Part 1 General

1.1 RELATED SECTIONS

.1 Specification E3 – Shop Drawings

.2 Specification D13 – Environmental Protection Plan.

.3 Section 07 92 10 – Joint Sealing: Caulking of joints between frames and other building components.

.4 Section 08 71 10 – Door Hardware: Supply of finish hardware, including weatherstripping and mounting heights.

.5 Section 09 91 00 – Painting and Protective Coatings.

1.2 REFERENCES

.1 National Building Code of Canada (NBC).

.2 Manitoba Building Code (MBC).

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

.1 ASTM A653/A653M-03, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.ASTM B29-92 (1997), Specification for Refined LeadASTM B749-97, Specification for Lead and Lead Alloy Strip, Sheet and Plate Products

.4 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.CGSB 41-GP-19Ma-84, Rigid Vinyl Extrusions for Windows and Doors

.5 Canadian Standards Association (CSA International)

.1 G40.20/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.2 CSA W59-M1989 (R2001), Welded Steel Construction (Metal Arc Welding) (Metric Version).

.6 Canadian Steel Door Manufacturers' Association, (CSDMA)

.1 CSDMA, Specifications for Commercial Steel Doors and Frames, 1990.

.2 CSDMA, Recommended Selection and Usage Guide for Commercial Steel Doors, 1990.

.7 National Fire Protection Association (NFPA)

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

.8 Underwriters' Laboratories of Canada (ULC)

.1 CAN4-S104-M80, Fire Tests of Door Assemblies.CAN4-S105-M85, Fire Door Frames Meeting the Performance Required by CAN4-S104.

.2 CAN/ULC-S701-01, Thermal Insulation, Polystyrene, Boards and Pipe Covering.

.3 CAN/ULC-S702-97, Mineral Fibre Thermal Insulation for Buildings.

.4 CAN/ULC-S704-03, Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.

1.3 DESIGN REQUIREMENTS

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

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

1.4 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Specification E3 – Shop Drawings

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

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

.4 Indicate details of construction and installation of all components of the work.

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

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

1.5 REQUIREMENTS

.1 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104M, CAN4-S105M and NFPA 252 for ratings specified or indicated.

.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.

1.6 WARRANTY

.1 Materials and workmanship shall be warranted by manufacturer in accordance with Canadian Steel Door Manufacturers' Association, (CSDMA) Standard Warranty for Steel Doors and Frames.

1.7 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, store and handle materials in accordance with Section E4

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

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Specification D13 – Environmental Protection Plan.

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

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

.4 Divert unused paint and sealant materials from landfill to an approved, official hazardous material collections site.

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

.6 Divert unused metal materials from landfill to an approved metal recycling facility.

.7 Divert unused wood materials from landfill to an approved recycling facility.

.8 Damaged or broken glazing materials are not recyclable. These materials must not be disposed of with materials destined for recycling.

Part 2 Products

2.1 ACCEPTABLE MANUFACTURERS

.1 Only steel frame products manufactured by Canadian Steel Door Manufacturers' Association, (CSDMA) members are eligible for use on this project.

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2.2 MATERIALS

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

.2 Reinforcement channel: to CSA G40.20/G40.21, Type 44W, hot dipped galvanized.

.3 Fire-rated doors and frames: Material and construction in accordance with listing requirements. Doors to be flush type with no face seams.

2.3 DOOR CORE MATERIALS

.1 Honeycomb construction:

.1 Structural small cell, 24.5 mm maximum kraft paper 'honeycomb', weight: 36.3 kg per ream minimum, density: 16.5 kg/m^3 minimum sanded to required thickness.

.2 Insulated:

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

.3 Temperature rise rated (TRR): core composition to limit temperature rise on unexposed side of door to 250^{o}C at 30 minutes. Core to be tested as part of a complete door assembly, in accordance with CAN4-S104, ASTM E152 or NFPA 252, covering Standard Method of Tests of Door Assemblies and listed by nationally recognized testing agency having factory inspection service.

2.4 ADHESIVES

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

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

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

2.5 PRIMER

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

2.6 PAINT

.1 Field paint steel doors and frames in accordance with Section 09 91 00 – Painting and Protective Coatings. Protect weatherstrips from paint. Provide final finish shall be free of scratches or other blemishes.

2.7 ACCESSORIES

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

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

.3 Door bottom seal: to Section 08 71 10 - Door Hardware.

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

.5 Accessories (doors and frames) and minimum base steel thickness:

.1	Lock/strike reinforcements:	1.6 mm
.2	Hinge reinforcements:	2.7 mm
.3	Flush bolt reinforcements:	1.6 mm
.4	Reinforcements for surface applied hardware:	1.2 mm
.5	Top or bottom channels:	1.2 mm
.6	Glass trim, screw fixed or snap-in types:	0.9 mm
.7	Mortar guard boxes:	0.8 mm
.8	Floor anchors:	1.6 mm
.9	Jamb spreaders:	0.9 mm

.6 Sealant: to Section 07 92 10 - Joint Sealing.

2.8 FRAMES FABRICATION GENERAL

.1 Fabricate frames in accordance with CSDMA specifications, reviewed Shop Drawings and listing requirements.

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

.3 Finish: hot dipped galvanized after fabrication.

.4 Blank, reinforce, drill and tap frames for mortised, template hardware, and electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.

.5 Protect mortised cut-outs with steel guard boxes welded to frame.

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

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

.8 Conceal fastenings except where exposed fastenings are indicated.

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

.10 Insulate exterior frame components with mineral wool insulation.

2.9 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, minimum 3 anchors per 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.

2.10 FRAMES: WELDED TYPE

.1 Welding in accordance with CSA W59.

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

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

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

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

.6 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.

2.11 DOOR FABRICATION GENERAL

.1 Fabricate doors in accordance with CSDMA specifications, reviewed Shop Drawings and listing requirements.

.2 Doors: swing type, flush, with provision for single, sealed insulated glass units, and louvre openings as indicated.

.3 Interior doors: honeycomb hollow steel construction

.4 Exterior doors: insulated polystyrene core construction

.5 Fabricate doors with longitudinal edges mechanically interlocked with visible seams.

.6 Bevel hinge and lock edges of doors, 3 mm in 50 mm.

.7 Blank, reinforce, drill doors and tap for mortised, template hardware and electronic hardware.

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

.9 Reinforce doors where required, for surface mounted hardware.

.10 Provide flush PVC steel top caps to exterior doors.

.11 Provide inverted, recessed, spot welded channels to top and bottom of interior doors.

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

.13 Provide 127 mm backset for all locksets and latchsets where indicated in the Door Schedule.

2.12 HOLLOW STEEL CONSTRUCTION (WITH INTERNAL STEEL REINFORCING)

.1 Form each face sheet for exterior doors from 1.6 mm (16 gauge) galvanized sheet steel with polystyrene core laminated under pressure to face sheets.

.2 Form each face sheet for interior doors from 1.3 mm (18 gauge) galvanized sheet steel with honeycomb or temperature rise rated core laminated under pressure to face sheets.

.4 Reinforce doors with vertical stiffeners, securely welded to each face sheet at 150 mm on centre maximum.

2.13 THERMALLY BROKEN DOORS AND FRAMES

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

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

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

.4 Welding of thermally broken frames must not cause thermal transfers between exterior and interior surfaces of frame sections.

.5 Fill voids in frame with mineral wool insulation prior to insulation.

Part 3 Execution

3.1 INSTALLATION GENERAL

.1 Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.

.2 Install doors and frames to CSDMA Installation Guide.

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3.2 FRAME INSTALLATION

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

.2 Secure anchorages and connections to adjacent construction.

.3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.

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

.5 Caulk perimeter of frames between frame and adjacent material.

.6 Maintain continuity of air barrier and vapour retarder.

.7 Install door silencers after finish painting of frame has been completed.

3.3 DOOR INSTALLATION

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

.3 Adjust operable parts for correct function.

.4 Install louvres.

.5 Install vinyl top caps in out swinging exterior doors for weather protection.

3.4 FINISH REPAIRS

.1 Touch up with primer finishes damaged during installation.

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

END OF SECTION

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Part 1 General

1.1 RELATED SECTIONS

.1 Section 07 92 10 - Joint Sealing: caulking of joints between frames and other building components.

.2 Glazing is included within this Section.

1.2 REFERENCES

.1 National Building Code of Canada (NBC).

.2 Manitoba Building Code (MBC).

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

.4 Canadian Standards Association (CSA) International

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

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

1.3 DESIGN

.1 Design aluminum windows to:

.1 Accommodate expansion and contraction within service temperature range expected in locality.

.2 Limit deflection to maximum 1/175th of the span, under design loads in accordance with requirements of the latest version of the National Building Code of Canada.

1.4 PERFORMANCE

.1 Design aluminum windows to meet or exceed air and water infiltration performance criteria of the applicable CGSB Specifications.

1.5 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Specification E3 – Shop Drawings

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

1.6 TEST REPORTS

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

.1 Windows classifications.

.2 Air tightness.

.3 Water tightness.

.4 Wind load resistance.

.5 Condensation resistance.

1.7 CLOSEOUT SUBMITTALS

.1 Provide operation and maintenance data for windows for incorporation into manual specified in Specification E4 – Operation and Maintenance Manual.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store, handle and protect units by methods approved by the window system manufacturer.

.2 Store units at site on wood platforms raised above grade in enclosures protected from the elements and corrosive materials.

.3 Store units in manner to prevent racking.

.4 Do not remove crates or protective coverings until units are ready for installation.

1.9 PROTECTION

.1 Protect work of this Section during erection against disfiguration, damage or contamination from harmful materials.

.2 Protect work of other trades from damage resulting from work of this Section. Make good such damage to satisfaction of Contract Administrator.

1.10 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Specification D13 – Environmental Protection Plan.

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

.3 Divert unused caulking material from landfill to official hazardous material collections site approved by Contract Administrator.

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

Part 2 Products

2.1 ACCEPTABLE SOURCES

.1 Manufacturers of Aluminum Windows having Products conforming to the requirements of this Section, considered acceptable for use:

.1 Commdoor Aluminum

.2 Commercial Aluminum

.3 Kawneer Company Canada Limited

.4 Or Approved equal in accordance with B7.

.2 Models

.1 Commdoor Aluminum series 411

.2 Commercial Aluminum Series 425

.3 Kawneer 516 Isoport Custom Vent.

2.2 MATERIALS

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

.2 All windows to be supplied by same manufacturer.

.3 Aluminum extrusions: alloy 6063 T5 with clean sharply defined profiles, free from defects impairing strength and performance.

.4 Frames:

.1 Type: aluminum, 125mm depth.

.2 Style: fixed

.3 Thermal break: extruded polyvinyl chloride separator

.4 Fasteners: concealed or tamper proof.

.5 Glass and Glazing:

.1 sealed double glazed units consisting of 6mm exterior and interior float glass;

.2 Low e coating on second surface

.3 argon filled cavity

.4 non-thermal conducting spacers providing a 12mm gap between panes.

.6 Window sills: extruded aluminum, minimum 3.0mm wall thickness to profiles indicated, complete with splice plates, jamb drip deflectors and concealed anchoring devices, to match finish of window framing.

.7 Isolation coating: alkali resistant bituminous paint.

.8 Fasteners in contact with aluminum: stainless steel, of sufficient strength to perform functions for which they are intended.

.9 Sealants for aluminum window components: as recommended by window manufacturer.

.10 Sealant for caulking aluminum window system to other building components: as specified under **Section 07 92 10 - Joint Sealing**.

2.3 WINDOW TYPE AND CLASSIFICATION

.1 Types:

.1 Fixed: with insulating glass.

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

.1 Air tightness: A3.

.2 Water tightness: B7.

.3 Wind load resistance: C4.

.4 Condensation resistance: Temperature Index, I 53.5.

.5 Forced Entry: F1 F2.

.6 Glazing: G2.

2.4 FABRICATION

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

.1 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.

.2 Jointing and intersections shall be accurately made with square or mitred cuts tightly fitted, sealed and made in true planes, with adequate fastenings.

.3 Work shall be made and erected square, plumb, straight and true, accurately fitted, and with tight joints and intersections. Work shall be adequately anchored in place.

.4 Exposed work shall be finished smooth with even close joints and neat connections.

.5 Intermediate members within units shall be of either solid or tubular design to suit wind loading and weight-carrying requirements.

.6 Construct units with clean, sharply defined profiles. Joints to be accurately machined, fitted, assembled and sealed to provide neat weathertight joinery.

.7 Draw joints together and secure by means of screws driven through the walls and into the integrally extruded screw channels of abutting extrusions.

.8 Glass stops to be screwless, lock-in type.

.9 Provide for 25 mm thick insulating glass units in fixed and operable window openings.

.10 Provide shielded drainage and pressure equalizing vents where required in window systems.

.11 Face dimensions detailed are maximum permissible sizes.

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

.13 Clips and anchors: to be stainless steel.

2.5 ALUMINUM FINISHES

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

.1 Clear anodized.

2.6 ISOLATION COATING

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

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

.3 Concrete, mortar and masonry.

2.7 GLAZING

.1 Glaze windows with insulating glass units with extruded aluminum lock-in stops, exterior shim tape, and interior EPDM gasket in accordance with CSA-A440/A440.1.

.2 Glass: insulated double glazed sealed units, composed of two 5mm panes of float glass separated 12mm nonmetallic spacer, argon filled cavity, with low-e coating.

.3 Provide tempered glass in door and sidelite locations.

2.8 AIR BARRIER AND VAPOUR RETARDER

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

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

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

Part 3 Execution

3.1 WINDOW INSTALLATION

.1 The work of this Section shall be installed by experienced workers in accordance with manufacturer's written instructions, reviewed Shop Drawings and in accordance with CSA-A440/A440.1.

.2 All items in this Section shall be set in their correct locations and shall be level, square, plumb and at proper elevations and alignment with other work to the Contract Administrator's approval.

.3 Clean down all material furnished under this Section as it is installed, leaving it free of dirt and surface blemishes.

.4 Aluminum to be placed in contact with concrete or dissimilar metals shall be given a heavy coat of alkali resistant bituminous paint on contacting surfaces.

.5 Interface aluminum window system with the building components using fixing devices in accordance with the window manufacturer's recommendations, and reviewed Shop Drawings.

.6 Arrange components to prevent abrupt variation in colour.

3.2 SILL INSTALLATION

.1 Install metal sills with uniform wash to exterior, level in length, straight in alignment with plumb upstands and faces. Use one piece lengths at each location. Use maximum practical lengths in continuous runs, with minimum number of joints.

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

.3 Fasten expansion joint cover plates and drip deflectors with self-tapping stainless steel screws finished to match adjacent material.

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

3.3 CAULKING

.1 Seal joints between windows and window sills with sealant.

.2 Bed sill expansion joint cover plates and drip deflectors in bedding compound. Caulk between sill up stand and window frame. Caulk butt joints in continuous sills.

.3 Apply sealant in accordance with Section 07 92 10 - Joint Sealing.

.4 Conceal sealant within window units except where exposed use is permitted by Contract Administrator.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Furnish complete automatic aluminum service window system, as specified, that has been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

.2 RELATED WORK:

.1 Openings: Division 08, applicable sections.

.2 Electrical: Division 26, applicable sections.

1.2 REFERENCES

.1 National Building Code of Canada (NBC).

.2 Manitoba Building Code (MBC).

.3 AMERICAN ARCHITECTURAL MANUFACTURERS ASSOCIATION (AAMA): 101 Appendix Dissimilar Materials. Canadian Standards Association (CSA) International

.4 AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):Z97.1: Safety Glazing Materials Used in Buildings - Methods of Test.

.5 AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM): B221 Aluminum-Alloy Extruded Bars, Rods, Shapes and Tubes.

.6 THE ALUMINUM ASSOCIATION (AA) Aluminum Finishes Manual.

.7 UNDERWRITERS LABORATORY, INC. (UL) AND UNDERWRITERS LABORATORY OF CANADA (ULC):

.1 UL 325: Electrical Door, Drapery, Gate, Louver, and Window Operators and Systems

1.3 SUBMITTALS

.1 PRODUCT DATA: Submit manufacturer's complete product and installation data.

.2 SHOP DRAWINGS: Submit drawings showing layout, profiles, product components including anchorage, accessories, finish and glazing details (where required).

.3 QUALITY ASSURANCE AND CLOSEOUT SUBMITTALS: Submit the following:

.1 Manufacturer's Operation and Maintenance Data.

.2 Warranty document as specified herein.

1.4 QUALITY ASSURANCE

.1 MANUFACTURER'S QUALIFICATIONS: Manufacturer to have minimum (5) five years successful experience in the fabrication of automatic and manual windows of the type required for this project.Shop Drawings

1.5 WARRANTIES

.1 MANUFACTURER'S WARRANTY: Units to be warranted against defect in material and workmanship for a period of one year from the Date of Substantial Completion. Manufacturer's warranty is in addition to, and not a limitation of, other rights the City may have under Contract Documents.

.2 DISTRIBUTOR'S WARRANTY: One year warranty: Labor & transportation charges for defective parts replacement.

1.6 PROJECT CONDITIONS

.1 FIELD MEASUREMENTS: Verify actual dimensions/openings by field measurements before fabrication and record on shop drawings. Coordinate with fabrication and construction schedule to avoid construction delays.

1.7 DELIVERY, STORAGE AND HANDLING

.1 ORDERING AND DELIVERY: Comply with factory's ordering instructions and lead time requirements. Delivery shall be in factory's original, unopened, undamaged containers with identification labels intact.

.2 STORAGE AND PROTECTION: Provide protection from exposure to harmful weather conditions and vandalism.

Part 2 Products

2.1 MANUFACTURER

.1 Acceptable suppliers with products meeting the requirements of this section:

.1 HORTON AUTOMATICS, a division of Overhead Door Corporation.

.2 Or Approved equal in accordance with B7.

2.2 EQUIPMENT

.1 MANUFACTURED WINDOW UNITS: Shall include automatic operator, header and track, jambs, sliding panel(s), and sidelite(s). Units to be mounted within rough opening with sliding panel(s) sliding along sidelite.

.1 Horton Automatics Series 8100 (O-X or X-O): Flush-mount, automatic single-slide unit with 1" (25 mm) insulated glass

.2 OPERATOR: The Electric Operating Mechanism for automatic units shall be Series 8000. Average current draw will be less than 2 amps. The operator shall be mounted and concealed within header.

.1 Operation shall be accomplished through a 1/8 HP DC permanent magnet working with a threadless, induction hardened stainless steel 1/2" (13 mm) diameter linear drive shaft. A linear travel block describes a helical path along the rotating shaft utilizing six aircraft quality ball bearings acting as an integral clutch. Linear drive shaft shall be self-lubricating by means of integral oiler located in the travel block.

.2 Electronic Master Control shall have dual on-board seven-segment diagnostic display with programmable parameters. Master control shall incorporate the following features:

.1 Adjustable time delay from 1 to 20 seconds

.2 Fully and independently adjustable open speed, close speed and close check

.3 Adjustable reversing circuit enabling operator to reopen window unit if closing path is obstructed

.4 Circuit breaker (.5 Amp) for current overload protection

.3 On/Off Switch shall be supplied. When switched OFF or during electrical power failure, unit reverts to free manual operation.

.4 Security window units will have interlock controller with security interface.

.3 HEADER: Shall be slim 4" (102 mm) deep by 6" (152 mm) high aluminum construction. Header shall have removable face plate.

.4 HEADER TRACK: Shall be aluminum, nylon covered, and replaceable. Rollers will be steel, high quality ball bearing wheels 1-1/4" (32 mm) diameter. Anti-Derailing shall be accomplished by means of a continuous aluminum extrusion full length of slide panel travel.

.5 SLIDING PANEL(S) AND FIXED SIDELITE(S): Shall be aluminum and glass, 1-3/4" (44 mm) deep with narrow stile or thin stile construction. Glass thickness and glazing as per unit type. Sliding panels shall have concealed guides to stabilize bottom of sliding panel. Mohair weather-strip provided on all strike rails as well as on adjoining vertical rails.

.6 JAMB/FRAME: Shall be aluminum, 1-3/4" (44 mm) deep by 4" (102 mm) wide.

.7 HARDWARE: Shall include the following:

.1 Manual Locks: Single slide units equipped with Adams Rite® maximum security MS1850 lock, 1-5/32" (29 mm) cylinder, 6410 standard thumbturn and keeper. Key cylinder optional.

.2 Autolock: All units equipped with automatic locking mechanism that securely locks the window every time it closes. It unlocks only if window unit is activated or if lock release is depressed.

.3 Manual Recessed Pull: On interior side of strike rails of manual units.

2.3 RELATED EQUIPMENT AND WORK REQUIREMENTS

.1 CONTROL SWITCHES FOR AUTOMATIC UNITS: Each of the following is 24 V AC, class ll circuit:

.1 WinScan™ for Flush-mounted Units: Surface applied, active infrared presence detector factory wired and mounted to header section of unit. Detection pattern is aimed down and in front of the opening and has an adjustable range of 10" - 36" (254 -914 mm) from sensor. Activation is initiated and maintained with interruption of pattern.

.2 Auxiliary Pushbutton: Momentary contact switch serves as auxiliary mode of actuation. Factory wired and installed.

.3 Latch Relay Module: Actuation button must be pressed once to open then again to close. Factory wired and installed.

.4 Fly Fan / Air Curtain Switch: Magnetic reed switch factory installed in automatic or manual units for actuation of fly/insect suction fan or air curtain when window is open. Fan / Air Curtain and wiring by electrical contractor.

.5 ELECTRICAL REQUIREMENTS FOR AUTOMATIC UNITS: 120 VAC, 60 cycle, 1 phase, 15 amp service to be provided by general or electrical contractor.

.6 GLASS AND GLAZING: General contractor to coordinate acquisition of glass in thickness and type in accordance with manufacturer's recommendations for prescribed design, and as specified under Division 8. (Manufacturer to provide corresponding glass stops for field glazing).

.7 Glazing Materials: Glass stops, glazing vinyl and setting blocks for field glazing as per Safety Glazing standard ANSI Z97.1.2.

2.4 MATERIALS, FINISHES AND FABRICATION

.1 EXTRUDED ALUMINUM: ASTM B221, 6063-T5 alloy and temper, anodized:

.1 Structural Header Sections: Minimum 3/16" (5 mm) thickness.

.2 Structural Frame Sections: Minimum 1/8" (3 mm) thickness.

.3 Structural Panel Sections: Commercial grade.

.2 FINISHES (for all exposed aluminum surfaces):

.1 204-R1 Clear: Arch. Class 2 Clear Anodized Coating, AA-MI2C22A31.

.3 PANEL CONSTRUCTION: Corner block type with 3/16" steel backup plate construction, mechanically secured with minimum of four hardened steel screws. Sash consists of snap-in glass stops, snap-in glazing beads and vinyl gaskets.

.4 FRAME CONSTRUCTION: Butt joints, mechanically secured by means of screws and formed aluminum corner brackets.

.5 OPERATOR CONSTRUCTION FOR AUTOMATIC UNITS: Electromechanical modular type construction.

Part 3 Execution

3.1 EXAMINATION

.1 SITE VERIFICATION OF CONDITIONING: Installer must verify that base conditions previously installed under other sections are acceptable for product installation according to with manufacturer's instructions. Notify the Contractor in writing of conditions detrimental to the proper and timely completion of work. Do not start work until all negative conditions are corrected in a manner acceptable to the installer and manufacturer.

3.2 INSTALLATION

.1 GENERAL: Install window units plumb, level and true to line, without warp or rack of frames or sash with manufacturer's prescribed tolerances. Provide support and anchor in place.

.2 DISSIMILAR MATERIALS: Comply with AAMA 101, Appendix Dissimilar Materials by separating aluminum materials and other corrodible surfaces from sources of corrosion or electrolytic action contact points.

.3 WEATHER-TIGHT CONSTRUCTION: Install header and framing members in a bed of sealant or with joint filler or gaskets. Coordinate installation with wall flashings and other components of construction.

.4 ELECTRICAL: Unit is to be complete with internal wiring, controls and control wiring. General or electrical contractor to install all power wiring to operator.

3.3 CLEANING, ADJUSTMENT AND PROTECTION

.1 CLEANING: After installation, installer to take following steps:

.1 Remove temporary coverings and protection of adjacent work areas.

.2 Remove construction debris from construction site and legally dispose of debris.

.3 Repair or replace damaged installed products.

.4 Clean product surfaces and lubricate operating equipment for optimum condition and safety.

.2 ADJUSTMENTS & PRECAUTIONS: Installer to adjust operator and controls for automatic units for optimum condition and safety. Advise contractor of precautions required through the remainder of the construction period, to ensure that units will be without damage or deterioration (other than normal weathering) at the time of acceptance.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Specification E3 – Shop Drawings

.2 Specification D13 – Environmental Protection Plan

.3 Section 08 11 14 - Metal Doors and Frames.

1.2 REFERENCES

.1 National Building Code of Canada (NBC).

.2 Manitoba Building Code (MBC).

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

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

.4 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-69.17-M86 (R1993), Bored and Preassembled Locks and Latches.

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

.3 CAN/CGSB-69.19-93/ANSI/BHMA A156.3-1984, Exit Devices.

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

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

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

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

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

.9 CAN/CGSB-69.31-M89/ANSI/BHMA A156.15-1981, Closer/Holder Release Device.

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

.11 CAN/CGSB-69.34-93/ANSI/BHMA A156.18-1987, Materials and Finishes.

1.3 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Specification E3 – Shop Drawings.

.2 Samples:

.1 Submit samples in accordance with Specification E3 – Shop Drawings

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

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

.3 Hardware List:

.1 Submit contract hardware list in accordance with Specification E3 – Shop Drawings.

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

.4 Manufacturer's Instructions:

.1 Submit manufacturer's installation instructions.

.5 Closeout Submittals

.1 Provide operation and maintenance data for door closers, locksets, and door holders for incorporation into manual specified in Section E4.

1.4 QUALITY ASSURANCE

.1 Regulatory Requirements:

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

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

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Packing, Shipping, Handling and Unloading:

.1 Deliver, store, handle and protect materials in accordance with Section E4.

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

.2 Storage and Protection:

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

1.6 WASTE DISPOSAL AND MANAGEMENT

.1 Separate and recycle waste materials in accordance with Specification D13 – Environmental Protection Plan.

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

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

1.7 MAINTENANCE

.1 Extra Materials:

.1 Provide maintenance materials in accordance with Section E4.

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

Part 2 Products

2.1 HARDWARE ITEMS

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

2.2 DOOR HARDWARE

.1 Butts and hinges: to CAN/CGSB-69.18, (3 per door for doors up to 2135 and 4 per door for doors up to 2440 in height or over 914 in width), NRP, ball bearing type, stainless steel.

.1 Acceptable products:

.1 Hagar AB850 x 114 x 114

.2 Stanley CB199 x 114 x 114

.3 Or Approved equal in accordance with B7.

.2 Exit devices: to CAN/CGSB-69.19, rim exit device, ULC rated, with cylinder core, exterior lever handle trim and vinyl touch bar.

.1 Acceptable products:

.1 Von Duprin 98 series

.2 Sargent 8800 series

.3 Or Approved equal in accordance with B7.

.2 Locksets:

.1 Locksets to CAN/CGSB-69.17 –M86, Grade 1 lever handle, bored locksets.

.2 Provide construction cylinder cores and final cores with keying to the City's BEST master key system.

.3 Acceptable products for interior locksets:

.1 Schlage "A" series

.2 Stanley 9K series

.3 Or Approved equal in accordance with B7.

.4 Acceptable products for exterior locksets:

.1 Schlage "D" series

.2 Stanley 9K series

.3 Or Approved equal in accordance with B7.

.3 Door Closers and Accessories:

.1 Door controls (closers): to CAN/CGSB-69.20, one per door. All door closers shall be through bolted. Finish aluminum lacquer.

.1 Acceptable products:

.1 LCN 4040 Super Smoothee by LCN closers

.2 Or Approved equal in accordance with B7.

.2 Door controls - overhead holders: to CAN/CGSB-69.24, extruded bronze, 110 degree hold-open and stop, one per door.

.1 Acceptable products:

.1 Sargent 598H

.2 Or Approved equal in accordance with B7.

.4 Architectural door trim: to CAN/CGSB-69.22, as listed below.

.1 Door protection plates: kick plate type, 1.27 mm thick stainless steel.

.1 Acceptable products:

.1 Canadian Builders Hardware

.2 Or Approved equal in accordance with B7.

.5 Thresholds: 150 mm, extruded aluminum with thermal break.

.1 Acceptable products:

.1 K. N. Crowder CT-46.

.2 Or Approved equal in accordance with B7.

.6 Weatherstripping:

.1 Head and jamb seal: Adjustable spring loaded, vinyl in extruded aluminum trim

.1 Acceptable products:

.1 K. N. Crowder W44.

.2 Or Approved equal in accordance with B7.

.2 Door bottom seal: Neoprene rubber in extruded aluminum trim

.1 Acceptable products:

.1 K. N. Crowder Type CT-54 Automatic door bottom.

.2 Or Approved equal in accordance with B7.

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.

.6 All fasteners to be non-corroding.

2.4 KEYING

.1 Lay out keying system in consultation with the City. Keying system shall include keying alike, keying differently, keying in groups, submaster keying and grand master keying locks as necessary to meet the requirements of the City.

.2 Keying chart and related explanatory data shall be prepared and submitted to the City for approval, and lock work shall not be commenced until written confirmation of keying arrangements is received from the City.

.3 Provide keys in duplicate for every lock.

.4 Stamp keying code numbers on keys and cylinders.

.5 Provide cabinet for key control with two tag security system complete with key loan register, three-way cross reference index, and cabinet door locking device.

.6 All locks shall be operated by a construction master key in construction cylinder cores while the building is under construction, but shall not operate when the temporary construction cores are replaced with permanent master keyed cylinders at completion of the building.

.7 Provide all permanent cores and keys to City.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

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

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

3.2 INSTALLATION

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

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

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

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

3.3 ADJUSTING

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

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

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

3.4 CLEANING

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

.2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with 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.

END OF SECTION