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VOLUME 2 –ELECTRICAL DIVISIONS – NOT INCLUDED HERE:
Refer to Electrical drawings

VOLUME 3 –REPORTS
Refer to separate document, Volume 3

ALLOWANCES

1 GENERAL

1.01 REFERENCE STANDARDS

- .1 City of Toronto Master Roster Agreement
- .2 Request for Tender
 - .1 Appendix B – Base Bid – Pricing Form

1.02 CASH ALLOWANCES

- .1 Refer to City of Toronto Master Roster Agreement.
- .2 Include in Contract Price specified cash allowances.
- .3 Cash allowances, unless otherwise specified, cover net cost to Contractor of services, products, construction machinery and equipment, freight, handling, unloading, storage and installation and other authorized expenses incurred in performing Work.
- .4 Contract Price, and not cash allowance, includes Contractor's overhead and profit in connection with such cash allowance.
- .5 Contract Price will be adjusted by written order to provide for excess or deficit to each cash allowance.
- .6 Where costs under a cash allowance exceed amount of allowance, Contractor will be compensated for excess incurred and substantiated plus allowance for overhead and profit as set out in Contract Documents.
- .7 Include progress payments on accounts of work authorized under cash allowances in Consultant's monthly certificate for payment.
- .8 Prepare schedule jointly with Consultant and Contractor to show when items called for under cash allowances must be authorized by Consultant for ordering purposes so that progress of Work will not be delayed.
- .9 List the amount of each allowance, for each work specified in each respective specification Section as follows:
 - .1 (-Deleted-) Not Used

1.03 CONTINGENCY ALLOWANCE

- .1 Contingency Allowance is for additional work requested and authorized, in writing, by COT Project Management. To be Determined

ALLOWANCES

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

METAL FABRICATIONS

PART 1 - GENERAL

1.1 General Requirements

1.1.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

1.2 Referenced Standards

1.2.1 ASTM A143-01 Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement

1.2.2 ASTM A167-99 (2004) Standard Specification for Stainless and Heat Resisting Chromium-Nickel Steel Plate, Sheet and Strip

1.2.3 ASTM A307-00 Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength

1.2.4 ASTM A325M-03 Standard Specification for High Strength Bolts for Structural Steel Joints (Metric)

1.2.5 ASTM A380-99 (2005) Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems

1.2.6 ASTM A563M-04 Standard Specification for Carbon and Alloy Steel Nuts (Metric)

1.2.7 (-deleted-)

1.2.8 CAN/CSA-S16.1-01 Limit States Design of Steel Structures

1.2.9 CSA W47.1-03 Certification of Companies for Fusion Welding of Steel Structures

1.2.10 CSA W55.3-1965 (R1998) Resistance Welding Qualification Code for Fabricators of Structural Members Used In Buildings

1.2.11 CSA W59-03 Welded Steel Construction (Metal Arc Welding)

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

METAL FABRICATIONS

1.2.13 (-Deleted-)

1.2.14 (-Deleted-)

1.2.15 UL 2768-11 Architectural Surface Coatings

1.3 Quality Assurance

1.3.1 Qualifications of metal fabricator / subcontractor in custom metal fabrication:
Execute work of this Section using a firm thoroughly conversant with governing laws, bylaws, and regulations. Use workmen skilled in work of this Section. The metal fabricator / subcontractor for the metal panels and supporting metal assembly must have a minimum of 10 years experience with custom metal fabrication.

1.3.2 Welding

- .1 Welding of structural components shall be done only by fabricators certified by CSA Welding Qualification Codes, CSA W47 or W55.3 as applicable, for welding of steel and who shall perform welding to meet specified requirements of W59.1, as may apply.
- .2 Weld all stainless steel by the Argon Arc process. Grind smooth and polish joints, crevice free, and flush without seams.
- .3 Weld all connections where possible, and bolt where not possible. Provide method to prevent loosening of nuts. Ream holes drilled for fastenings. Make welded joints tight, flush, and in true planes with base metals. Make welds continuous at joints where entry of water into building or into voids of members or assemblies is possible. Grind welds in exposed locations smooth in a manner that will not leave blemishes on exposed surfaces. Join members generally by inert metal arc welding where practicable, using materials recommended by manufacturers of metals being welded. Remove flux completely following welding, and grind and polish joints smooth and clean.
- .4 Where galvanized steel is to be welded, provide adequate ventilation. If adequate ventilation is not available provide supplementary air circulation. In confined spaces use a respirator.
- .5 Touch up all uncoated weld areas.

1.4 Shop Drawings

METAL FABRICATIONS

- 1.4.1 Submit shop drawings in accordance with Section 01 33 23, of all the work of this Section, including large-scale detail of members and materials, of connection and jointing details, and of anchorage devices, dimensions, gauges, thicknesses, description of materials, metal finishing, as well as all other pertinent data and information, for Consultant's review before fabrication.
- 1.4.2 Submit shop drawings for the following metal components:
- .1 Metal panel screen wall shop drawings:
1. Indicate all metal panels along Edward Street within bay openings. Coordinate with structural.
 2. Details of connections of metal panels to supporting assembly.
 3. Details of metal panels and doors coordinated with hollow metal doors & hollow metal frames.
 4. Refer to architectural & structural drawings, including
- .2 High-speed garage door support structure
1. Refer to Structural Drawings
- 1.5 **Samples**
- 1.5.1 Metal panel screen wall samples:
1. Provide a minimum two (2) 300mm x 300mm (12" x 12") samples of [M-1] expanded metal mesh panel together with:
 2. Provide a minimum 2 (2) 300mm x 300mm (12" x 12") corner sample of metal frame surround [M-2] for [M-1] panels.
- 1.6 **Product Delivery, Storage, and Protection**
- 1.6.1 Maintain protection provided for work of this Section from time of installation until final finishes are applied or to final cleanup.
- 1.6.2 Protect prime-painted and galvanized surfaces from damage.
- 1.6.3 Protect exposed surfaces of prefinished metal work which does not receive site finishing with protective coatings or wrappings. Use materials recommended by finishers or manufacturers of metals, to ensure that method is sufficiently protective, easily removable, and harmless to the finish.

METAL FABRICATIONS

1.6.4 Load and store primed and/or galvanized articles as follows to prevent the formation of wet storage stain:

.1 Stack the articles or bundle to allow air between the primed and/or galvanized surfaces during transport from the supplier. Load the material in such a manner that continuous drainage could occur.

.2 Raise the articles from the ground and separate with strip spacers to provide free access of air to most parts of the surface. Incline in a manner which will give continuous drainage. Under no circumstances will primed or galvanized steel be allowed to rest on cinders, clinkers, wet soil or decaying vegetation.

.3 Handle primed and/or galvanized articles in such a manner as to avoid any mechanical damage and to minimize distortion.

PART 2 - PRODUCTS

2.1 Materials

2.1.1 General: Metals shall be free from defects which impair strength or durability, or which are visible. Metals shall be new, of best quality, and free from rust, or waves, or buckles, clean, straight, and with sharply defined profiles.

2.1.2 Metals

.1 Steel: For (-) sections hot rolled to meet requirements of CAN3-G40.21, Grade 50W for tubes and Grade 44W for flat shapes. For sheet cold-rolled furniture steel, double annealed, mill stretched and levelled, and fully pickled. Otherwise, steel shall be hot-rolled or cold-rolled of alloy to suit needs of fabrication, use, and appearance.

.2 Stainless Steel: Type 304 alloy conforming to ASTM A167, No. 4 finish.

.3 Primers and Coatings

.1 Interior Steel in Dry Areas: Quick drying oil alkyd conforming to CISC/CPMA 2.75.

.2 Exterior Steel, Interior Steel in Unheated Areas: Quick drying epoxy conforming to MPA#108 plus enamel. Refer to 09 91 00.

.3 Steel Embedded in Concrete: Hot dip galvanized conforming to CSA G164.

.4 (-Deleted-)

METAL FABRICATIONS

- .5 Fastenings: Use nuts and bolts conforming to ASTM A307, A325, and A563 as applicable.
- .6 For interior work, use cadmium-plated fastenings where other protection is not specified.
- .7 For exterior work and interior wet areas such as but not limited to shower rooms, change rooms use 300 series stainless steel.
- 2.1.3 Anchors and Shims For exposed anchorage of stainless steel, use stainless steel and otherwise to match metal anchored. For non-exposed work, anchors and shims may be galvanized steel.
- 2.1.4 Anchors and Shims Pipe: To ASTM A53, extra strong steel pipe for bollards.
- 2.1.5 Expanded Metal Mesh panel [M-1] assembly:
 - .1 Metal panels and supporting assembly to be provided by one metal fabricator / subcontractor, with experience in custom metal fabrication. See Quality Assurance item 1.3.
 - .2 All metal panels [M-1] and supporting assembly components are to be powder coated finish. Powder coat finish to match finish on overhead coiling doors (refer to 08 33 23.13).
 - .3 All Metal angles framing expanded metal panels to be painted to match [M-1] Panels. (refer to 09 91 00)
 - .4 The metal panel screen walls along Edward St and Elizabeth St are composed of but not limited to the following components:
 - .5 Expanded Metal panels:
 - .1 [M-1] Apex 03 by Amico Global
 - Visual % Open: 26%
 - Long way Diamond: 6.0"
 - Short Way Diamond: 2.5"
 - Finish: Powder Coat
- 2.1.6 High speed garage door metal support:

METAL FABRICATIONS

- .1 All metal supporting assembly components are to be painted finish.
- .2 Refer to Architectural drawings and Structural drawings & specifications.

- 2.1.7 Angle support for hollow metal door frames and expanded metal mesh
 - .1 Angles required for the support and anchorage of hollow metal and aluminium door frames to masonry openings are the responsibility of the miscellaneous metals section.
 - .2 Exterior angles to be primed and painted
 - .3 Painted to match [M-1] panels
- 2.1.8 Lintels and Shelf Angles
 - .1 Lintels or shelf angles secured to a structural steel member are the responsibility of structural steel trade.
 - .2 Other lintels and shelf angles are the responsibility of the miscellaneous metals section.
 - .3 Exterior lintels and shelf angles to be primed and painted.
 - .4 Refer to Structural Drawing for lintel schedule. (-deleted-)
- 2.2 **Design and Fabrication**
 - 2.2.1 Generally
 - .1 Fabricate work of this Section with machinery and tools specifically designed for the intended manufacturing processes, and with skilled tradesmen.
 - .2 Fit and assemble work in the shop. When this is not possible, make a trial shop assembly.
 - 2.2.2 Construction
 - .1 Fabricate work with materials, component sizes, metal gauges, reinforcing, anchors, and fasteners of adequate strength to withstand intended use, and with allowable design factors imposed by Jurisdictional Authorities.
 - .2 Ensure that work will remain free of warping, buckling, opening of joints and seams, distortion, and permanent deformation.

METAL FABRICATIONS

2.2.3 Assembly

- .1 Accurately cut, machine, and fit joints, corners, copes and mitres so that junctions between components fit together tightly, and in true planes.
- .2 Fasten work with concealed methods, unless otherwise indicated on the Drawings.
- .3 Weld all connections where possible, and bolt where not possible, and cut off bolts flush with nuts. Countersink bolt heads and provide method to prevent loosening of nuts. Ream holes drilled for fastenings.
- .4 Make welded joints tight, flush, and in true planes with base metals, and continuous at joints where entry of water into building or into voids of members or assemblies is possible. Continuously grind and make smooth welds in exposed locations.
- .5 Provide for differential movements within assemblies and at junctions of assemblies with surrounding work.
- .6 Plug galvanizing vent holes with pear shaped fishing weights hammered in place and filed smooth.
- .7 Fabricate shims of galvanized steel of sizes required.

2.2.4 Finish Work

- .1 Provide holes and connections for work installed under other Sections of this Specification.
- .2 Cleanly and smoothly finish exposed edges of materials, including holes.
- .3 Cap open ends of sections exposed to view, such as pipes, channels, angles, and other similar work.

2.2.5 Prime Painting of Steel: Clean all loose mill scale, rust, dirt, weld flux, and spatter from work after fabrication. Grind smooth sharp projections. Prepare for prime painting by blast cleaning to SSPC-SP6. Apply to steel a shop prime coat of paint. Work paint into corners, and onto open areas smoothly. Deliver work to site with primer undamaged. Paint all surfaces except those to be welded in field, encased in concrete, or that are machined or galvanized. Paint surfaces that are inaccessible to finish field painting with two coats of primer.

2.2.6 Galvanized Steel

METAL FABRICATIONS

.1 Not Applicable (-Deleted-)

- .2 Galvanized surfaces to be painted must be prepared to insure adhesion. Brush blasting, hand tooling or acid etching before application of coating. Oxidation of galvanized surfaces must be removed prior to coating.

Surface treatment with Clean 'n Etch by Great Lakes Laboratories or similar.
Apply treatment as per manufacturer's recommendations.

- 2.2.7 Mechanical Damage: Repair areas damaged by welding, flame cutting, or during handling, transport or erection (in accordance with ASTM A780) using one of the following methods whenever the damage exceeds 4.7 mm in width:

.1 Cold Galvanizing Compound

- .2 Ensure surfaces to be reconditioned with cold galvanized zinc-rich compound are clean, dry, and free of oil, grease and corrosion products.
- .3 Power clean areas to be repaired to near white metal condition. To ensure that a smooth reconditioned coating can be effected, extend surface preparation into the undamaged galvanized compound.
- .4 Touch up using specified cold galvanizing compound.
- .5 Spray or brush apply paint in minimum two coats until a dry film thickness of 4 mils minimum has been achieved. Apply a finish coat of aluminum paint to provide a colour blend with the surrounding galvanizing. Verify coating thickness by measurements with a magnetic or electromagnetic gauge.
- .6 Treat galvanized surfaces that are cut, welded, or threaded with three coats of cold galvanizing compound immediately following damage to galvanized protection.
- .7 Coating shall be continuous, adherent, as smooth and evenly distributed as possible and free from any defect that is detrimental to the stated end use of the coated article.
- .8 Determine the integrity of the coating by visual inspection and coating thickness measurements.
- .9 The galvanized coating shall be sufficiently adherent to withstand normal handling during transport and erection.

- 2.2.8 Wet Storage Stain: Remove any wet storage stain if formed and discovered prior to leaving the galvanizer's plant, unless late pick up or acceptance of delivery has

METAL FABRICATIONS

necessitated the material being stored in unfavourable conditions. In any event, remove wet storage stain before installation so that premature failure of the coating will not occur. Remove wet storage stain as follows:

- .1 Arrange the objects so that their surfaces dry rapidly.
- .2 Remove light deposits by means of a stiff bristle (not wire) brush. Remove heavier deposits by brushing with a 5% solution of sodium or potassium dichromate with the addition of 0.1% by volume of concentrated sulphuric acid. Apply with a stiff bristle brush and leave for about 30 seconds before thoroughly rinsing and drying. Alternatively a proprietary product such as Oakite Highlite, which is intended for this purpose may be used according to manufacturer's recommendations.

2.2.9 Stainless Steel Work

- .1 The stainless steel fabricator shall take all necessary precautions to safeguard against latent surface discolouration due to disturbance of the natural protective oxide coating of the material or to contamination from other sources. The fabrication process shall include proper and adequate cleaning in accordance with the recommended practices set out in ASTM A380.
- .2 Workmanship shall be the best standard practice for this type of work. Do all stainless steel work in accordance with NAAMM, Code of Standard Practice for the Metal Industry, Workmanship, Class 1.
- .3 Do all stainless steel fabrication in clean shops, located away from areas where carbon steel is burnt, ground, or cut with abrasive wheels to ensure that carbon steel dust will not be embedded into the stainless steel.
- .4 Prior to fabrication of stainless steel clean tools and dies which have been used on carbon steels.
- .5 Ensure tools and dies used for forming and cutting stainless steel are free of nicks and other damage.

PART 3 - EXECUTION

3.1 Inspection of Site

- 3.1.1 Take site measurements to ensure that work is fabricated to fit surrounding construction around obstructions and projections in place, or yet to be put in place to suit service locations, and inaccuracies of construction.

METAL FABRICATIONS

3.2 **Installation**

- 3.2.1 Install work plumb, true, square, straight, level, and accurately and tightly fitted together and to surrounding work.
- 3.2.2 Work includes anchor bolts, bolts, washers and nuts, lag screws, expansion shields, toggles, straps, sleeves, brackets, clips, shims and other items necessary for secure installation, as required to support and/or resist loads and forces, and as required by Jurisdictional Authorities.
- 3.2.3 Provide anchors at 600 mm o.c. for cast-in-place work unless shown otherwise.
- 3.2.4 Attach work to wood by screws through countersunk holes in metal.
- 3.2.5 Attach work to masonry with lead plugs and non-corrosion fastenings to support load with a safety factor of 3.
- 3.2.6 Insulate between dissimilar metals, or between metals and masonry or concrete with bituminous paint to prevent electrolysis.
- 3.2.7 Caulk between components installed under this work.

3.3 **Patching and Refinishing**

- 3.3.1 After erection, touch up prime paint and/or galvanized finishes damaged or removed during installation.
- 3.3.2 Remove damaged, dented, defaced, defectively finished, or tool-marked components and replace with new.
- 3.3.3 Refinish shop-applied finishes in field only with approval of Consultant.
- 3.3.4 Clean off dirt on surfaces resulting from installation work.

END OF SECTION

HARDWARE

Part 1 General

1.1 GENERAL REQUIREMENTS

- .1 Comply with requirements of Division 1.
- .2 Furnish and delivery of 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 Engineer-Architect 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 Engineer-Architect.
- .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. Electrical hardware devices to be installed by section 08 71 00 with all final connection with termination above the frame. Electric hardware devices for the proper operation and application of the hardware noted by connection notes in the hardware schedule. Power, conduit, low voltage wire to junction box above the frame. Connection of the card readers, maglocks and high voltage wire by the electrical section Division 28.
- .8 Division 28 to provide high voltage wiring and conduit to the door opening or power supplies including conduit to hardware locations.

1.2 RELATED SECTIONS

- .1 05 50 00 – Metal Fabrications
- .2 08 11 13 – Hollow Metal Doors and Frames
- .3 08 33 23.13 – Overhead Coiling Door

HARDWARE

1.3 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 – Latest Edition
 - .2 NFPA-80 - Standard for Fire Doors and Windows – Latest Edition
 - .3 NFPA101 - Life Safety Code – Latest Edition
 - .4 NFPA-105 - Smoke and Draft Control – Latest Edition

HARDWARE

1.4 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 |

1.5 SUBMITTALS

- .1 Product Data:

HARDWARE

- .1 Submit manufacturer's printed product literature, specifications and data sheets in accordance with Section 01 33 00
- .2 Samples:
 - .1 Upon Engineer-Architect request submit samples of door hardware. Identify each sample by label indicating applicable specification paragraph number, brand name and number, finish and hardware package number.
 - .2 After approval samples will be returned for incorporation in the Work.
- .3 Hardware List:
 - .1 Submit detailed hardware list and keying schedule. Hardware Schedule is to be submitted as per DHI vertical format which is in the "Sequence and Format for Hardware Schedules".
 - .2 Indicate specified hardware including make, model, material, function, size, finish and other pertinent information.
 - .3 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 Engineer-Architect.
 - .4 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.
 - .5 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 33 00
- .6 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 1 year
 - .6 All other Hardware 1 year

HARDWARE

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, Ontario Building Code 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 00 01.
 - .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 Aluminum Doors to be shipped directly to the Aluminum Door supplier. Hardware for Aluminum Doors will be ordered immediately after approval of shop drawings. Delays in ordering the Aluminum Door hardware will not be accepted.
 - .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:

HARDWARE

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

1.8 MAINTENANCE

- .1 Provide maintenance materials in accordance with Section 01 00 01.
- .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.

1.9 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 owner/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

HARDWARE

- .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 Locksets
 - .1 Sargent– ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
- .4 Cylinders
 - .1 Medeco– ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
- .5 Exit Devices
 - .1 Sargent – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
- .6 Closers
 - .1 Sargent – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
- .7 Power Operators
 - .1 Besam - ASSA ABLOY Entrance Systems 4020B Sladeview Crescent. Units 3&4 Ontario, L5L 6B1
- .8 Flush Bolts
 - .1 Rockwood Manufacturing – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
- .9 Overhead Stops
 - .1 Sargent – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
- .10 Flatware
 - .1 Rockwood Manufacturing – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
- .11 Floor/Wall Stops
 - .1 Rockwood Manufacturing – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
- .12 Weatherstrip/Thresholds
 - .1 Pemko – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
- .13 Electromagnetic Locks
 - .1 Securitron – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan Ontario, L4H 4T9.
- .14 Power Supplies, Push Buttons
 - .1 Securitron – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan Ontario, L4H 4T9.
- .15 Electric Strikes

HARDWARE

- .1 HESS – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan Ontario, L4H 4T9.
- .16 Card Readers
 - .1 HID Global

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.
 - .3 Interior hinges of stainless 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 630/US32D Satin Stainless Steel.
 - .10 Standard of Acceptance:

.1	Specified	Acceptable Alternates		
.2	<u>McKinney</u>	<u>Hager</u>	<u>Stanley</u>	<u>Ives</u>
.3	TA2714	BB1279	FBB179	5BB1 Series
.4	TA2314	BB1191	FBB191	5BB1 Series
.5	TA3786	BB1168	FBB168	5BB1 HW
.6	TA3386	BB11699	FBB199	5BB1 HW
- .4 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.

HARDWARE

- .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 US 32D.
- .17 Standard of Acceptance:
 - .1 Specified Acceptable Alternates
 - .2 Sargent Corbin Yale Schlage Dorma
 - .3 8200 – Series ML2200 8800 L9000 M9000
 - .4 No alternates acceptable for cylinders
- .5 Exit Devices: to ANSI/BMHA A156.3, Grade 1.
 - .1 Modern touch pad type, fabricated of stainless steel or aluminum.
 - .2 UL listed for Accident Hazard or Fire Exit Hardware as required.
 - .3 Hex key dogging standard on non fire-rated exit devices. Cylinder dogging where specified.
 - .4 Exit devices shall be UL listed panic exit hardware. All exit devices for fire rated openings shall be ULC labeled fire exit hardware.
 - .5 Include all electrified functions as specified.
 - .6 Device Length as per manufacturer's guidelines.
 - .7 The design of the exit device shall eliminate the necessity of removing the device from the door for standard maintenance or keying changes.
 - .8 Trim as specified shall be through-bolted.
 - .9 All vertical rod in pairs to be less bottom rod where noted.
 - .10 Extension rods are required as per manufacturer's requirements.
 - .11 Electronic exit devices to have Linx quick connectors (QC).

HARDWARE

- .12 Exit devices to suite doors over 45mm where required.
- .13 Standard of acceptance:
- | .1 | Specified | Acceptable Alternates | | | | |
|----|----------------|-----------------------|-------------|-------------------|--------------|------|
| .2 | <u>Sargent</u> | <u>Corbin</u> | <u>Yale</u> | <u>Von Duprin</u> | <u>Dorma</u> | |
| .3 | 8800 - Series | ED5200 | 7100 | 98 | | 9300 |
| .4 | 8700 - Series | ED5400 | 7110 | 9827 | | 9400 |
| .5 | 8600 - Series | ED5800 | 7120 | 9847 | | 9100 |
| .6 | 8500 - Series | ED4200 | 7200 | 33 | | 9700 |
| .7 | 8400 - Series | ED4800 | 7220 | 3347 | | 9600 |
- .6 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.

HARDWARE

- .16 All closer to have a forged steel main arm and forged forearm for parallel arm closers.
- .17 Finish to US 32D.
- .18 Standard of acceptance:
- | | | | | | |
|----|----------------|------------------------|---------------|------------|--------------|
| .1 | Specified | Acceptable Alternates: | | | |
| .2 | <u>Sargent</u> | <u>Norton</u> | <u>Corbin</u> | <u>LCN</u> | <u>Dorma</u> |
| .3 | 1431 | 8500 | DC6200 | 1460-FC | 8600 |
| .4 | 351 | 7500 | DC3000 | 4040 | 8900 |
| .5 | 422 | 2800ST | DC5000 | No Equal | TS-93 |
- .7 Architectural door trim: to ANSI/BHMA A156.6, as listed in Hardware Schedule, finished to US 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 Standard of acceptance:
- | | | | | |
|----|-----------------|-----------------------|-------------|--------------|
| .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 US 32D.
- .1 Standard of acceptance:
- | | | | |
|----|-----------------|-----------------------|-------------|
| .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 US 32D.
- .1 Standard of acceptance:
- | | | | |
|----|-----------------|-----------------------|-------------|
| .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 US32D.
- .1 Standard of acceptance: 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 |

HARDWARE

- .8 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 Black US32D.
 - .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 Standard of acceptance:

.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 Standard of acceptance:

.1	Specified	Acceptable Alternates	
.2	<u>Rockwood</u>	<u>Standard Metal</u>	<u>Ives</u>
.3	406	S121	WS406CV
.4	409	S123	WS406CC
- .9 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.

HARDWARE

- .9 Confirm frame detail and if necessary provide a suitable mounting plate to install operator properly.
- .10 Standard of acceptance:
 - .1 Specified Acceptable Alternates
 - .2 Besam Gyro Tech Stanley
 - .3 SW200i GT-8500 Magic Force
 - .4 SW100i GT-8710 Magic Access
- .10 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 Standard of acceptance:
 - .1 Specified Acceptable Alternates
 - .2 PEMKO KN Crowder Hager
 - .3 179AP CT-39P 552W
 - .4 252 x 3AFG CT45A 421S
 - .5 251 x 226AFG CT49A 515S
- .11 Electric Strikes.
 - .1 Standard Electric Strikes: Heavy duty, cylindrical and mortise lock electric strikes conforming to ANSI/BHMA A156.31, Grade 1, UL listed for both Burglary Resistance and for use on fire rated door assemblies. Stainless steel construction with dual interlocking plunger design tested to exceed 3000 lbs. of static strength and 350 ft-lbs. of dynamic strength. Strikes tested for a minimum 1 million operating cycles. Provide strikes with 12 or 24 VDC capability and supplied standard as fail-secure unless otherwise specified. Option available for latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike.
 - .1 Standard of acceptance:
 - .1 Specified Acceptable Alternates
 - .2 HES RCI
 - .3 5200 S6514
 - .4 1006 F2164
 - .5 9500 F0162
 - .6 9600 0162
- .12 Power Supplies:
 - .1 Dual output, field selectable 12 or 24 VDC via clearly marked toggle switch.

HARDWARE

- .2 Supplies 1 full AMP continuous current output, even while charging back-up batteries.
- .3 SPDT AC monitoring output allows for remote monitoring of the power supply's 110V AC input.
- .4 Separate voltage inputs for load and battery allow the batteries to charge at a higher output while the load remains at exactly 12 or 24 VDC.
- .5 LED indication (AC & DC) showing power supply status UL listed low current fire alarm disconnect requires only a minimum size fire alarm relay and wire gauge Polyswitch type breakers allow for large short duration inrush current if batteries are installed (approx. 20A for 1 second) Line voltage and DC fuses Sealed lead acid-gel battery charging capability (battery not included).
- .6 UL Class 2, linear regulated power supply provides the cleanest power available sensitive, active safety and security devices.
- .7 UL Listed.
- .8 CFAR Relay - Securitron's Fire Alarm reset module interconnects with a Securitron BPS series power supply and a fire alarm (made by others). The purpose is to provide additional safety and control in an installation where activation of the fire alarm is intended to switch off the BPS power supply.
- .9 This is often done to release power to magnetic locks which are installed on perimeter doors so as to permit safe evacuation in the event of a fire. The module has three specific functions:
 - .1 It will maintain the released condition of devices released by activation of the fire alarm even after the fire alarm resets and until the module itself is reset by key.
 - .2 It allows key controlled release of the same devices (separate from the fire alarm control).
 - .3 It signals the released or "normal" condition of the devices via a bicolor LED.
- .10 Standard of acceptance:

.1	Specified	Acceptable Alternates
.2	<u>Securitron</u>	<u>Sargent</u> <u>Schlage Electronics</u>
.3	BPS	3500 PS900
- .13 Power Transfer Devices:
 - .1 Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

HARDWARE

- .2 Standard of acceptance:
 - .1 Specified Acceptable Alternates
 - .2 Securitron Pemko Von Duprin
 - .3 EL-CEPT EL-CEPT EPT-10
- .14 Electric Door Wire Harnesses:
 - .1 Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.
 - .2 Standard of acceptance:
 - .1 Specified Acceptable Alternates
 - .2 McKinney Von Duprins Stanley
 - .3 QC-C Series CON WH Series
- .15 Key Switches:
 - .1 Key switches furnished standard with stainless steel single gang face plate.
 - .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.
 - .5 Key switches available as momentary or maintained action and in narrow face plate options.
 - .6 Standard of acceptance:
 - .1 Specified Acceptable Alternates
 - .2 Securitron Alarm Controls Security Door Controls
 - .3 MK Series NTB Series 800 Series
- .16 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 Standard of acceptance:
 - .1 Specified Acceptable Alternates
 - .2 Securitron Sargent Schlage Electronics

HARDWARE

.3 DPS W/M 3287 679 Series

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	Description	Material	BMHA
.2	Exterior Hinges	Stainless Steel Metal, Satin	US32D
.3	Interior Hinges	Stainless Steel Metal, Satin	US32D
.4	Locks	Stainless Steel Metal, Satin	US32D
.5	Exit Devices	Satin Chromium Plated	US26D
.6	Closers	Aluminum Powder Coated	US26D
.7	Flatware	Stainless Steel Metal, Satin	US32D
.8	All other items	Satin Chromium Plated	US26D

2.5 HARDWARE SETS

- .1 Set 1: 1065 x 2240 x45, Hollow Metal. Entry.
Single D-101

3	HINGE, FULL MORTISE, HVY WT	TA386XNRPXSIZE TO SUIT	MK
1	RIM EXIT DEVICE, STOREROOM	16 72 8804 LESS PULL	SA
2	PERMANENT CORE	KEYED TO OWNERS REQUEST	OT
1	ELECTRIC STRIKE	9600-LBM	HS
1	DOOR PULL	RM3310-36 MTG-TYPE 1HD	RO
1	CONC OVERHEAD STOP	6-X36	RF
1	SURFACE CLOSER	351 P9	SA
1	KICK PLATE	K1050 =8",10",12" HIGH SA BEV	RO
1	THRESHOLD	25_X_FG	PE

HARDWARE

1	GASKETING	290S	PE
1	GASKETING	2891S	PE
1	ELECTROLYNX HARNESS	QC-C3000P	MK
1	DOOR POSITION SWITCH	3287	SA
1	CARD READER	BY GC	OT
1	MOTION SENSOR	XMS	SU
1	CENTRALIZED POWER SUPPLY	HID SIGNO 40 BY GC	HID
1	JUNCTION BOX	AS REQ'D BY GC	OT

Notes: division 26 to provide; 120vac power to power supply, final connection all back boxes, and conduit with low-voltage wiring.

Description of operation:

- entry by access control system schedule or presenting authorized card at card reader or by mechanical key override.
- exit by depressing on pushpad. Free egress at all times.
- request to exit monitoring and latch bolt monitor.

.2 Set 2: 1065 x 2240 x45, Hollow Metal. Exit.
Single D-102

3	HINGE, FULL MORTISE, HVY WT	TA386XNRPXSIZE TO SUIT	MK
1	RIM EXIT DEVICE, STOREROOM	16 72 8804 LESS PULL	SA
1	CONC OVERHEAD STOP	6-X36	RF
1	SURFACE CLOSER	351 P9	SA
1	KICK PLATE	K1050 =8",10",12" HIGH SA BEV	RO
1	THRESHOLD	25_X_FG	PE
1	GASKETING	290S	PE
1	GASKETING	2891S	PE

Description of operation:

- exit by depressing on pushpad. Free egress at all times.

.3 Set 3: Existing, Wood Door Metal Frame. Verifiy in Field.
Single D-203

3	HINGE,	EXISTING		
1	STOREROOM/CLOSET LOCK	72 8204 LNMI	US26D	SA
1	PERMANENT CORE	KEYED TO OWNERS REQUEST		OT
1	ELECTRIC STRIKE	1500C-LM	630	HS
1	ELECTROLYNX HARNESS	QC-C3000P		MK
1	DOOR INTERFACE RELAY	CX-12 PLUS		OT
1	DOOR POSITION SWITCH	3287		SA
1	CARD READER	HID SIGNO 40 BY GC		HID
1	CENTRALIZED POWER SUPPLY	BY GC		OT
1	JUNCTION BOX	AS REQ'D BY OTHERS		OT

HARDWARE

NOTES: DIVISION 26 TO PROVIDE; 120VAC POWER TO POWER SUPPLY, FINAL CONNECTION ALL BACK BOXES, AND CONDUIT WITH LOW-VOLTAGE WIRING.

DESCRIPTION OF OPERATION:

- ENTRY BY ACCESS CONTROL SYSTEM SCHEDULE OR PRESENTING AUTHORIZED CARD AT CARD READER OR BY MECHANICAL KEY OVERRIDE.

.5 Set 5: Existing, Alum Door and Frame. Verifiy in Field.
Double D-105

	HINGES	EXISTING	
1	RIM EXIT DEVICE, STOREROOM	16 72 8804 LESS PULL	SA
2	PERMANENT CORE	KEYED TO OWNERS REQUEST	OT
1	ELECTRIC STRIKE	9600-LBM	HS
1	DOOR PULL	RM3310-36 MTG-TYPE 1HD	RO
1	CONC OVERHEAD STOP	6-X36	RF
1	SURFACE CLOSER	351 P9	SA
1	KICK PLATE	K1050 =8",10",12" HIGH SA BEV	RO
1	THRESHOLD	25_X_FG	PE
1	GASKETING	290S	PE
1	GASKETING	2891S	PE
1	ELECTROLYNX HARNESS	QC-C3000P	MK
1	DOOR POSITION SWITCH	3287	SA
1	CARD READER	BY GC	OT
1	MOTION SENSOR	XMS	SU
1	CENTRALIZED POWER SUPPLY	HID SIGNO 40 BY GC	HID
1	JUNCTION BOX	AS REQ'D BY GC	OT

Notes: division 26 to provide; 120vac power to power supply, final connection all back boxes, and conduit with low-voltage wiring.

Description of operation:

- entry by access control system schedule or presenting authorized card at card reader or by mechanical key override.
- exit by depressing on pushpad. Free egress at all times.
- request to exit monitoring and latch bolt monitor.

.6 Set 6: Overhead Coiling Vehicular Exit Door D-103

Card reader	N/A	
Door Activation	triple push button control. 3BXL, NEMA 4	MMTC
1 Exterior	closure only activation button	

HARDWARE

.7 Set 7: Overhead Coiling Vehicular Entry Door D-104

1	Card Reader	HID SIGNO 40	HID
1	Door Activation	triple push button control 3BLXL, NEMA 4	MMTC

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.

HARDWARE

- .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 High voltage wiring by Division 28. 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 contractors 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 manufacture's instructions.
- .3 Remove protective material from hardware items where present.
- .4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.5 DEMONSTRATION

- .1 Keying System Setup and Cabinet:
 - .1 Set up key control system with file key tags, duplicate key tags, numerical index, alphabetical index and key change index, label shields, control book and key receipt cards.
 - .2 Place file keys and duplicate keys in key cabinet on their respective hooks.
 - .3 Lock key cabinet and turn over key to Owner's Representative.
- .2 Maintenance Staff Briefing:

HARDWARE

- .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.
- .5 Demonstrate operation, operating components, adjustment features, and lubrication requirements.

3.6 FIELD QUALITY CONTROL

- .1 An inspection report will be required 6 months after substantial completion by a qualified Architectural Hardware Consultant to note any deficiencies. The inspection should include checking each lock against the key schedule to make sure the correct locks and cylinders are on the proper doors.

3.7 PROTECTION

- .1 Protection must be given to all products and finishes until such time as the owner accepts the project.

3.8 CERTIFICATION

- .1 After installation, Hardware Supplier is to have a regular member of the Architectural Hardware Consultants" (AHC) Association inspect and certify in writing that all items and their installations are in accordance with specified requirements.

3.9 DOOR HARDWARE SETS

- .1 The door hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
- .2 The supplier is responsible for handing and sizing all products as listed in the door hardware sets. Quantities listed are for each pair of doors, or for each single door.
- .3 Products listed in the Door Hardware Sets must meet the requirements described in the specification sections noted.

END OF SECTION