (839mm - 965mm) (Special Templating)	630
4	Kick Plate	Rockwood K1050 900mm x 25mm LDW (Push Side)	US32D

Heading #24

1 Pair of doors 124

900, 900 x 2150 x 45 - HM DR x PSF FR

6	Double Acting Hinge	McKinney 9001 8"	US26D
4	Push Plate	Rockwood 70RCF (203mm x 406mm)	US32D
2	O/H Stop - Concealed	Rixson 1-336 (839mm - 965mm) (Special Templating)	630
4	Kick Plate	Rockwood K1050 900mm x 25mm LDW (Push Side)	US32D

Heading #25

1 Single door 109

900 x 2150 x 45 - HM DR x PSF FR

3	Standard Hinge	McKinney TA2714 114 x 101	US26D
1	Privacy Lockset	Sargent LB-8265 LNL	US26D
1	Surface Closer	Sargent 421 PCTB (PUSH SIDE)	EN
2	Kick Plate	Rockwood K1050 355mm x 50mm LDW	US32D
1	Wall Door Stop	Rockwood 406 (Convex HD)	US26D

Heading #26

1 Single door 114

900 x 2150 x 45 - HM DR x PSF FR

3	Standard Hinge	McKinney TA2714 114 x 101	US26D
1	Storeroom Lockset	Sargent 72-8204 LNL	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
2	Kick Plate	Rockwood K1050 355mm x 50mm LDW	US32D
1	O/H Stop - Concealed	Rixson 1-336 (839mm - 965mm)	630

Heading #27

1 Single door 115

900 x 2150 x 45 - HM DR x PSF FR

3	Standard Hinge	McKinney TA2714 114 x 101	US26D
1	Privacy Lockset	Sargent LB-8265 LNL	US26D
2	Kick Plate	Rockwood K1050 355mm x 50mm LDW	US32D
1	Wall Door Stop	Rockwood 406 (Convex HD)	US26D

Heading #28

1 Single door 116

900 x 2150 x 45 - HM DR x PSF FR

3	Standard Hinge	McKinney TA2714 114 x 101	US26D
1	Privacy Lockset	Sargent LB-8265 LNL	US26D
2	Kick Plate	Rockwood K1050 355mm x 50mm LDW	US32D
1	Wall Door Stop	Rockwood 406 (Convex HD)	US26D

Heading #29

1 Single door 113

900 x 2150 x 45 - HM DR x PSF FR

3	Standard Hinge	McKinney TA2714 114 x 101	US26D
1	Passage Latchset	Sargent 8215 LNL	US26D
2	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
2	Push Plate	Rockwood 70RCF (203mm x 406mm)	US32D
1	Surface Closer	Sargent 421 CTB (PULL SIDE)	EN
2	Kick Plate	Rockwood K1050 355mm x 50mm LDW	US32D
1	Wall Door Stop	Rockwood 406 (Convex HD)	US26D

Heading #30

1 Single door 107

900 x 2150 x 45 - HM DR x PSF FR

3	Standard Hinge	McKinney TA2714 114 x 101	US26D
1	Storeroom Lockset	Sargent 72-8204 LNL	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
1	Surface Closer	Sargent 1431 O	EN
2	Kick Plate	Rockwood K1050 355mm x 50mm LDW	US32D
1	Wall Door Stop	Rockwood 406 (Convex HD)	US26D
1	Kick Down Door Stop	Rockwood 461	US26D

Heading #31

1 Single door 135

900 x 2150 x 45 - HM DR x PSF FR

3	Standard Hinge	McKinney TA2714 114 x 101	US26D
1	Storeroom Lockset	Sargent 72-8204 LNL	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
1	Surface Closer	Sargent 1431 O	EN
2	Kick Plate	Rockwood K1050 355mm x 50mm LDW	US32D
1	Floor Door Stop	Rockwood 440/442	US26D
1	Kick Down Door Stop	Rockwood 461	US26D

Heading #32

1 Single door 126A

900 x 2150 x 45 - HM DR x PSF FR

3	Standard Hinge	McKinney TA2714 114 x 101 (NRP)	US26D
1	Storeroom Lockset	Sargent 72-8204 LNL	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
1	Surface Closer	Sargent 1431 PS	EN
2	Kick Plate	Rockwood K1050 355mm x 50mm LDW	US32D
1	Kick Down Door Stop	Rockwood 461	US26D

Heading #33

1 Single door 126B

900 x 2150 x 45 - HM DR x PSF FR

3	Standard Hinge	McKinney TA2714 114 x 101 (NRP)	US26D
1	Storeroom Lockset	Sargent 72-8204 LNL	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
1	Surface Closer	Sargent 1431 PS	EN
2	Kick Plate	Rockwood K1050 355mm x 50mm LDW	US32D
1	Kick Down Door Stop	Rockwood 461	US26D

Heading #34

1 Single door 003

900 x 2150 x 45 - HM DR x PSF FR - 45 Min

3	Standard Hinge	McKinney TA2714 114 x 101 (NRP)	US26D
1	Storeroom Lockset	Sargent 72-8204 LNL	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
1	Surface Closer	Sargent 1431 PS	EN

Heading #35

1 Single door 004

900 x 2150 x 45 - HM DR x PSF FR - 45 Min

3	Standard Hinge	McKinney TA2714 114 x 101 (NRP)	US26D
1	Storeroom Lockset	Sargent 72-8204 LNL	US26D
1	Permanent Core	Best 1C 71 High Security Kaba Peaks	626
1	Surface Closer	Sargent 1431 PS	EN

Heading #36

1 Single door 001

900 x 2150 x 45 - HM DR x PSF FR - 45 Min

1	Continuous Hinge	Pemko CFM83SLFHD1	C
1	Passage Latchset	Sargent 8215 LNL	US26D
1	Surface Closer	Sargent 421 PCTB (PUSH SIDE)	EN
1	Drop Plate	Sargent 1431D	EN
1	Wall Door Stop	Rockwood 406 (Convex HD)	US26D

Heading #37

1 Single door X104B

2150 x 2440 x 50 - OHD DR x CI FR

1	By Others	Hardware by Door Manufacturer	
1	Door Position Switch	Sentrol 2207AH	

Heading #38

1 Single door 118A

2150 x 2440 x 50 - OHD DR x CI FR

1	By Others	Hardware by Door Manufacturer	
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Heading #39

1 Single door 122

2150 x 2440 x 50 - OHD DR x CI FR

1	By Others	Hardware by Door Manufacturer	
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Heading #40

1 Single door X122B

2150 x 2440 x 50 - OHD DR x CI FR

1	By Others	Hardware by Door Manufacturer	
1	Door Position Switch	Sentrol 2207AH	

Heading #41

1 Elevation Misc

\_\_ x \_\_ x \_\_ - HM DR x HM FR

3	Key Charge	Sargent (CAD) GMK KEYS
3	Key Charge	Sargent (CAD) MK KEYS PER GROUP
10	Key Charge	Sargent (CAD) CONSTRUCTION KEYING
5	Key Charge	Sargent (CAD) CONTROL KEYS - CONSTRUCTION
5	Key Charge	Sargent (CAD) CONTROL KEYS - PERMANENT
1	Key Charge	Sargent (CAD) EXTRA CUT KEY/LOCK
50	Key Charge	Sargent (CAD) KEY BLANKS
1	Key Cabinet	TCR-123-S



## **PART 1 - GENERAL**

### **1.1 GENERAL REQUIREMENTS**

- .1 Comply with requirements of Division 1.

### **1.2 RELATED SECTIONS**

- .1 Section 05 50 00: Metal Fabrications.
- .2 Section 07 92 00: Joint Sealing.
- .3 Section 08 11 00: Steel Doors and Frames.
- .4 Section 08 50 00: Windows.
- .5 Section 10 28 13: Washroom Accessories.

### **1.3 REFERENCES**

- .1 ANSI/ASTM E330 Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.
- .2 CAN/CGSB-12.1 Tempered or Laminated Safety Glass.
- .3 CAN/CGSB-12.3 Flat, Clear Float Glass.
- .4 CAN/CGSB-12.4 Heat Absorbing Glass.
- .5 CAN/CGSB-12.5 Mirrors, Silvered.
- .6 CAN/CGSB-12.8 Insulating Glass Units.
- .7 CAN/CGSB-12.10 Glass, Light and Heat Reflecting.
- .8 CAN/CGSB-12.11 Wired Safety Glass.
- .9 Flat Glass Manufacturer's Association (FGMA) Glazing Manual.
- .10 CCD-045, Sealants and Caulking – Environmental Choice Program (ECP).

### **1.4 PERFORMANCE REQUIREMENTS**

- .1 Provide continuity of building enclosure vapour and air barrier using glass and glazing materials as follows:
  - .1 Utilize inner light of multiple light sealed units for continuity of air and vapour seal.
- .2 Size glass to withstand wind loads, dead loads and positive and negative live loads acting normal to plane of glass to a design pressure of as measured in accordance with ANSI/ASTM E330.
- .3 Limit glass deflection to 1/200 flexural limit of glass with full recovery of glazing materials.

### 1.5 SUBMITTALS

- .1 Product Data: Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 35 29 – Health and Safety Requirements. Indicate VOC's for glazing materials during application and curing.
- .3 Shop Drawings: Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Samples: Submit samples in accordance with Section 01 33 00 - Submittal Procedures. Submit 300 mm x 300 mm size samples of insulating glazing units.
- .5 Manufacturer's Instructions: Submit manufacturer's installation instructions.
- .6 Closeout Submittals: Provide maintenance data including cleaning instructions for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

### 1.6 QUALITY ASSURANCE

- .1 Perform work in accordance with IGMAC and Laminators Safety Glass Association - Standards Manual for glazing installation methods.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Tempered glass identification must be sandblasted into glass and shall be visible after installation.

### 1.7 ENVIRONMENTAL REQUIREMENTS

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

### 1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 22 - Construction/Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard and packaging material in appropriate on site bins for recycling in accordance with Waste Management Plan.

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

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS: FLAT GLASS**

- .1 Float Glass: to CAN/CGSB-12.3, glazing quality, 6 mm thick.
- .2 Safety Glass (tempered): to CAN/CGSB-12.1, tempered glass, type 2, Class B, 6 mm thick.
- .3 Wired Glass: to CAN/CGSB-12.11, type 1, wire mesh style 3 (square), 6 mm thick.
- .4 Low Emissivity (LOW E) glass: to CAN/CGSB-12.10, low-E coating on clear tempered glass, third surface, 6 mm thick.
  - .1 Light transmittance: 69.
  - .2 Shading co-efficient: 0.44.
  - .3 U-Value: winter 1.64 (night-time), summer 1.64 (daytime).
  - .4 Acceptable product:
    - .1 "LoE<sup>2</sup> 272" by Cardinal Glass Industries.
    - .2 or approved equal.
- .5 Silvered Mirror Glass: to CAN/CGSB-12.5, type 3C – film reinforced, 6 mm thick.

### **2.2 MATERIALS: SEALED INSULATING GLASS**

- .1 Insulating glass units (IG): factory sealed units to CAN/CGSB-12.8, double unit, nominal 25 mm overall thickness.
  - .1 Glass: to CAN/CGSB-12.1; 12.4; 12.10 and 12.13 – see insulating glass units descriptions.
  - .2 Glass thickness: 6 mm inner light, 6 mm outer light.
  - .3 Inter-cavity space thickness: 13 mm with black, low conductivity spacer.
  - .4 Glass coating: low "E" on third surface (exterior surface of inner light).
  - .5 Inert gas fill: Argon.
  - .6 Insulating glass units:
    - .1 IG: Outer light – to CAN/CGSB-12.4, tempered, clear, 6 mm thick. Inner light - to CAN/CGSB-12.10, low-E coating on clear tempered glass, third surface, 6 mm thick.
      - .1 Light transmittance: 52%.
      - .2 Shading co-efficient: 0.18. 2.2
      - .3 U-Value: winter 0.24 (night-time), summer 0.22 (daytime).

### **2.3 GLAZING AND SEALING COMPOUNDS**

- .1 Sealant: as specified in Section 07 92 00 – Joint Sealing.
- .2 Heel bead: as specified in Section 07 92 00 – Joint Sealing.
- .3 Cap bead compound: as specified in Section 07 92 00 – Joint Sealing.

## **2.4 ACCESSORIES**

- .1 Setting blocks: Neoprene, 80 - 90 Shore A durometer hardness to ASTM D 2240, minimum 100 mm x width of glazing rabbet space minus 1.5 mm x height to suit glazing method, glass light weight and area.
- .2 Spacer shims: Neoprene, 50-60 points Shore A durometer hardness to ASTM D 2240, 75 mm long x one half height of glazing stop x thickness to suit application. Self adhesive on one face.
- .3 Glazing tape: Preformed butyl compound with integral resilient tube spacing device, 10 - 15 Shore A durometer hardness to ASTM D 2240; coiled on release paper; sized to suit; black colour.
- .4 Glazing splines: resilient PVC, extruded shape to suit glazing channel retaining slot, colour to match adjacent material.
- .5 Lock-strip gaskets: to ASTM C542.
- .6 Primer - sealers and cleaners: to glass manufacturer's standard.

## **PART 3 - EXECUTION**

### **3.1 MANUFACTURER'S INSTRUCTIONS**

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

### **3.2 EXAMINATION**

- .1 Verify that openings for glazing are correctly sized and within tolerance.
- .2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

### **3.3 PREPARATION**

- .1 Clean and prime surfaces scheduled to receive sealant in accordance with sealant manufacturers recommendations. Use solvents and cleaning agents recommended by manufacturer of sealing materials.
- .2 Clean contact surfaces with solvent and wipe dry.
- .3 Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- .4 Prime surfaces scheduled to receive sealant.

### **3.4 GLASS INSTALLATION GENERAL**

- .1 Provide clearance at perimeter edge of glass on all four sides, minimum equal to glass thickness.
  - .1 Accurately cut glass to fit openings, allowing for expansion in accord with glass manufacturer's recommendations.
  - .2 Provide sealer space between face of glass and glazing stops of minimum 3 mm.

- .2 Set glass on setting blocks, spaced as recommended by glass manufacturer. Provide at least one setting block at quarter points from each corner.
- .3 Centre glass in glazing rabbet to maintain specified clearances at perimeter on all four sides. Maintain centred position of glass in rabbet and provide the required sealer thickness on both sides of glass.
- .4 On interior hollow metal screens, locate glass and glazing stops on "secure" side of frame (i.e. to interior of room side).
- .5 Carefully remove glazing stops and reinstall after glazing.

### **3.5 INSTALLATION: EXTERIOR WET/DRY METHOD (PREFORMED TAPE AND SEALANT)**

- .1 Perform work in accordance with FGMA Glazing Manual, IGMAC and Laminators Safety Glass Association - Standards Manual for glazing installation methods.
- .2 Cut glazing tape to length and set against permanent stops, 3 mm below sight line. Seal corners by butting tape and dabbing with sealant.
- .3 Apply heel bead of along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete continuity of air and vapour seal.
- .4 Place setting blocks at  $\frac{1}{4}$  points, with edge block maximum 150 mm from corners.
- .5 Rest glazing on setting blocks and push against tape and heel head of sealant with sufficient pressure to attain full contact at perimeter of light or glass unit.
- .6 Install removable stops with spacer strips inserted between glazing and applied stops 6 mm below sight line. Place glazing tape on glazing light or unit with tape 3 mm below sight line.
- .7 Fill gap between glazing and stop with sealant to depth equal to bite of frame on glazing, maximum 9 mm below sight line.
- .8 Apply cap head of sealant along void between stop and glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

### **3.6 INSTALLATION: INTERIOR - DRY METHOD (TAPE AND TAPE)**

- .1 Perform work in accordance with FGMA Glazing Manual, IGMAC and Laminators Safety Glass Association - Standards Manual for glazing installation methods.
- .2 Cut glazing tape to length and set against permanent stops, projecting 1.6 mm above sight line.
- .3 Place setting blocks at  $\frac{1}{4}$  points, with edge block maximum 150 mm from corners.

- .4 Rest glazing on setting blocks and push against tape for full contact at perimeter of light or unit.
- .5 Place glazing tape on free perimeter of glazing in same manner described.
- .6 Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
- .7 Knife trim protruding tape.

### **3.7 CLEANING**

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Remove dust, dirt, sealant, plaster, paint spatter, and other harmful and deleterious matter from glass promptly and completely, before they establish tight adhesion.
- .3 Remove glazing materials promptly from finish surfaces as the work progresses. Remove traces of primer and caulking.
- .4 Remove labels after work is complete.
- .5 Clean glass and mirrors using approved non-abrasive cleaner in accordance with manufacturer's instructions. Avoid using abrasives, steel wool razor blades, solvents alkaline or other harsh cleaning agents.
- .6 Replace chipped, broken, scratched or otherwise damaged glass.
- .7 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

### **3.8 PROTECTION OF FINISHED WORK**

- .1 After installation, mark light with an "X" by using removable plastic tape or paste.

### **3.9 SCHEDULE**

- .1 Provide glazing for the following elements and components:
  - .1 Windows, doors and entrances.
  - .2 Exterior and interior doors and sidelights.
  - .3 Interior hollow metal screens.
  - .4 Other glazing shown on drawings prepared and not covered in other Sections.
- .2 Provide the following glass:
  - .1 Insulating double glazed sealed units: windows, entrances and exterior doors.
  - .2 Wired glass: at fire rated locations and where shown.
  - .3 Tempered safety glass: interior doors and door sidelights, and interior hollow metal screens.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 GENERAL

- .1 Comply with requirements of Division 1.

### 1.2 RELATED WORK

- .1 Section 07 46 19: Preformed Metal Wall Cladding.
- .2 Section 07 62 00: Metal Flashings and Trim.
- .3 Section 07 92 00: Joint Sealing.
- .4 Division 23: Heating Ventilation and Air Conditioning (HVAC).

### 1.3 REFERENCES

- .1 AAI DAF-45-2003(R2009), Designation System for Aluminum Finishes - Aluminum Association Inc. (AAI).
- .2 ASTM A653/A653M - 11, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .3 ASTM B209 -10, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

### 1.4 PERFORMANCE REQUIREMENTS

- .1 Deflection: louvre members shall deflect not more than 1/180 of span between supports when subjected to wind load of 1 kPa applied horizontally to louvre blade.
- .2 Louvres shall provide for nominal 45% free area.
- .3 Vibration: louvre members shall not vibrate or rattle.

### 1.5 ACTION AND INFORMATION SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications and datasheets and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
  - .1 Submit shop drawings in accordance with Section 01 33 00- Submittal Procedures.
  - .2 Indicate fabrication and erection details, including anchorage, accessories, and finishes.

- .4 Samples:
  - .1 Submit samples in accordance with Section 01 33 00 – Submittal Procedures.
  - .2 Submit samples of louvre blade, frame, screening and finish.
- .5 Quality Assurance Submittals: submit following in accordance with Section 01 45 00 – Quality Control.
  - .1 Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence and cleaning procedures.

#### 1.6 DELIVERY, STORAGE AND HANDLING

- .1 Packing, shipping, handling and unloading:
  - .1 Deliver, store and handle in accordance with Section 01 61 00 – Common Product Requirements.
  - .2 Deliver, store and handle materials in accordance with manufacturer's written instructions.
  - .3 Deliver materials to the site in undamaged condition.
- .2 Storage and Protection:
  - .1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Protect louvers from nicks, scratches and blemishes.
  - .3 Replace defective or damaged materials with new.

#### 1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 22 - Construction / Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard and packaging material in appropriate on site bins for recycling in accordance with Waste Management Plan.
- .4 Divert metal cut-offs from landfill by disposal into on-site metal recycling bin.
- .5 Divert uninstalled materials for reuse at nearest used building materials facility or similar type facility.
- .6 Fold up metal banding, flatten and place in designated area for recycling.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- .1 Anodized aluminum extrusions: Aluminum Association alloy AA6063-T5.
- .2 Galvanized steel sheet: commercial quality to ASTM A653/A653M with Z275 zinc coating.

- .3 Fasteners: same material as fabricated items.
- .4 Extruded aluminum louvre (Type 1): stationary, mullion type louvre with 3 mm thick blades, 177 mm deep with "storm resistant" blades, aluminum bird screen and blank-off panels as required. Finish: clear anodized aluminum.
  - .1 Acceptable products:
    - .1 Model # RS 7315 Architectural Mullion Louvres by Construction Specialties.
    - .2 Model EME 745 Wind Driven Rain Resistant Stationary Louver by Ruskin Company.
    - .3 Equivalent product by E.H.Price, M.W. McGill, Airolite.
    - .4 or approved equal.
- .5 Extruded aluminum louvre (Type 2): stationary, mullion type louvre with 3 mm thick blades, 155 mm deep with "storm resistant" blades, aluminum bird screen and rear security bars. Finish: clear anodized aluminum.
  - .1 Acceptable products:
    - .1 Model # A6310 Architectural Mullion Louvres by Construction Specialties.
    - .2 Model ELF 6375X Stationary Louver by Ruskin Company.
    - .3 Equivalent product by E.H.Price, M.W. McGill, Airolite.
    - .4 or approved equal.
- .6 Extruded aluminum louvre (Type 3): stationary, mullion type louvre with 3 mm thick blades, 131 mm deep with "storm resistant" blades, aluminum bird screen and rear security bars. Finish: clear anodized aluminum.
  - .1 Acceptable products:
    - .1 Model # RS 5300 Storm Resistant Louvres by Construction Specialties.
    - .2 Model EME 520DD Wind Driven Rain Resistant Stationary Louver by Ruskin Company.
    - .3 Equivalent product by E.H.Price, M.W. McGill, Airolite.
    - .4 or approved equal.
- .7 Formed steel louvre (Type 4): stationary, mullion type louvre with 1.3 mm thick (18 Gauge) galvanized steel blades, 102 mm deep with "drainable" blades, aluminum bird screen, rear security bars and blank-off panels as required. Finish: baked enamel finish – colour as selected by Departmental Representative.
  - .1 Acceptable products:
    - .1 Model # L375D High Performance Stationary Louvre by Ruskin Company.
    - .2 Equivalent product by Construction Specialties, E.H.Price, M.W. McGill, Airolite.
    - .3 or approved equal.
- .8 Screens (Birdscreen): 12 mm size mesh, 1.5 mm double crimped aluminum wire cloth secured to 2.2 mm thick extruded aluminum frame mitered at corners and secured with corner locks.
- .9 Blank-off panels: 50 mm thick, with 0.81 mm thick aluminum face sheets both sides of panels with expanded polystyrene (EPS) core, R=8 minimum. Panel perimeter frame: 1.27 mm thick, formed aluminum channels with mitered corners. Finish panels to match louvers.

- .10 Sill extensions: formed aluminum, depth and profile to suit continuous horizontal sill flashing condition. Concealed clip anchor, drip deflector at sill ends.

## 2.2 FABRICATION

- .1 Construct louvres from aluminum extrusions and/or galvanized steel sections to sizes and shapes indicated.
- .2 Arrange blades, mullions and frame extrusions as indicated.
- .3 Install concealed vertical stiffeners spaced to meet required loads.
- .4 Complete louvre assembly to have 45% free area.

## 2.3 FINISHES

- .1 Aluminum components: finish exposed surfaces of aluminum louvres in accordance with Aluminum Association Designation System for Aluminum Finishes - 1980.
  - .1 Anodized finish: designation AA-M12 C22A44, Class 1, with a minimum coating thickness of 0.7 mils. Colour: clear anodized.
  - .2 Formed components such as closures, trim etc. shall be formed prior to finishing.
- .2 Steel components: finish exposed surfaces of galvanized steel louvres with baked enamel finish, 1.2 mils total dry film thickness. Colour to be selected at later date by Departmental Representative from manufacturer's standard colour range.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- .1 Install louvres where shown on drawings.
- .2 Install louvres plumb and level and securely fasten to adjacent building elements.
- .3 Space mullions as required to keep louvre blades within specified deflection limit.
- .4 Dissimilar metals and metals in contact with cementitious elements shall have contact surfaces coated with bituminous paint or other means approved by Departmental Representative.
- .5 Attach bird screen to inside face of louvres.
- .6 Repair damage to louvres to match original finish.
- .7 Install wall louvers using flanges, brackets, jamb fasteners as appropriate for wall construction and in accordance with manufacturer's recommendations.

- .8 Install blank-off panels over unused portion(s) of louvers as required (See mechanical drawings).

**3.2 CLEANING**

- .1 Proceed in accordance with Section 01 74 11 – Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

**3.3 PROTECTION**

- .1 Where aluminium contacts metal other than zinc, paint dissimilar metal with primer and two coats of aluminium paint.
- .2 Paint metal in contact with mortar, concrete, or other masonry materials with alkali-resistant coatings such as heavy-bodied bituminous paint.

**3.4 SCHEDULE**

- .1 Install louvres where indicated.

<b>Louvre No.</b>	<b>Room No.</b>	<b>Room Name</b>	<b>Size: W x H x D</b>	<b>Type</b>	<b>Material/ Finish</b>	<b>Remarks</b>
LV - 1	002	Mech. Rm.	1950 W x 2200 H x 100 D	4	Galv. Steel / baked enamel	
LV - 2	002	Mech. Rm.	300 W x 300 H x 131 D	3	Alum. / clear anodized	
LV - 3	117	Inmate Coffee & Lunch Area	1800 W x 1200 H x 177 D	1	Alum. / clear anodized	
LV - 3	124	Ware Wash	500 W x 900 H x 155 D	2	Alum. / clear anodized	

**END OF SECTION**