

DOOR								FRAME				RATING	LINTEL TYPE	REMARKS
NO.	WIDTH HEIGHT THICK.	TYPE	MATL	CORE	FIN	CLR	HDWRE	TYPE	MATL	FIN	CLR			
MAIN FLOOR														
D100A	1000 X 2300 X 50	E	ALUM	INSUL	ANOD	CLEAR	1	A-2.2	ALUM	ANOD	CLEAR			3
D100B	1000 X 2150 X 45	E	HM	HC	P	P-1	2	11	HM	P	P-1			3
D102	1000 X 2150 X 45	A	WD	SOLID	ST	ST-1	3	10	HM	P	P-1			
D103	1000 X 2150 X 45	A	WD	SOLID	ST	ST-1	4	9	HM	P	P-1			5
D104A	(3x) 1000 X 2300 X 50	E	ALUM	INSUL	ANOD	CLEAR	5	A-2.2	ALUM	ANOD	CLEAR			3
D104B	(3x) 1000 X 2300 X 50	E	ALUM	HC	ANOD	CLEAR	6	13	ALUM	ANOD	CLEAR			3
D106A	1000 X 2150 X 45	C	WD	SOLID	ST	ST-1	7	1	HM	P	P-1			5
D106B	5000 X 1550	-	ALUM	-	ANOD	CLEAR	8	-						1
D106C	3500 X 1850	-	ALUM	-	ANOD	CLEAR	8	-						1
D107	1000 X 2150 X 45	B	WD	SOLID	ST	ST-1	9	1	HM	P	P-1			
D108	1000 X 2150 X 45	B	WD	SOLID	ST	ST-1	9	1	HM	P	P-1			
D109	1000 X 2150 X 45	A	WD	SOLID	ST	ST-1	9	6	HM	P	P-1			
D110	1000 X 2150 X 45	A	WD	SOLID	ST	ST-1	9	6	HM	P	P-1			
D111	1000 X 2150 X 45	A	WD	SOLID	ST	ST-1	9	6	HM	P	P-1			
D112	1000 X 2150 X 45	A	WD	SOLID	ST	ST-1	9	6	HM	P	P-1			
D114	1000 X 2150 X 45	A	WD	SOLID	ST	ST-1	9	1	HM	P	P-1			
D115A	1000 X 2150 X 45	B	WD	SOLID	ST	ST-1	10	1	HM	P	P-1			7
D115B	1000 X 2150 X 45	B	WD	SOLID	ST	ST-1	11	1	HM	P	P-1			7
D116	1000 X 2150 X 45	B	WD	SOLID	ST	ST-1	9	1	HM	P	P-1			
D117	1000 X 2150 X 45	B	WD	SOLID	ST	ST-1	9	1	HM	P	P-1			
D118	1000 X 2300 X 50	E	ALUM	INSUL	ANOD	CLEAR	1	A-2.2	ALUM	ANOD	CLEAR			3
D119	1000 X 2150 X 45	A	WD	SOLID	ST	ST-1	12	1	HM	P	P-1			
D120	1000 X 2150 X 45	A	HM	HC	P	P-1	13	1	HM	P	P-1			
D121	1000 X 2150 X 45	B	WD	SOLID	ST	ST-1	3	1	HM	P	P-1			
D122A	1200 X 2150 X 45	A	HM	HC	P	P-1/ P-11	14	3	HM	P	P-1/ P-11			13
D122B	(2x) 1000 X 2150 X 45	A	HM	HC	P	P-1	15	4	HM	P	P-1			
D123	(2x) 1000 X 2150 X 45	A	HM	HC	P	P-1	15	4	HM	P	P-1			
D124	1000 X 2150 X 45	B	WD	SOLID	ST	ST-1	3	1	HM	P	P-1			

DOOR								FRAME				RATING	LINTEL TYPE	REMARKS
NO.	WIDTH HEIGHT THICK.	TYPE	MATL	CORE	FIN	CLR	HDWRE	TYPE	MATL	FIN	CLR			
D125	1000 X 2150 X 45	B	WD	SOLID	ST	ST-1	3	1	HM	P	P-1			
D126A	1000 X 2150 X 45	A	HM	HC	P	P-15	16	1	HM	P	P-1			9
D126B	1200 X 1350	-	ALUM		ANOD	CLEAR		-	ALUM	ANOD	CLEAR			2
D127	1000 X 2150 X 45	A	HM	HC	P	P-15	16	1	HM	P	P-1			9
D128A	1000 X 2150 X 45	A	HM	HC	P	P-15	17	1	HM	P	P-1			10
D128B	2000 X 1350	-	ALUM	-	ANOD	CLEAR		-	ALUM	ANOD	CLEAR			2
D128C	2000 X 1350	-	ALUM	-	ANOD	CLEAR		-	ALUM	ANOD	CLEAR			2
D129	1000 X 2150 X 45	A	HM	HC	P	P-15	17	1	HM	P	P-1			
D130A	1000 X 2150 X 45	A	HM	INSUL	P	P-15/ P-1	18	1	HM	P	P-1	1.5 HR		8, 14
D130B	1200 X 2150 X 45	A	HM	INSUL	P	P-1/ P-11	14	S1	HM	P	P-1/ P-11			13
D130C	400 X 620 X 45	A	HM	INSUL	P	P-1/ P-11	19	7	HM	P	P-1/ P-11			13
D130D	2750 X 2800 X 38	-	HM	INSUL	P	PF		-	-	P	PF			12
D131	1000 X 2150 X 45	A	HM	INSUL	P	P-1	20	1	HM	P	P-1	1.5 HR		8
D136A	1000 X 2300 X 50	E	ALUM	INSUL	ANOD	CLEAR	1	A-2.2	ALUM	ANOD	CLEAR			3
D136B	1000 X 2150 X 45	E	HM	HC	P	P-1	2	12	HM	P	P-1			3
D137	1000 X 2150 X 45	A	HM	HC	P	P-15	16	1	HM	P	P-1			9
D138A	1000 X 2150 X 45	A	HM	HC	P	P-15	21	1	HM	P	P-1			
D138B	1000 X 2150 X 45	A	HM	HC	P	P-15	21	1	HM	P	P-1			
D139A	1000 X 2150 X 45	A	HM	HC	P	P-15	16	1	HM	P	P-1			9
D139B	1000 X 2150 X 45	A	HM	HC	P	P-15/ P-1	16	1	HM	P	P-1			15
D140	1100 X 2150 X 45	A	HM	HC	P	P-1	22	2	HM	P	P-1			
D141A	1000 X 2150 X 45	A	HM	HC	P	P-15	16	1	HM	P	P-1			
D141B	1000 X 2150 X 45	A	HM	HC	P	P-15/ P-1	16	1	HM	P	P-1			15
D142A	1000 X 2150 X 45	A	HM	HC	P	P-15	21	1	HM	P	P-1			
D142B	1000 X 2150 X 45	A	HM	HC	P	P-15	21	1	HM	P	P-1			
D143	1000 X 2150 X 45	A	HM	HC	P	P-15	16	1	HM	P	P-1			9
D144A	(3x) 1000 X 2150 X 45	D	WD	SOLID	ST	ST-1	23	5	HM	P	P-1			3, 4, 6

NO.	DOOR							FRAME				RATING	LINTEL TYPE	REMARKS
	WIDTH HEIGHT THICK.	TYPE	MATL	CORE	FIN	CLR	HDWRE	TYPE	MATL	FIN	CLR			
D144B	(2x) 1000 X 2150 X 45	A	HM	INSUL	P	P-1/ P-11	24	S2	HM	P	P-1/ P-11			4, 13
D147	1000 X 2150 X 45	A	HM	HC	P	P-16/ P-1	25	1	HM	P	P-16/ P-1			17
D148A	1000 X 2150 X 45	A	HM	HC	P	P-1	26	1	HM	P	P-1			
D148B	1000 X 2150 X 45	A	HM	HC	P	P-1	26	1	HM	P	P-1			
D148C	1000 X 2150 X 45	A	HM	HC	P	P-15/ P-1	26	1	HM	P	P-15/ P-1			16
D148D	1900 X 1350	-	ALUM	INSUL	ANOD	CLEAR		-	ALUM	ANOD	CLEAR			3
D148E	1900 X 1350	-	ALUM	INSUL	ANOD	CLEAR		-	ALUM	ANOD	CLEAR			3
D148F	1900 X 1350	-	ALUM	INSUL	ANOD	CLEAR		-	ALUM	ANOD	CLEAR			3
D149A	(2x) 1000 X 2150 X 45	A	HM	HC	P	P-15/ P-1	15	4	HM	P	P-15/ P-1			16
D149B	1200 X 2150 X 45	A	HM	HC	P	P-1	27	3	HM	P	P-1			5
D150A	1000 X 2150 X 45	A	WD	SOLID	ST	ST-1	28	8	HM	P	P-1			5, 11
D150B	1000 X 2150 X 45	A	WD	SOLID	ST	ST-1	28	8	HM	P	P-1			5, 11
D150C	1000 X 2150 X 45	A	HM	HC	P	P-1	29	1	HM	P	P-1			
MEZZANINE FLOOR														
D200	1000 X 2150 X 45	A	HM	HC	P	P-1	17	1	HM	P	P-1			
D202	1000 X 2150 X 45	A	HM	HC	P	P-1	17	1	HM	P	P-1			
D203	1000 X 2150 X 45	A	HM	HC	P	P-1	30	1	HM	P	P-1	3/4 HR		

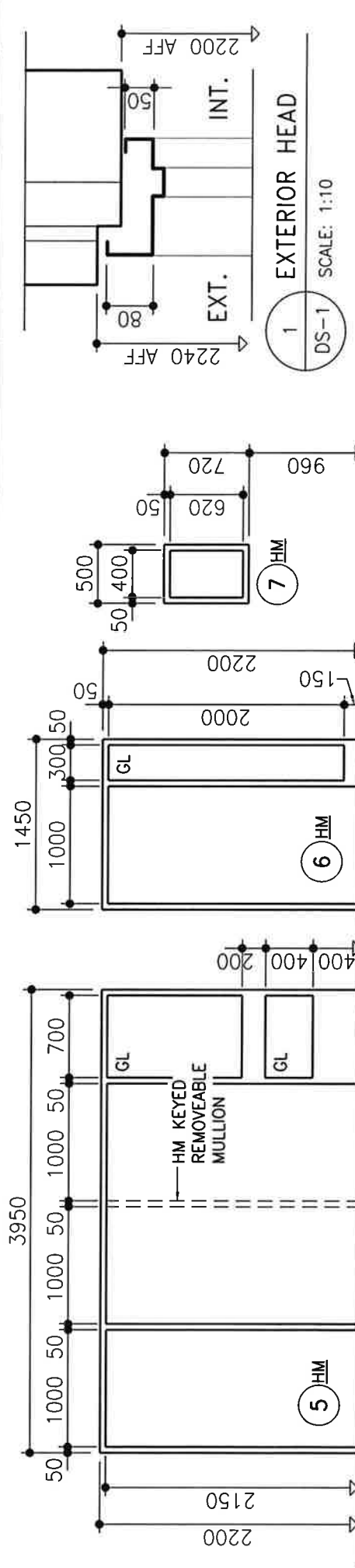
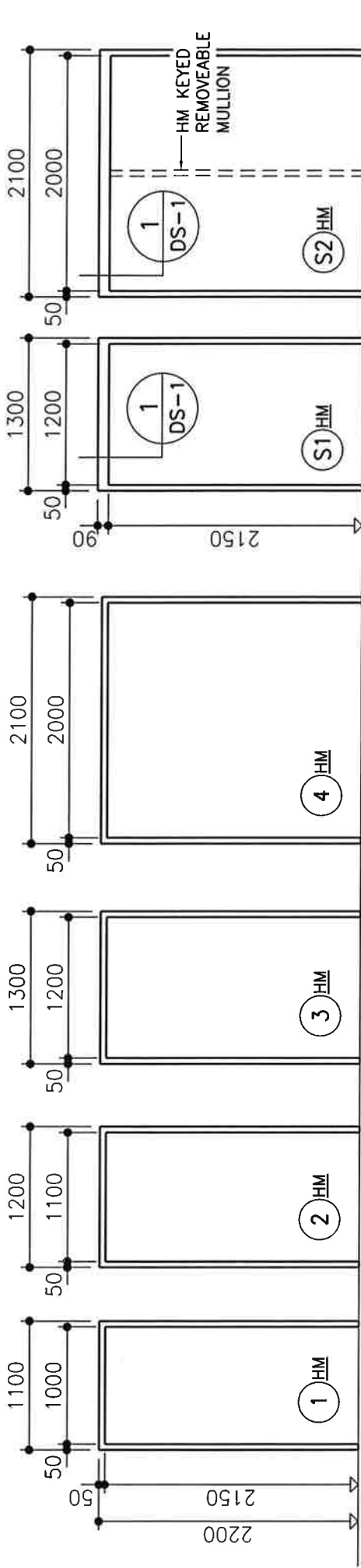
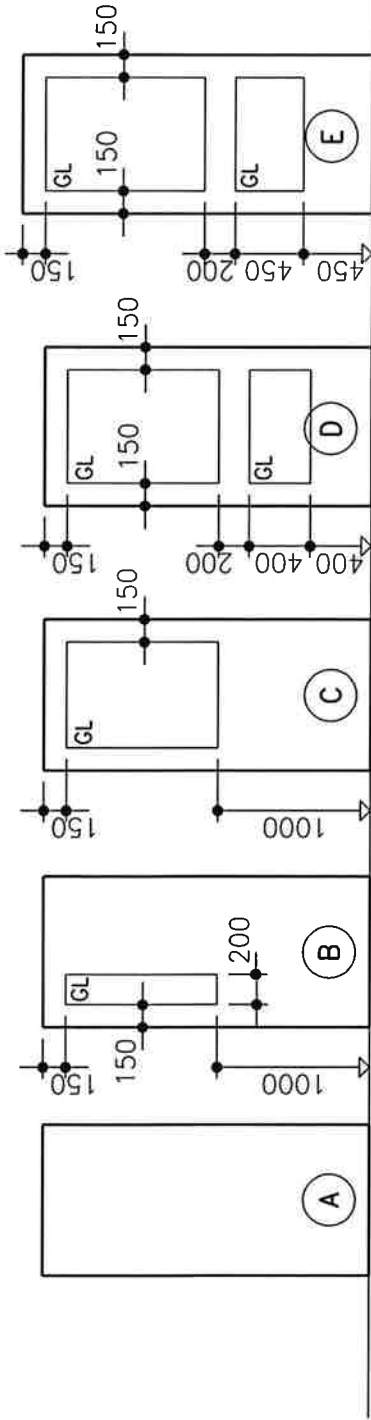
REMARKS:

- 1.) OVERHEAD ROLLING SECURITY GRILLE, LOCKABLE, MANUAL OPERATION
- 2.) OVERHEAD ROLLING SLAT SHUTTER, LOCKABLE, MANUAL OPERATION
- 3.) PROVIDE AUTO DOOR OPERATOR (VESTIBULE DOORS SEQUENCED) TO DOOR INDICATED ON A-1.3, SEE ALSO ELECTRICAL
- 4.) PROVIDE REMOVABLE, KEYED MULLION WHERE INDICATED ON A-1.3
- 5.) PROVIDE ACOUSTIC TREATMENT - TO INCLUDE DOOR JAMB SEALS, AUTO-BOTTOM & INSULATED DOOR FRAME
- 6.) PROVIDE SELF-CLOSER TO ALL RATED DOORS, ALL EXTERIOR DOORS AND WHERE INDICATED ABOVE
- 7.) PROVIDE SELF-CLOSER C/W OVERHEAD HOLD-OPEN DEVICE (NOT TIED BACK TO FIRE ALARM)
- 8.) PROVIDE WHEATHER STRIPPING, INSUL DOOR AND INSUL FRAME TO ALL EXTERIOR DOORS AND WHERE INDICATED ABOVE
- 9.) UNDERCUT DOOR 20mm

DOOR								FRAME				RATING	LINTEL TYPE	REMARKS
NO.	WIDTH	HEIGHT	THICK.	TYPE	MATL	CORE	FIN	CLR	HDWRE	TYPE	MATL			
10.)	ALLOW FOR 180 DEGREE DOOR SWING													
11.)	PROVIDE "PANIC" TYPE HARDWARE FOR ALL EXTERIOR DOORS AND WHERE INDICATED ABOVE													
12.)	O/H DOOR C/W OPENER													
13.)	PAINT DOOR AND FRAME D122A, D130B, D130C, D144B P-11 ON EXTERIOR OF BUILDING, P-1 ON INTERIOR OF BUILDING													

DOOR/ FRAME SCHEDULE NOTES:

- REFER TO DOOR SCHEDULE FOR DOOR FRAME TYPES, REFER TO FLOOR PLANS A-1.3 & A-1.4 FOR INTERIOR WINDOW FRAME TYPES
- FRAME DEPTHS: ALL INTERIOR WINDOW FRAME TYPES & DOOR FRAME TYPES W/ SIDELIGHTS TO MATCH OUT TO OUT FACE OF FINISHED WALL CONSTRUCTION



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scale: 1:50

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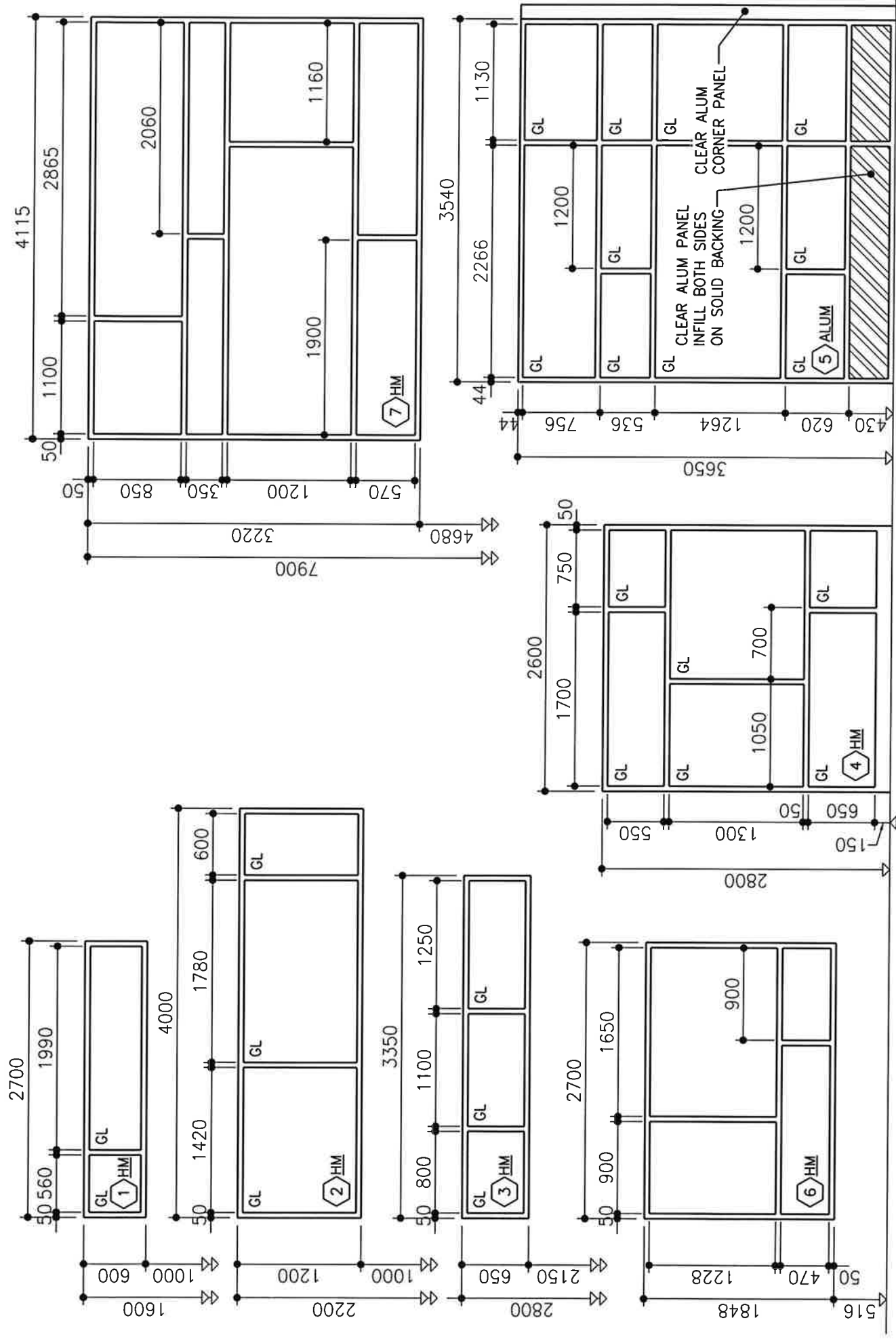
sheet title: DOOR SCHEDULE DOOR/ FRAME TYPES

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Part 1 General

1.1 SECTION INCLUDES

- .1 Standard Non-rated, fire rated and thermally insulated steel frames.
- .2 Standard Non-rated, fire rated and thermally insulated steel doors.
- .3 Interior glazed steel light frames.

1.2 RELATED SECTIONS

- .1 Section 04 22 00 - Concrete Unit Masonry: Masonry grout fill of metal frames.
- .2 Section 08 06 00 - Door Schedule.
- .3 Section 08 71 00 - Door Hardware: Hardware and weather-stripping.
- .4 Section 08 80 00 - Glazing.
- .5 Section 09 90 00 - Painting: Field painting of doors and frames.

1.3 REFERENCES

- .1 ANSI A117.1 - Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.
- .2 ASTM A653/A653M - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .3 ASTM E152 - Methods of Fire Tests of Door Assemblies.
- .4 CSDFMA (Canadian Steel Door and Frame Manufacturers Association).
- .5 DHI - Door Hardware Institute: The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.
- .6 NFPA 80 - Fire Doors and Windows.
- .7 NFPA 252 - Fire Tests for Door Assemblies.
- .8 SDI-100 - Standard Steel Doors and Frames.
- .9 UL 10B - Fire Tests of Door Assemblies.

1.4 SUBMITTALS

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data: Indicate frame configuration and finishes. Indicate door configurations, location of cut-outs for hardware reinforcement.

- .3 Shop Drawings: Indicate frame elevations, reinforcement, anchor types and spacings, location of cut-outs for hardware, and finish. Indicate door elevations, internal reinforcement, closure method, and cut-outs for glazing, louvers, and finishes.

1.5 QUALITY ASSURANCE

- .1 Conform to requirements of CSDFMA and ANSI A117.1.
- .2 Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

1.6 REGULATORY REQUIREMENTS

- .1 Fire Rated Frame Construction: Conform to UL 10B.
- .2 All doors in fire walls rated 2 hours or more shall be listed and labelled with a maximum temperature rise limitation of 250 C degrees after 30 minutes in accordance with the National Building Code.
- .3 Installed Door and Frame Assembly: Conform to NFPA 80 for fire rated class as scheduled.

1.7 PROJECT CONDITIONS

- .1 Coordinate the work with frame opening construction, door, and hardware installation.
- .2 Sequence installation to ensure wire connections are achieved in an orderly and expeditious manner.

Part 2 Products

2.1 ACCEPTABLE MANUFACTURERS

- .1 Fleming
- .2 Shanahans

2.2 MATERIALS

- .1 Frames
 - .1 Frames: 1.5 mm thick material, base metal thickness with ZF75 Colourbond coating.
 - .2 Removable Stops: Rolled steel shape, mitered corners; prepared for countersink style tamper proof screws.
 - .3 Anchors: purpose made to rigidly secure frames, 3 per jamb.
 - .4 Mortar Guard Boxes: 0.76 mm welded in place.
 - .5 Bituminous Coating: Fibered asphalt emulsion.
 - .6 Primer: Zinc chromate type.

- .7 Silencers: Resilient rubber set in steel fitted into drilled hole.
- .8 Insulation: Fibreglass.
- .2 Doors
 - .1 Insulated Core Doors: minimum , 1.2 mm surface sheets, and top and bottom end channels; cores filled with insulation.
 - .2 Honeycomb Core Doors: minimum , 1.2 mm surface sheets and, top and bottom end channels; cores filled with honeycomb material laminated under pressure to surface sheets.
 - .3 Fire Rated Doors: Minimum, 1.2 mm surface sheets and, top and bottom end channels, of ULC label requirements indicated on drawings.
 - .4 Reinforcement for hardware:
 - .1 Locks: minimum 1.52 mm steel.
 - .2 Butts: minimum 3.42 mm steel.
 - .3 Flush Bolts: minimum 3.42 mm steel.
 - .4 Door Closures: minimum 1.9 mm steel.
 - .5 Glazing Stops: 0.91 mm rolled steel channel shape, butted corners; 16 mm high profile; prepared for countersink screws.

2.3 FABRICATION

- .1 Frames:
 - .1 Fabricate frames as welded unit.
 - .2 Mullions for Double Doors: Fixed and removable type, of same profiles as jambs. For removable mullion locations, refer to door schedule.
 - .3 Transom Bars for Glazed Lights: Fixed type, of same profiles as jamb and head.
 - .4 Fabricate frames with hardware reinforcement plates welded in place. Provide mortar guard boxes.
 - .5 Reinforce frames wider than 1 200 mm with roll formed steel channels fitted tightly into frame head, flush with top.
 - .6 Prepare frames for silencers. Provide three single silencers for single doors and mullions of double doors on strike side. Provide two single silencers on frame head at double doors without mullions.
 - .7 Attach fire rated label to each fire rated door unit.
 - .8 Provide drywall returns on all frames.
 - .9 Attach channel spreaders at bottom of frames for shipping.
- .2 Doors
 - .1 Fabricate hollow metal doors and panels in accordance with requirements of "Canadian Manufacturing Standards for Steel Doors and Frames" produced by

the Canadian Steel Door and Frame Manufacturer's Association and as indicated on Drawings. Fabricate doors with hardware reinforcement welded in place.

- .2 Fabricate fire rated hollow metal doors in accordance with requirements of Underwriters Laboratories of Canada (ULC). Place ULC labels where visible when in installed position.
- .3 Mechanically interlock longitudinal seams of honeycomb core type doors fully weld seams and sand flush. Top and bottom of doors closed with end channels recessed and spot welded in place.
- .4 Reinforce and prepare doors to receive hardware. Refer to Section 08 71 00 for hardware requirements.
- .5 Each exterior hollow metal door to be supplied complete with a full minimum 3.42 mm anti-intrusion plate welded to latch side of door.

Part 3 Execution

3.1 EXAMINATION

- .1 Verify that opening sizes and tolerances are acceptable.

3.2 INSTALLATION

- .1 Install frames in accordance with CSDFMA.
- .2 Coordinate with masonry, gypsum board, concrete wall construction for anchor placement.
- .3 Coordinate installation of glass and glazing.
- .4 Coordinate installation of doors and frames with installation of hardware specified in Section 08 71 00
- .5 Install roll formed steel reinforcement channels between two abutting frames. Anchor to structure and floor.
- .6 After installation, touch up all scratched or damaged surface and prime.
- .7 Insulate all frames exposed to the exterior.

3.3 ERECTION TOLERANCES

- .1 Maximum Diagonal Distortion: 1.5 mm measured with straight edges, crossed corner to corner.
- .2 Clearance on steel doors at head and jambs shall be: 3 mm maximum, and 3 mm maximum between pairs of doors.

3.4 ADJUSTING

- .1 Adjust door for smooth and balanced door movement.

END OF SECTION

Part 1

General

1.1 SECTION INCLUDES

- .1 Flush wood doors non-rated.

1.2 RELATED SECTIONS

- .1 Section 06 20 00 - Finish Carpentry.
- .2 Section 08 41 13 - Aluminum Entrances and Storefronts.
- .3 Section 08 71 00 - Door Hardware.
- .4 Section 08 80 00 - Glazing.
- .5 Section 09 90 00 - Paint and Coatings: Site finishing of doors.

1.3 REFERENCES

- .1 AWI/AWMAC - Quality Standards Illustrated (QSI), current edition.
- .2 HPMA HP - Hardwood and Decorative Plywood.

1.4 SUBMITTALS FOR REVIEW

- .1 Section 03 30 00: Submission procedures.
- .2 Product Data: Indicate door core materials and construction; veneer species, type and characteristics.
- .3 Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, special beveling, special blocking for hardware, factory machining criteria, identify cutouts for glazing .
- .4 Samples: Submit two samples of door veneer, 200 x 200 mm in size illustrating wood grain, stain colour, and sheen.

1.5 QUALITY ASSURANCE

- .1 Perform work in accordance with AWI/AWMAC QSI, Custom Grade.
- .2 Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

1.6 DELIVERY, STORAGE, AND PROTECTION

- .1 Package, deliver and store doors in accordance with AWI/AWMAC QSI.
- .2 Protect doors with resilient packaging. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges if stored more than one week. Break seal on site to permit ventilation.

1.7 WARRANTY

- .1 Provide 3 year warranty.
- .2 Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, telegraphing core construction.

Part 2 Products

2.1 DOOR TYPES

- .1 Flush Interior Doors: 44 mm thick; solid core construction.

2.2 DOOR CONSTRUCTION

- .1 Core Solid, Non-Rated: Solid particleboard core: bonded to particleboard core with wood lock blocks 5-ply construction.

2.3 FLUSH DOOR FACING

- .1 Veneer Facing: QSI A Grade quality select white birch species wood, flat cut , with centre balanced matched grain, for transparent finish.
- .2 Glazing Stops: Wood, of same species as door facing mitered corners; lip moulding, prepared for countersink style screws.

2.4 ADHESIVE

- .1 Facing Adhesive: II - water resistant.

2.5 FABRICATION

- .1 Fabricate non-rated doors in accordance with QSI Custom Grade Quality Standards requirements.
- .2 Provide lock blocks at lock edge and top of door for closer for hardware reinforcement.
- .3 Vertical Exposed Edge of Stiles: Of same species as veneer facing.
 - .1 Door Edge Detail to conform to QSI No. 2 Edge, hardwood vertical edges of species to match face veneer.
- .4 Bond edge banding to cores.
- .5 Factory machine doors for finish hardware in accordance with hardware requirements and dimensions. Do not machine for surface hardware.
- .6 Provide edge clearances in accordance with QSI.

Part 3 Execution

3.1 EXAMINATION

- .1 Verify that opening sizes and tolerances are acceptable.
- .2 Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.2 INSTALLATION

- .1 Install doors in accordance with manufacturer's instructions.
- .2 Trim non-rated door width by cutting equally on both jamb edges.
- .3 Trim door height by cutting bottom edges to a maximum of 19 mm.
- .4 Machine cut for hardware.
- .5 Coordinate installation of doors with installation of frames specified in Section 08 11 00 and hardware specified in Section 08 71 00.
- .6 Coordinate installation of glass and glazing.

3.3 INSTALLATION TOLERANCES

- .1 Conform to QSI requirements for fit and clearance tolerances.
- .2 Maximum Distortion : 4 mm measured with straight edge or taut string, corner to corner, over an imaginary 915 x 2 130 mm surface area.

3.4 ADJUSTING

- .1 Adjust door for smooth and balanced door movement.
- .2 Adjust closer for full closure.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTION

- .1 Section 013300 - Submittal Procedures.
- .2 Section 016100 - Common Product Requirements.
- .3 Section 017810 - Closeout Submittals.
- .4 Section 092116 - Gypsum Board Assemblies.

1.2 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 013300 - Submittal Procedures.
- .2 Submit catalogue details for each type of door illustrating profiles, dimensions and methods of assembly.

1.3 SAMPLES

- .1 Submit samples in accordance with Section 013300 - Submittal Procedures.
- .2 Submit one sample of each type of hand entry access door.
- .3 Submit one 300 x 300 mm corner sample of each type of body entry door.

1.4 CLOSEOUT SUBMITTALS

- .1 Provide maintenance data for cleaning and maintenance of stainless steel finishes for incorporation into manual specified in Section 017810 - Closeout Submittals.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 016100 - Common Product Requirements.
- .2 Apply temporary protective coating to finished surfaces. Remove coating after erection. Do not use coatings that will become hard to remove or leave residue.
- .3 Leave protective covering in place until final cleaning of building.

PART 2 PRODUCTS

2.1 ACCESS DOORS

- .1 Sizes: Except as indicated otherwise, to be minimum sizes as follows:
 - .1 For body entry: 600 x 600 mm.
 - .2 For hand entry: 300 x 300 mm.
- .2 Construction: Rounded safety corners, concealed hinges, screwdriver latch, anchor straps, able to open 180°.
- .3 Materials
 - .1 Tiled or marble surfaces and other special areas: Stainless steel with brushed satin or polished finish as directed by Contract Administration.
 - .2 Other areas: Prime coated steel.

2.2 EXCLUSIONS

- .1 Lay-in tile ceilings: use unobtrusive identification locators.

PART 3 EXECUTION

3.1 INSTALLATION

- .1 Installation:
 - .1 Install to suit surfaces. Refer to other Sections for detailed requirements.

3.2 LOCATION

- .1 Location: Ensure that equipment is within view and accessible for operating, inspecting, adjusting, servicing without using special tools.

END OF SECTION 083119

Part 1 General

1.1 SECTION INCLUDES

- .1 Non rated overhead coiling shutter, manual operation.

1.2 RELATED SECTIONS

- .1 Section 05 50 00 - Metal Fabrications: Support framing.
- .2 Section 08 33 26 - Overhead Coiling Grilles.

1.3 REFERENCES

- .1 ASTM B221/A221M - Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes.

1.4 SYSTEM DESCRIPTION

- .1 Manual hand crank lift] unit with overhead counter balance device.

1.5 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submittal Procedures.
- .2 Product Data: Provide general construction, component connections and details,.
- .3 Shop Drawings: Indicate pertinent dimensioning, anchorage methods, hardware locations, and installation details.

1.6 SUBMITTALS FOR CLOSEOUT

- .1 Section 01 78 10: Closeout Submittals.
- .2 Maintenance Data: Indicate lubrication requirements and frequency and periodic adjustments required.

Part 2 Products

2.1 MANUFACTURERS

- .1 Manufacturers:
 - .1 Kinnear Canada
 - .2 Cookston Rolling Doors.
 - .3 Overhead Doors of Winnipeg model 652 Series
 - .4 Raynor Doors
 - .5 Cornell.

2.2 MATERIALS

- .1 Counter shutter: Clear anodized aluminum; manual crank operation.
 - .1 Curtain: conforming to the following: interlocking aluminum slats; slats of ASTM B221 aluminum alloy Type 6063 ; single thickness slat; 38 mm slat size nominal; Nominal Slat Size: 38 mm wide x required length; flat style.
 - .2 Slat Ends: fitted with end locks to act as wearing surface in guides and to prevent lateral movement.
 - .3 Curtain Bottom: Aluminum tubular extrusion with vinyl bottom astragal.
 - .4 Fitted with angles to provide reinforcement and positive contact with counter in closed position.
- .2 Guides: Extruded aluminum shapes with clear anodized finish with continuous silicone treated wool pile strips.
- .3 Roller Shaft Counterbalance: Steel pipe and helical steel spring system, capable of producing torque sufficient to ensure smooth operation of curtain from any position and capable of holding position at mid-travel; with adjustable spring tension.
- .4 Hood Enclosure aluminum; internally reinforced to maintain rigidity and shape.
- .5 Hardware: Inside side mounted, adjustable keeper, spring activated latch bar with feature to keep in locked or retracted position; interior handle.
- .6 Mounting: face of wall mount inside room kitchen / canteen.
- .7 Provide manual crank on inside of room - handle to be maximum 1200 mm above finished floor for accessibility.

2.3 FINISHES

- .1 All exposed aluminum surfaces to be anodized aluminum finish.

Part 3 Execution

3.1 EXAMINATION

- .1 Verify that opening sizes, tolerances and conditions are acceptable.

3.2 INSTALLATION

- .1 Install door unit assembly in accordance with manufacturer's instructions.
- .2 Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
- .3 Securely and rigidly brace components suspended from structure. Secure guides to structural members only.

- .4 Fit and align assembly including hardware; level and plumb, to provide smooth operation.
- .5 Coordinate installation of sealants and backing materials at frame perimeter as specified in Section 07 92 00.
- .6 Install perimeter trim and closures.

3.3 ERECTION TOLERANCES

- .1 Maintain dimensional tolerances and alignment with adjacent work.
- .2 Maximum Variation From Plumb: 1.5 mm.
- .3 Maximum Variation From Level: 1.5 mm.
- .4 Longitudinal or Diagonal Warp: Plus or minus 3 mm per 3 m straight edge.

3.4 ADJUSTING

- .1 Adjust door, hardware and operating assemblies for smooth and noiseless operation.

3.5 CLEANING

- .1 Clean door and components.
- .2 Remove labels and visible markings.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Coiling metal grilles and operating hardware; manual operation.

1.2 RELATED SECTIONS

- .1 Section 05 50 00-Metal Fabrication.
- .2 Section 08 33 23 - Overhead Coiling Doors.
- .3 Section 08 71 00 - Door Hardware - General: Cylinder core and keys.

1.3 REFERENCES

- .1 ASTM B221 - Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

1.4 SYSTEM DESCRIPTION

- .1 Manual unit with overhead counter balance device.
- .2 Coiling Grille: Surface mounted.

1.5 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data: Provide general construction, component connections and details.
- .3 Shop Drawings: Indicate pertinent dimensioning, anchorage methods, hardware locations, and installation details.

1.6 SUBMITTALS FOR CLOSEOUT

- .1 Section 01 78 10: Submission procedures.
- .2 Maintenance Data: Indicate lubrication requirements and frequency, periodic adjustments required.

Part 2 Products

2.1 MANUFACTURERS

- .1 Manufacturers:
 - .1 Amstel Manufacturing: Model Gardaire .

2.2 MATERIALS

- .1 Grille: Conforming to the following:
 - .1 Material: Aluminum conforming to ASTM B221/B221M.
 - .2 Sizes: Fabricated of 8 mm diameter horizontal members spaced at 38 mm on centre; 13 mm diameter tube spacers for carrier rods spaced at 81 mm on centre.
 - .3 Vertical Connecting Members: 19 x 3 mm flat bar , links spaced at 225 mm on centre.
 - .4 Ends: Members with nylon runners for quiet operation.
 - .5 Bottom Bar: Back-to-back angles with tubular resilient cushion.
- .2 Guides: Extruded aluminum conforming to ASTM B221/B221M. angles, of profile to retain grille in place, mounting brackets of same metal.
- .3 Roller Shaft Counterbalance: Steel pipe and helical steel spring system, capable of producing torque sufficient to assure smooth operation of grille from any position; with adjustable spring tension.
- .4 Hood Enclosure: aluminum conforming to ASTM B221/B221M ; internally reinforced to maintain rigidity and shape.
- .5 Hardware:
 - .1 Cylinders: grilles keyed alike. and master keyed to building system.
 - .2 Handle: Inside centre mounted, adjustable keeper, spring activated latch bar with feature to keep in locked or retracted position; interior handle.
- .6 Operation; manual crank operation. Bottom o crank must be maximum 1200 mm above finished floor for accessibility. Crank to be on inside of room.

2.3 FINISHES

- .1 Grille Components: Aluminum, anodized of natural colour.

Part 3 Execution

3.1 EXAMINATION

- .1 Verify that opening sizes, tolerances and conditions are acceptable.

3.2 INSTALLATION

- .1 Install grille unit assembly in accordance with manufacturer's instructions.
- .2 Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
- .3 Securely and rigidly brace components suspended from structure. Secure guides to structural members only.

- .4 Fit and align assembly including hardware; level and plumb, to provide smooth operation.
- .5 Install perimeter trim and closures.

3.3 ERECTION TOLERANCES

- .1 Maintain dimensional tolerances and alignment with adjacent work.
- .2 Maximum Variation From Plumb: 1.5 mm.
- .3 Maximum Variation From Level: 1.5 mm.
- .4 Longitudinal or Diagonal Warp: Plus or minus 3 mm per 3 m straight edge.

3.4 ADJUSTING

- .1 Adjust grille, hardware and operating assemblies for smooth and noiseless operation.

3.5 CLEANING

- .1 Section 01 74 00: Cleaning installed work.
- .2 Clean grille and components.
- .3 Remove labels and visible markings.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Electric overhead sectional door.
- .2 Operating hardware, supports, and controls.

1.2 RELATED SECTIONS

- .1 Section 04 22 00 -Concrete Unit Masonry: Prepared opening in masonry.
- .2 Section 05 50 00 - Metal Fabrications: -: Steel channel opening frame.
- .3 Section 07 92 00 - Joint Sealants: Perimeter sealant and backup materials.
- .4 Section 08 71 00 - Door Hardware - General: Cylinder locks.
- .5 Division 26 - Electrical: Electrical Requirements for door operator.

1.3 REFERENCES

- .1 ASTM A653/A653M - Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 NEMA MG 1 - Motors and Generators.
- .3 NFPA 70 - National Electrical Code.

1.4 SYSTEM DESCRIPTION

- .1 Panels: Flush steel, insulated.
- .2 Lift Type: Standard lift operating style with track and hardware.
- .3 Operation: Electric.
- .4 Loads: Design and size components to withstand dead and live loads caused by pressure and suction of wind acting normal to plane of wall as calculated in accordance with code.

1.5 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Shop Drawings: Indicate opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, installation details and .
- .3 Product Data: Provide component construction, anchorage method and hardware.
- .4 Samples: Submit two exterior and interior panel finish samples, 200x 200 mm in size, illustrating colour and finish.

1.6 SUBMITTALS AT PROJECT CLOSEOUT

- .1 Section 01 33 00: Submission procedures.
- .2 Operation Data: Include electrical control and adjustments.
- .3 Maintenance Data: Include data for motor and transmission, shaft and gearing, lubrication frequency, spare part sources.
- .4 Warranty: Submit manufacturer warranty and ensure forms have been completed in City's name and registered with manufacturer.

1.7 QUALITY ASSURANCE

- .1 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.
- .2 Installer: Company specializing in performing the work of this section with minimum years documented experience approved by manufacturer.

1.8 REGULATORY REQUIREMENTS

- .1 Conform to applicable code for motor and motor control requirements.
- .2 Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories, Inc. as suitable for the purpose specified.

1.9 WARRANTY

- .1 Correct defective Work within a five year period after Date of Substantial Completion.
- .2 Warranty: Include coverage for electric motor and transmission.
- .3 Provide five year manufacturer warranty for electric operating equipment.

Part 2 Products

2.1 MANUFACTURERS

- .1 Richards Wilcox: Model Thermatite.
- .2 Upwardoor: Model Thermalex.
- .3 Steelcraft: Model Therm-o-dor.
- .4 Overhead Door: Model 422

2.2 MATERIALS

- .1 Sheet Steel: ASTM A653/A653M galvanized to Z275, pre-coated with silicone polyester finish, plain surface.

- .2 Insulation: Rigid polyurethane same thickness as core framing members, bonded to facing.

2.3 PANEL CONSTRUCTION

- .1 Panels: Flush steel construction; outer steel sheet of 0.91 mm thick, flat profile; inner steel sheet of 0.45 mm thick, flat profile; core reinforcement of mm thick sheet steel roll formed to channel Z- shape, rabbeted weather joints at meeting rails; insulated.
- .2 Door Nominal Thickness: 50 mm thick.

2.4 DOOR COMPONENTS

- .1 Track: Rolled galvanized steel, 2.3 mm thick; 75 mm wide, continuous one piece per side; galvanized steel mounting brackets 6 mm thick.
- .2 Hinge and Roller Assemblies: Heavy duty hinges and adjustable roller holders of galvanized steel; floating hardened steel bearing rollers, located at top and bottom of each panel, each side.
- .3 Lift Mechanism: Torsion spring on cross head shaft, with braided galvanized steel lifting cables.
- .4 Sill Weatherstripping: rubber safety edge.
- .5 Jamb Weatherstripping: Roll formed aluminum section full height of jamb, fitted with resilient weatherstripping, placed in moderate contact with door panels.
- .6 Head Weatherstripping: EPDM rubber seal , one piece full length.
- .7 Panel Joint Weatherstripping: Neoprene foam seal , one piece full length.
- .8 Lock: Inside centre side mounted, adjustable keeper, spring activated latch bar with feature to retain in locked or retracted position; interior and exterior handle; cylinder lock master keyed with building keying system..

2.5 ELECTRICAL CHARACTERISTICS AND COMPONENTS

- .1 Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70.
- .2 Disconnect Switch: Factory mount disconnect switch in control panel
- .3 Electric Operator: Side mounted on cross head shaft adjustable safety friction clutch; brake system actuated by independent voltage solenoid controlled by motor starter; enclosed gear driven limit switch; enclosed magnetic cross line reversing starter; mounting brackets and hardware.
- .4 Control Station: Standard three one button (open-close-stop) momentary continuous pressure type, control for each electric operator; 24 volt circuit, recess mounted. Located in shift supervisor office.

- .5 Safety Edge: At bottom of door panel, full width; electro-mechanical sensitized type, wired to reverse door upon striking object; hollow rubber covered to provide weatherstrip seal.

2.6 FINISHES

- .1 Exterior Surfaces: Precoat of custom colour to be selected by Contract Administrator.
- .2 Interior Surfaces: Prime paint finish.

Part 3 Execution

3.1 EXAMINATION

- .1 Verify that wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.
- .2 Verify that electric power is available and of the correct characteristics.

3.2 PREPARATION

- .1 Prepare opening to permit correct installation of door unit to perimeter air and vapour barrier seal.

3.3 INSTALLATION

- .1 Install door unit assembly in accordance with manufacturer's instructions.
- .2 Anchor assembly to wall construction and building framing without distortion or stress.
- .3 Securely brace door tracks suspended from structure. Secure tracks to structural members only.
- .4 Fit and align door assembly including hardware.
- .5 Coordinate installation of electrical service. Complete power and control wiring from disconnect to unit components.
- .6 Coordinate installation of sealants and backing materials at frame perimeter as specified in Section 07 92 00.

3.4 ERECTION TOLERANCES

- .1 Maximum Variation from Plumb: 1.5 mm.
- .2 Maximum Variation from Level: 1.5 mm.
- .3 Longitudinal or Diagonal Warp: Plus or minus 3 mm from 3 m straight edge.
- .4 Maintain dimensional tolerances and alignment with adjacent work.

3.5 ADJUSTING

- .1 Adjust door assembly to smooth operation and in full contact with weatherstripping.

3.6 CLEANING

- .1 Clean doors and frames.
- .2 Remove temporary labels and visible markings.

3.7 PROTECTION OF FINISHED WORK

- .1 Do not permit construction traffic through overhead door openings after adjustment and cleaning.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Aluminum doors and frames, sidelights and transoms.
- .2 Vision glass.
- .3 Door hardware.
- .4 Perimeter sealant.

1.2 RELATED SECTIONS

- .1 Section 07 92 00 - Joint Sealants: System perimeter sealant and back-up materials.
- .2 Section 08 71 00 - Door Hardware.
- .3 Section 08 80 00 - Glazing.
- .4 Section 08 44 13 - Glazed Aluminum Curtain Walls.

1.3 REFERENCES

- .1 AA (Aluminum Association) - Designation System for Aluminum Finishes.
- .2 AAMA - Metal Curtain Wall, Window, Store Front and Entrance - Guide Specifications Manual.
- .3 AAMA 611 - Specification for Anodized Architectural Aluminum.
- .4 ANSI A117.1 - Safety Standards for the Handicapped.
- .5 ASTM A123/A123M - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- .6 ASTM A653/A653M - Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .7 ASTM B209 - Aluminum and Aluminum-Alloy Sheet and Plate.
- .8 ASTM B221 - Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

1.4 SYSTEM DESCRIPTION

- .1 Aluminum entrances (interior only) and storefront system includes tubular aluminum sections with supplementary internal support framing, shop fabricated, factory finished, vision glass, related flashings, anchorage and attachment devices.
- .2 System Assembly: Site assembled.

1.5 PERFORMANCE REQUIREMENTS

- .1 System Design: Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of wall as calculated in accordance with applicable building code and as measured in accordance with ASTM E330.
- .2 Deflection: Limit mullion deflection $1/175$ of span; with full recovery of glazing materials.
- .3 System Assembly: Accommodate without damage to components or deterioration of seals, movement within system, movement between system and peripheral construction, dynamic loading and release of loads, deflection of structural support framing.

1.6 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work and expansion and contraction joint location and details.

1.7 QUALITY ASSURANCE

- .1 Perform Work in accordance with AAMA - Metal Curtain Wall, Window, Store Front and Entrance - Guide Specifications Manual.
- .2 Conform to requirements of ANSI A117.1.
- .3 Manufacturer and Installer: Company specializing in manufacturing aluminum glazing systems with minimum three years documented experience.
- .4 Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed at the place where the Project is located.

1.8 DELIVERY, STORAGE, AND PROTECTION

- .1 Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather.

1.9 WARRANTY

- .1 Correct defective Work within a five year period after Substantial Completion.
- .2 Warranty: Include coverage for complete system for failure to meet specified requirements.
- .3 Provide five year manufacturer warranty for glazed units.

Part 2 Products

2.1 MATERIALS

- .1 Extruded Aluminum: ASTM B221/B221M. .
- .2 Sheet Aluminum: ASTM B209/B209M. .
- .3 Sheet Steel: ASTM A653/A653M .
- .4 Fasteners: Stainless steel.

2.2 COMPONENTS

- .1 Frame (interior): 50 x112 mm nominal dimension; flush glazing stops: Trifab VG 450 Centre manufactured by Kawneer.
 - .1 Other acceptable manufacturers: Alumicor.
- .2 Entrance doors (interior and exterior): Kawneer 350 medium stile doors; 89 mm styles, and 400 mm bottom rail.
 - .1 Other acceptable manufacturers Alumicor Canadiana series.
- .3 Flashings: 2.1 mm thick aluminum, finish to match mullion sections where exposed.

2.3 GLASS AND GLAZING MATERIALS

- .1 Glass and Glazing Materials: As specified in Section 08 80 00.
- .2 Glazing Materials: Type to suit application to achieve weather, moisture, and air infiltration requirements.

2.4 SEALANT MATERIALS

- .1 Sealant and Backing Materials: Type as specified in Section 07 92 00.

2.5 HARDWARE

- .1 Hardware: as specified in Section 08 71 00 - Door Hardware.

2.6 FABRICATION

- .1 Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
- .2 Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.
- .3 Prepare components to receive anchor devices. Fabricate anchors.
- .4 Arrange fasteners and attachments to conceal from view.
- .5 Prepare components with internal reinforcement for door hardware and door operator hinge hardware.

- .6 Reinforce framing members for imposed loads.

2.7 FINISHES

- .1 Finish Coatings: Conform to AAMA 611.
- .2 All Exposed Aluminum Surfaces: anodized to clear colour, to 0.018 mm thickness.
- .3 Concealed Steel Items: Primed with iron oxide paint.
- .4 Apply one coat of bituminous paint to concealed aluminum and steel surfaces in contact with cementitious or dissimilar materials.

Part 3 Execution

3.1 EXAMINATION

- .1 Verify dimensions, tolerances, and method of attachment with other work.
- .2 Verify wall openings and adjoining air and vapour seal materials are ready to receive work of this Section.

3.2 INSTALLATION

- .1 Install wall system in accordance with manufacturer's instructions and AAMA - Metal Curtain Wall, Window, Store Front and Entrance - Guide Specifications Manual.
- .2 Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- .3 Provide alignment attachments and shims to permanently fasten system to building structure.
- .4 Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- .5 Provide thermal isolation where components penetrate or disrupt building insulation.
- .6 Install flashings and sills.
- .7 Set thresholds in bed of mastic and secure.
- .8 Install hardware using templates provided. Refer to Section 08 71 00 for installation requirements.
- .9 Install glass and infill panels to glazing method required to achieve performance criteria.
- .10 Install perimeter sealant to method required to achieve performance criteria Type , backing materials, and installation criteria in accordance with Section 07 92 00.

3.3 ERECTION TOLERANCES

- .1 Maximum Variation from Plumb: 1.5 mm/m non-cumulative or 1.5 mm/3 m, whichever is less.
- .2 Maximum misalignment of two adjoining members abutting in plane: 0.8 mm.

3.4 ADJUSTING

- .1 Adjust operating hardware for smooth operation.

3.5 CLEANING

- .1 Remove protective material from pre-finished aluminum surfaces.
- .2 Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.
- .3 Remove excess sealant by method acceptable to sealant manufacturer.

3.6 PROTECTION OF FINISHED WORK

- .1 Protect finished Work from damage.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Aluminum tube framing system with vision glass.
- .2 Insulated glass and metal infill panels.
- .3 Aluminum doors.
- .4 Anchors, brackets, and attachments.
- .5 Perimeter sealant.

1.2 RELATED SECTIONS

- .1 Section 05 10 00 - Structural Steel
- .2 Section 07 21 15 - insulation
- .3 Section 07 28 00 - Air & Vapour Barriers
- .4 Section 07 92 00 - Joint Sealers: System perimeter sealant and back-up materials.
- .5 Section 08 41 13 - Aluminum Entrances and Storefronts: Entrance doors, frames, and glazed lights.
- .6 Section 08 71 00 - Door Hardware
- .7 Section 08 80 00 - Glazing.

1.3 REFERENCES

- .1 AA (Aluminum Association) - Designation System for Aluminum Finishes.
- .2 AAMA (American Architectural Manufacturers' Association) - Metal Curtain Wall, Window, Store Front and Entrance - Guide Specifications Manual.
- .3 AAMA 501.2 - Methods of Test for Metal Curtain Walls.
- .4 AAMA 608.1 - Specification and Inspection Methods for Electrolytically Deposited Colour Anodic Finishes for Architectural Aluminum.
- .5 ASTM A123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- .6 ASTM A653/A653M - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .7 ASTM B209/B209M - Aluminum and Aluminum-Alloy Sheet and Plate.
- .8 ASTM B221/B221M - Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes.

- .9 ASTM E283 - Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors.
- .10 ASTM E331 - Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
- .11 ASTM E1105 - Test Method for Field Determination of Water Penetration of Installed

1.4 SYSTEM DESCRIPTION

- .1 Curtain Wall System: Tubular aluminum sections with self supporting framing, factory prefinished, vision glass, glass and metal insulated spandrel infill; related flashings, anchorage and attachment devices.

1.5 PERFORMANCE REQUIREMENTS

- .1 System Design: Design and size components to withstand dead loads and live loads caused by positive and negative wind loads acting normal to plane of wall as calculated in accordance with applicable building code and in accordance with ASTM E330. System to be designed to the NBC 2005 for a building importance category of post-disaster. Design shall be engineered by fabricator.
- .2 For mullion corner and special change of wall plane conditions, limit glazing sealant design movement to 20 percent maximum for elastomeric sealants or 5 percent for acrylic or butyl sealants.
- .3 Deflection: Limit mullion deflection to flexure limit of glass or L/175 whichever is less with full recovery of glazing materials.
- .4 System Assembly: Accommodate without damage to system, components or deterioration of seals, movement within system, movement between system and perimeter framing components, dynamic loading and release of loads, deflection of structural support framing, tolerance of supporting components, shortening of building concrete structural columns, creep of concrete structural members, and mid-span slab edge deflection.
- .5 Air Infiltration: Limit air infiltration through assembly to 0.015 l/s/sq m of wall area, measured at a reference differential pressure across assembly of 75 Pa as measured in accordance with ASTM E283.
- .6 Water Leakage: None, when measured in accordance with ASTM E331 at a differential pressure of 286 Pa.
- .7 Expansion / Contraction: System to provide for expansion and contraction within system components caused by a cycling temperature range of 95 degrees C over a 12 hour period without causing detrimental affect to system components.
- .8 System Internal Drainage: Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to the exterior by a weep drainage network.

- .9 Air and Vapour Seal: Maintain continuous air barrier and vapour barrier throughout assembly, primarily in line with inside pane of glass.
- .10 Not Permitted: Vibration harmonics, wind whistles, noises caused by thermal movement, thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of system.

1.6 SUBMITTALS

- .1 Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, internal drainage.
- .2 Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, anticipated deflection under load, affected related Work, weep drainage network, expansion and contraction joint location and details, and field welding required.
- .3 Shop drawings shall be sealed and signed by a Professional Structural Engineer experienced in design of this Work and licensed at the place where the Project is located.
- .4 Test Reports: If requested by Contract Administrator submit substantiating engineering data, test results of previous tests by independent laboratory which purport to meet performance criteria, and other supportive data.

1.7 QUALITY ASSURANCE

- .1 Perform Work in accordance with AAMA - Metal Curtain Wall, Window, Store Front and Entrance - Guide Specifications Manual and manufacturers instructions.
- .2 Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years documented experience and approved by manufacturer.
- .3 Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed at the place where the Project is located.

1.8 INSPECTION TESTING

- .1 Coordinate inspection of vapour barrier to curtain wall elements prior to vapour barrier system being covered up by other trades.
- .2 Testing of air / vapour barrier materials and their connection to the curtain wall system will be performed by an independent inspection firm appointed and paid for by the City. Testing will be performed so as to least encumber the performance of the work.
- .3 The City will pay for the cost of one (1) series of tests only, on the areas being evaluated. Pay for costs of additional testing as required due to improper performance of work.
- .4 When work of this section or portions of work are completed to own satisfaction, notify the testing firm to perform tests. Do not proceed with additional portion of work until results have been verified and approved.

- .5 If, during progress of Work, tests indicate that materials do not meet specified requirements, remove defective work, replace and retest at own expense, as directed by the Contract Administrator.

1.9 STORAGE AND PROTECTION

- .1 Protect prefinished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather. Puncture wrappings at ends for ventilation.

1.10 COORDINATION

- .1 Coordinate the Work with installation of air barrier placement, vapour barrier placement.

1.11 WARRANTY

- .1 Provide a five year warranty to include coverage for complete system for failure to meet specified requirements.

Part 2 PRODUCTS

2.1 CURTAIN WALL SYSTEM

- .1 Manufacturers:
 - .1 Kawneer SSG classic 1900 series
 - .2 Alumicor

2.2 Materials

- .1 Extruded Aluminum: ASTM B221/B221M; 6063 alloy, T-5 temper.
- .2 Sheet Aluminum: ASTM B209/B209M; 3003 alloy, H-14 temper.
- .3 Sheet Steel: ASTM A653/A653M;
- .4 Steel Sections: ASTM A36/A36M weldable structural quality, shaped to suit mullion sections.
- .5 Fasteners: Stainless steel.

2.3 COMPONENTS

- .1 Dual pane glazed curtain wall: Mullion Profile: 63.5 mm wide profile, thermally broken with interior tubular section insulated from exterior pressure plate; matching stops and pressure plate of sufficient size and strength to provide bite on glass and infill panels; drainage holes, deflector plates and internal flashings to accommodate internal weep drainage system; internal mullion baffles to eliminate "stack effect" air movement within internal spaces.
- .2 Duo pane curtain wall with polycarbonate protection: Mullion Profile: 63.5 mm wide profile, thermally broken with interior tubular section insulated from exterior pressure plate; matching stops and pressure plate of sufficient size and strength to provide bite on

glass and infill panels; drainage holes, deflector plates and internal flashings to accommodate internal weep drainage system; internal mullion baffles to eliminate "stack effect" air movement within internal spaces.

- .3 Snap caps (covers): three sized of snap caps are required; 100 mm deep, 32 mm deep and 19 mm deep. Refer to drawings A-2.2 for locations.
- .4 Infill Panel: Internally reinforced, glazing edge sealed, outside air barrier:
 - .1 Outer Face: 3.2 mm thick anodized aluminum.
 - .2 Core: Glass fiber insulation core.
 - .3 Inner Face: 3.2 mm thick anodized aluminum.
- .5 Entrance doors: Specified in Section 08 41 13..
- .6 Flashings: 1.2 mm thick aluminum, finish to match curtain wall mullion sections where exposed, secured with concealed fastening method.
- .7 Vapour Barrier and Air Barrier: Specified in Section 07 28 00.
- .8 Curtain wall closure: 1.2 aluminum bonded to 25 mm rigid insulation.

2.4 GLASS AND GLAZING MATERIALS

- .1 Glass Materials: As specified in Section 08 80 00.
- .2 Glazing Materials: Dry / Dry glazing system to suit application to achieve weather, moisture, and air infiltration requirements.

2.5 SEALANT MATERIALS

- .1 Sealant and Backing Materials: As specified in Section 07 92 00.

2.6 HARDWARE

- .1 Provide door hardware as specified in Section 08 71 00.

2.7 FABRICATION

- .1 Fabricate system components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
- .2 Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.
- .3 Prepare components to receive anchor devices. Fabricate anchors.
- .4 Arrange fasteners and attachments to ensure concealment from view.
- .5 Reinforce framing members for external imposed loads.

2.8 ACCESSORIES

- .1 Rigid Insulation: CAN/ULC S701-97, Type 4, extruded cellular polystyrene, square edges; thickness as indicated on drawings
 - .1 Acceptable Manufacturers: Styrofoam as manufactured by Dow Chemical
Celfort by Owens Corning.

2.9 FINISHES

- .1 Finish Coatings: Conform to AAMA 608.1.
- .2 All Exposed Aluminum Surfaces: clear anodized to 0.018 mm thickness. Except where noted below.
 - .1 19 mm deep snap caps to be black anodized finish. Refer to drawing A-2.2 for locations of black anodized snap caps.
 - .2 100 mm and 32 mm snap caps are to be clear anodized.
- .3 Shop and Touch-Up Primer for Steel Components: SPCC Paint 25 red oxide.
- .4 Apply one coat of bituminous paint to concealed aluminum and steel surfaces in contact with cementitious or dissimilar materials.

Part 3 EXECUTION

3.1 EXAMINATION

- .1 Verify dimensions, tolerances, and method of attachment with other work.
- .2 Verify wall openings and adjoining air barrier and vapour retarder materials are ready to receive work of this section.

3.2 Installation

- .1 Install curtain wall system in accordance with manufacturer instructions.
- .2 Install curtain wall system prior to construction of adjacent exterior wall assemblies.
- .3 Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- .4 Provide alignment attachments and shims to permanently fasten system to building structure.
- .5 Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances and align with adjacent work.
- .6 Install air/vapour barrier transition membranes.
- .7 Provide thermal isolation where components penetrate or disrupt building insulation.
- .8 Install sill flashings.

- .9 Coordinate attachment and seal of perimeter air barrier and vapour retarder materials.
- .10 Pack insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- .11 Install glass and infill panels to glazing method required to achieve performance criteria. exterior wet/dry method of glazing.
- .12 Install perimeter sealant to method required to achieve performance criteria

3.3 ERECTION TOLERANCES

- .1 Maximum Variation from Plumb: 0.06 inches every 1.5 mm/m non-cumulative or 12 mm/30 m, whichever is less.
- .2 Maximum Misalignment of Two Adjoining Members Abutting in Plane: 0.8 mm.
- .3 Sealant Space Between Curtain Wall Mullions and Adjacent Construction: Maximum of 19 mm and minimum of 6 mm.

3.4 MANUFACTURER'S FIELD SERVICES

- .1 Curtain wall Glass product manufacturers to provide field surveillance of the installation of their Products.
- .2 Monitor and report installation procedures and unacceptable conditions .

3.5 CLEANING

- .1 Remove protective material from prefinished aluminum surfaces.
- .2 Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.
- .3 Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.

3.6 PROTECTION OF FINISHED WORK

- .1 Protect finished Work from damage.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Extruded aluminum windows with fixed and operating sash.
- .2 Factory glazed.
- .3 Externally attached sulsash with polycarbonate glazing.
- .4 Operating hardware and insect screens.
- .5 Perimeter sealant.

1.2 RELATED SECTIONS

- .1 Section 06 10 00 - Rough Carpentry: Wood Blocking And Curbing.
- .2 Section 07 21 15 - Insulation.
- .3 Section 07 2800 - Air and Vapour Barriers.
- .4 Section 07 92 00 - Joint Sealants.
- .5 Section 08 41 13 - Aluminum Framed Entrances And Storefronts.
- .6 Section 08 44 13 - Glazed Aluminum Curtain Walls.
- .7 Section 08 80 00 - Glazing.

1.3 REFERENCES

- .1 AA (Aluminum Association) - Designation System for Aluminum Finishes.
- .2 AAMA 611 - Specifications for Anodized Architectural Aluminum.
- .3 ASTM A123/A123M - Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.
- .4 ASTM B209 - Aluminum and Aluminum-Alloy Sheet and Plate.
- .5 ASTM B221 - Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- .6 ASTM E283 - Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- .7 ASTM E330 - Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

- .8 ASTM E331 - Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
- .9 CAN/CSA-A440-M90, Windows.

1.4 SYSTEM DESCRIPTION

- .1 Windows: Tubular aluminum sections, factory fabricated, factory finished, vision glass, related flashings, anchorage and attachment devices.
- .2 Configuration: Fixed and operable.
- .3 Glazing: Interior.

1.5 PERFORMANCE REQUIREMENTS

- .1 System Design: Design and size components to withstand dead loads and live loads caused by positive and negative wind loads acting normal to plane of wall as calculated in accordance with applicable code.
- .2 Deflection: Limit member deflection to 1/200 of the longer dimension with full recovery of glazing materials.
- .3 Assembly: To accommodate, without damage to components or deterioration of seals, movement between window and perimeter framing, deflection of lintel.
- .4 Air Infiltration: Limit air infiltration through assembly to 0.015 L/s/sq m of wall area, measured at a reference differential pressure across assembly of 75 Pa as measured in accordance with ASTM E283. .
- .5 Water Leakage: None, when measured in accordance with ASTM E331.
- .6 System Internal Drainage: Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to the exterior by a weep drainage network.
- .7 Air and Vapour Seal: Maintain continuous air barrier and vapour barrier throughout assembly, primarily in line with inside pane of glass.
- .8 Operable windows to meet CAN/CSA - A440 - M Classification A-3, B-7, C-5 minimum.

1.6 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data: Provide component dimensions, anchorage and fasteners, glass, internal drainage details and .
- .3 Shop Drawings: Indicate opening dimensions, framed opening tolerances, affected related work; installation requirements.
- .4 Submit two samples of operating hardware.

1.7 QUALITY ASSURANCE

- .1 Installer: Company specializing in Installing institutional aluminum windows with minimum three years documented experience.

1.8 DELIVERY, STORAGE, AND PROTECTION

- .1 Protect factory finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond when exposed to sunlight or weather.

1.9 WARRANTY

- .1 Correct defective Work within a five year period after Date of Substantial Completion.
- .2 Provide five year manufacturer warranty for insulated glass units from seal failure, interpane dusting or misting, and replacement of same.
- .3 Warranty: Include coverage for degradation of colour finish.

Part 2 Products

2.1 MANUFACTURERS

- .1 Kawneer Canada Model 518 Isoport with 526 operating sash.
- .2 Other acceptable manufacturers: Alumicor

2.2 MATERIALS

- .1 Extruded Aluminum: ASTM B221/B221M; 6063 alloy, T5 temper.
- .2 Sheet Aluminum: ASTM B209/B209M; alloy, temper.
- .3 Steel Sections: Profiled to suit mullion sections.
- .4 Fasteners: Stainless steel.

2.3 COMPONENTS

- .1 Frames: 38 mm wide x 184 mm deep profile, thermally broken with interior portion of frame insulated from exterior portion; applied glass stops of snap-on type. 518 isoport with extended brick mould and 526 operable sash.
- .2 Sills: 3.2 mm thick, extruded brake formed aluminum; sloped for positive wash; fit under sash leg to 12 mm beyond wall face; one piece full width of opening jamb angles to terminate sill end.
- .3 Insect Screens: 14/18 mesh, glass fibre strands.
- .4 Operable Sash Weather Stripping: neoprene; permanently resilient, profiled to effect weather seal.

.5 Externally attached sulsash: Natural anodized aluminum frame with polycarbonate glazing (Type -G).

.6 Fasteners: Stainless steel.

2.4 GLASS AND GLAZING MATERIALS

.1 Glass and Glazing Materials: As specified in Section 08 80 00.

2.5 SEALANT MATERIALS

.1 Sealant and Backing Materials: As specified in Section 07 92 00.

2.6 HARDWARE

.1 Operator Geared rotary handle fitted to projecting sash arms with limit stops.

.2 Projecting Sash Arms: Cadmium plated steel, friction pivot joints with nylon bearings, removable pivot clips for cleaning.

.3 Sash lock: Lever handle with cam lock.

.4 Insect Screen Frames: Rolled aluminum steel, of rectangular sections; fit frames with adjustable hardware.

2.7 FABRICATION

.1 Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.

.2 Accurately fit and secure joints and corners. Make joints flush, hairline , and weatherproof.

.3 Prepare components to receive anchor devices. Fabricate anchors.

.4 Arrange fasteners and attachments to ensure concealment from view.

.5 Prepare components with internal reinforcement for operating hardware.

.6 Provide internal reinforcement in mullions with galvanized steel members to maintain rigidity.

.7 Permit internal drainage weep holes and channels to migrate moisture to exterior. Provide internal drainage of glazing spaces to exterior through weep holes.

.8 Assemble insect screen frame, mitre and reinforced frame corners. Fit mesh taut into frame and secure. Fit frame with four spring loaded steel pin retainers.

.9 Double weatherstrip operable units.

.10 Factory glaze window units.

- .11 Attach sulsash to windows to locations indicated with stainless steel screws.

2.8 FINISHES

- .1 Finish Coatings: Conform to AAMA 611..
- .2 All Exposed Aluminum Surfaces: clear anodized to 0.018 mm thickness.
- .3 Operator and Exposed Hardware: Enameled to colour as selected.
- .4 Touch-Up Primer for Galvanized Steel Surfaces: SPCC Paint 20 zinc rich. .
- .5 Concealed Steel Items: Galvanized in accordance with ASTM A123 to 610 g/sq m.
- .6 Apply one coat coats of bituminous paint to concealed aluminum and steel surfaces in contact with treated wood, cementitious, or dissimilar materials.

Part 3 Execution

3.1 EXAMINATION

- .1 Verify wall openings and adjoining air and vapour seal materials are ready to receive work of this Section.

3.2 INSTALLATION

- .1 Install window frames, glass and glazing and hardware in accordance with manufacturers instructions.
- .2 Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.
- .3 Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.
- .4 Install sill.
- .5 Provide thermal isolation where components penetrate or disrupt building insulation. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- .6 Coordinate attachment and seal of perimeter air and vapour barrier materials.
- .7 Install operating hardware.
- .8 Install glass in accordance with Section 08 80 00, to glazing method required to achieve performance criteria.
- .9 Install perimeter sealant to method required to achieve performance criteria.

3.3 ERECTION TOLERANCES

- .1 Maximum Variation from Level or Plumb: 1.5 mm/m non-cumulative or 3 mm/3 m, whichever is less.

3.4 ADJUSTING

- .1 Adjust hardware for smooth operation and secure weathertight closure.

3.5 CLEANING

- .1 Remove protective material from factory finished aluminum surfaces.
- .2 Wash surfaces by method recommended and acceptable to sealant and window manufacturer; rinse and wipe surfaces clean.
- .3 Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant and window manufacturer.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Hardware for wood hollow steel and aluminum doors.
- .2 Thresholds.
- .3 Weatherstripping, seals, and door gaskets.

1.2 RELATED SECTIONS

- .1 Section 06 20 00-Finish Carpentry: Cabinet hardware.
- .2 Section 08 11 00 - Metal Doors and Frames.
- .3 Section 08 14 16 - Flush Wood Doors.
- .4 Section 08 41 13 - Aluminum Framed Entrances And Storefronts.
- .5 Section 08 44 13 - Glazed Aluminum Curtain Walls.
- .6 Division 26 - Electrical.

1.3 REFERENCES

- .1 AWI/AWMAC - Quality Standards Illustrated (QSI), current edition.
- .2 BHMA (Builders Hardware Manufacturers Association) - A156 series.
- .3 CSDFMA (Canadian Steel Door and Frame Manufacturers Association).
- .4 DHI (Door Hardware Institute) - A115 series.
- .5 DHI (Door Hardware Institute) - WDHS.3 - Hardware Locations for Wood Flush Doors.

1.4 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Shop Drawings:
 - .1 Indicate locations and mounting heights of each type of hardware, schedules, catalogue cuts, electrical characteristics and connection requirements.
 - .2 Submit manufacturer's parts lists, templates, and .

1.5 SUBMITTALS AT PROJECT CLOSEOUT

- .1 Section 01 33 00: Submission procedures.

- .2 Project Record Documents: Record actual locations of installed cylinders and their master key code.
- .3 Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
- .4 Keys: Deliver with identifying tags to City by security shipment direct from hardware supplier.
- .5 Warranty: Submit manufacturer warranty and ensure forms have been completed in City's name and registered with manufacturer.

1.6 QUALITY ASSURANCE

- .1 Hardware Supplier Qualifications: Company specializing in supplying institutional door hardware with years documented experience. approved by manufacturers.

1.7 DELIVERY, STORAGE, AND PROTECTION

- .1 Section 01 61 00 Product Requirements : Transport, handle, store, and protect products.
- .2 Package hardware items individually; label and identify each package with door opening code to match hardware schedule.

1.8 PROJECT CONDITIONS

- .1 Section 01 31 00: Project Management and Coordination.
- .2 Coordinate the work with other directly affected sections involving manufacture or fabrication of internal reinforcement for door hardware and recessed items.
- .3 Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.
- .4 Coordinate City's keying requirements during the course of the Work.

1.9 MAINTENANCE PRODUCTS

- .1 Section 01 78 40 - Maintenance Requirements: Operation and maintenance data.
- .2 Provide special wrenches and tools applicable to each different or special hardware component.
- .3 Provide maintenance tools and accessories supplied by hardware component manufacturer.

Part 2 Products

2.1 SUPPLIERS

- .1 Refer to hardware Schedule listed at the end of this specification section.

2.2 KEYING

- .1 Door Locks: Keyed differently.
- .2 Grand master keyed.
- .3 Supply keys in the following quantities:
 - .1 3 master keys.
 - .2 3 grand master keys.
- .4 All exterior door locksets to be BEST system locks with Type WB keyway to match City Standard requirements - City Key Shop Contact: PPD-Building Services - Glen Mazowita (986-5633). Provide exterior locks with construction cores. Permanent WB cores to be sent directly to City Key Shop c/o Glen Mazowita.

2.3 KEY CABINET

- .1 Cabinet Construction: Sheet steel construction, piano hinged door with cylinder lock master keyed to building system.
- .2 Cabinet Size: Size for project keys plus 350 locker / cabinet and other miscellaneous keys and 10 percent growth.
- .3 Hooks for keys.
- .4 Horizontal plastic strips for key hook labelling with clear plastic strip cover over labels.
- .5 Finish: Baked enamel, finish, colour as selected.

2.4 FINISHES

- .1 Finishes: Identified in Schedule at end of section.

Part 3 Execution

3.1 EXAMINATION

- .1 Verify that doors and frames are ready to receive work and dimensions are as indicated on shop drawings.
- .2 Verify that electric power is available to power operated devices and is of the correct characteristics.

3.2 INSTALLATION

- .1 Install hardware in accordance with manufacturer's instructions.
- .2 Use templates provided by hardware item manufacturer.

3.3 ADJUSTING

.1 Adjust hardware for smooth operation.

3.4 SCHEDULES

.1 HW SET:01

1	EA	CONTINUOUS HINGE MAR	FM300	630	
1	EA	PANIC HARDWARE	35A-NL-OP X BEST CYL	626	VON
1	EA	PULL	3012-2 X #5 MTG	630	STD
1	EA	AUTO-EQUALIZER	4642	689	LCN
1	EA	OVERHEAD STOP	100S SERIES	630	GLY
1	EA	H/C THRESHOLD	CT-66	627	KNC
4	EA	WALL PLATE SWITCH LEVEL) 630	7910-956 (MTD HAND HEIGHT AND FLOOR LCN WEATHERSTRIP BY DOOR SUPPLIER		

.2 HW SET:02

1	EA	CONTINUOUS HINGE MAR	FM300	630	
1	EA	PUSH/PULL	2012-2 X 6000-2 X #5 MTG - B. TO B.	630	STD
1	EA	AUTO-EQUALIZER	4631 (SEQUENCED)	689	LCN
1	EA	KICKPLATE	K10A 12" X WIDTH TO SUIT	630	STD
1	EA	FLOOR STOP	S101/S103	626	STD
2	EA	WALL PLATE SWITCH LEVEL) 630	7910-956 (MTD HAND HEIGHT AND FLOOR LCN		

.3 HW SET:03

3	EA	HINGE	3CB1HW 4.5 X 4	652	IVE
1	EA	CLASSROOM LOCK	ND94PD RHO	626	SCH
1	EA	PULL	2007-1	630	STD
1	EA	FLOOR STOP	S101/S103	626	STD

.4 HW SET:04

3	EA	HINGE	3CB1HW 4.5 X 4	652	IVE
1	EA	CLASSROOM LOCK	ND94PD RHO	626	SCH
1	EA	PULL	2007-1	630	STD
1	EA	FLOOR STOP	S101/S103	626	STD
1	EA	DOOR BOTTOM	CT-52	628	KNC
1	SET	WEATHERSTRIP	W-21	BLK	KNC

.5 HW SET:05

3	EA	CONTINUOUS HINGE MAR	FM300	630	
2	EA	PANIC HARDWARE	35A-EO	626	VON
1	EA	PANIC HARDWARE	35A-NL-OP X BEST CYL	626	VON
3	EA	PULL	3012-2 X #5 MTG	630	STD
2	EA	SURFACE CLOSER	4111 EDA	689	LCN
1	EA	AUTO-EQUALIZER	4642	689	LCN
3	EA	OVERHEAD STOP	100S SERIES	630	GLY
3	EA	H/C THRESHOLD	CT-66	627	KNC
4	EA	WALL PLATE SWITCH (LEVEL)	7910-956 (MTD HAND HEIGHT AND FLOOR 630		LCN
			WEATHERSTRIP BY DOOR SUPPLIER		

.6 HW SET:06

3	EA	CONTINUOUS HINGE MAR	FM300	630	
3	EA	PUSH/PULL	2012-2 X 6000-2 X #5 MTG - B. TO B.	630	STD
2	EA	SURFACE CLOSER	4111 EDA	689	LCN
1	EA	AUTO-EQUALIZER	4631 (SEQUENCED)	689	LCN
3	EA	OVERHEAD STOP	100S SERIES	630	GLY
2	EA	WALL PLATE SWITCH (LEVEL)	7910-956 (MTD HAND HEIGHT AND FLOOR 630		LCN

.7 HW SET:07

3	EA	HINGE	3CB1HW 4.5 X 4	652	IVE
1	EA	CLASSROOM LOCK	ND94PD RHO	626	SCH
1	EA	FLOOR STOP	S101/S103	626	STD
1	EA	DOOR BOTTOM	CT-52	628	KNC
1	SET	WEATHERSTRIP	W-21		BLK KNC

.8 HW SET:08

1			CYLINDER TO SUIT		
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.9 HW SET:09

3	EA	HINGE	3CB1HW 4.5 X 4	652	IVE
1	EA	ENTRANCE LOCK	ND92PD RHO	626	SCH
1	EA	PULL	2007-1	630	STD
1	EA	FLOOR STOP	S101/S103	626	STD

.10 HW SET:10

3	EA	HINGE	3CB1HW 4.5 X 4	652	IVE
1	EA	CLASSROOM LOCK	ND94PD RHO	626	SCH
1	EA	SURFACE CLOSER	4011	689	LCN
1	EA	OVERHEAD HOLDER	410H SERIES	630	GLY
1	EA	KICKPLATE	K10A 12" X WIDTH TO SUIT	630	STD

.11 HW SET:11

3	EA	HINGE	3CB1HW 4.5 X 4	652	IVE
1	EA	PULL	2412-2	630	STD
1	EA	PUSH PLATE	K11A - 5	630	STD
1	EA	SURFACE CLOSER	4011	689	LCN
1	EA	OVERHEAD HOLDER	410H SERIES	630	GLY
1	EA	KICKPLATE	K10A 12" X WIDTH TO SUIT	630	STD

.12 HW SET:12

3	EA	HINGE	3CB1HW 4.5 X 4	652	IVE
1	EA	PRIVACY SET	ND40S RHO	626	SCH
1	EA	PULL	2007-1	630	STD
1	EA	WALL STOP	S121/S123	626	STD

.13 HW SET:13

3	EA	HINGE	3CB1HW 4.5 X 4	652	IVE
1	EA	STOREROOM LOCK	ND96PD RHO	626	SCH
1	EA	KICKPLATE	K10A 12" X WIDTH TO SUIT	630	STD
1	EA	WALL STOP	S121/S123	626	STD

.14 HW SET:14

4	EA	HINGE	3CB1HW 4.5 X 4 NRP	630	IVE
1	EA	DEADBOLT	83T 7K S1	626	BES
1	SET	PULL	2007-1 X 2007-1 X B TO B MTG	630	STD
1	EA	OVERHEAD HOLDER	100H SERIES	630	GLY
1	EA	THRESHOLD	CT-11	627	KNC
1	EA	DOOR SWEEP	W-13S	628	KNC
1	SET	WEATHERSTRIP	W-50	628	KNC

.15 HW SET:15

6	EA	HINGE	3CB1HW 4.5 X 4 NRP	652	IVE
2	EA	MANUAL FLUSH BOLT	FB458	626	IVE
1	EA	CLASSROOM LOCK	ND94PD RHO	626	SCH
1	EA	ASTRAGAL	W-9	628	KNC
2	EA	OVERHEAD HOLDER	410H SERIES	630	GLY

.16 HW SET:16

3	EA	HINGE	3CB1HW 4.5 X 4	652	IVE
1	EA	DEADBOLT	B660P	626	SCH
1	EA	PULL	2412-2	630	STD
1	EA	PUSH PLATE	K11A - 5	630	STD
1	EA	SURFACE CLOSER	4031	689	LCN
1	EA	KICKPLATE	K10A 12" X WIDTH TO SUIT	630	STD
1	EA	WALL STOP	S121/S123	626	STD

.17 HW SET:17

3	EA	HINGE	3CB1HW 4.5 X 4	652	IVE
1	EA	ENTRANCE LOCK	ND92PD RHO	626	SCH
1	EA	FLOOR STOP	S101/S103	626	STD

.18 HW SET:18

3	EA	HINGE	3CB1HW 4.5 X 4	652	IVE
1	EA	ENTRANCE LOCK	ND92PD RHO	626	SCH
1	EA	SURFACE CLOSER	4031	689	LCN
1	EA	OVERHEAD STOP	410S SERIES	630	GLY
1	EA	KICKPLATE	K10A 12" X WIDTH TO SUIT	630	STD
1	EA	DOOR BOTTOM	CT-52	628	KNC
1	SET	WEATHERSTRIP	W-21	BLK	KNC

.19 HW SET:19

2	EA	HINGE	3CB1 4.5 X 4 NRP	630	IVE
1	EA	DEADBOLT	83T 7K S1	626	BES
1	EA	CYL PULL	H411	628	STD
1	SET	WEATHERSTRIP	W-50	628	KNC

.20 HW SET:20

3	EA	HINGE	3CB1HW 4.5 X 4	652	IVE
1	EA	ENTRANCE LOCK	ND92PD RHO	626	SCH
1	EA	SURFACE CLOSER	4031	689	LCN
1	EA	KICKPLATE	K10A 12" X WIDTH TO SUIT	630	STD
1	EA	FLOOR STOP	S101/S103	626	STD
1	EA	DOOR BOTTOM	CT-52	628	KNC
1	SET	WEATHERSTRIP	W-21	BLK	KNC

.21 HW SET:21

3	EA	HINGE	3CB1HW 4.5 X 4	652	IVE
1	EA	DEADBOLT	B660P	626	SCH
1	EA	PULL	2009-1	630	STD
1	EA	PUSH PLATE	K11A - 5	630	STD
1	EA	SURFACE CLOSER	4031 EDA	689	LCN
1	EA	KICKPLATE	K10A 12" X WIDTH TO SUIT	630	STD
1	EA	WALL STOP	S121/S123	626	STD

.22 HW SET:22

3	EA	HINGE	3CB1HW 4.5 X 4	652	IVE
1	EA	STOREROOM LOCK	ND96PD RHO	626	SCH
1	EA	WALL STOP	S121/S123	626	STD
1	EA	DOOR BOTTOM	CT-52	628	KNC
1	SET	WEATHERSTRIP	W-21	BLK	KNC

.23 HW SET:23

12	EA	HINGE	3CB1HW 4.5 X 4	652	IVE
1	EA	MULLION	KR4954 X CYL	689	VON
3	EA	PANIC HARDWARE	98L 996L X CYL	626	VON
2	EA	SURFACE CLOSER	4111 EDA	689	LCN
1	EA	AUTO EQUALISER	4642CS	689	LCN
2	EA	OVERHEAD STOP	100S SERIES	630	GLY
3	EA	KICKPLATE	K10A 12" X WIDTH TO SUIT	630	STD
1	EA	FLOOR STOP	S101/S103	626	STD
4	EA	ACTUATOR LEVEL)	7910-956 (MTD HAND HEIGHT AND FLOOR 630		LCN

.24 HW SET:24

2	EA	CONTINUOUS HINGE MAR	FM300	630	
1	EA	MULLION	KR4954 X CYL	689	VON
1	EA	FIRE EXIT HARDWARE	XP98EO	626	VON
1	EA	PANIC HARDWARE	XP98NL-OP X BEST CYL	626	VON
1	EA	CTL PULL	H412	628	STD
2	EA	SURFACE CLOSER	4111 EDA	689	LCN
2	EA	OVERHEAD HOLDER	100H SERIES	630	GLY
2	EA	H/C THRESHOLD	CT-66	627	KNC
2	EA	DOOR SWEEP	W-13S	628	KNC
2	EA	WEATHERSTRIP	W-20N (TOP ONLY)	628	KNC
2	SET	WEATHERSTRIP	W-50	628	KNC

.25 HW SET:25

3	EA	HINGE	3CB1HW 4.5 X 4	652	IVE
1	EA	PRIVACY SET	ND40S RHO	626	SCH
1	EA	OVERHEAD STOP	410S SERIES	630	GLY

.26 HW SET:26

3	EA	HINGE	3CB1HW 4.5 X 4	652	IVE
1	EA	DEADBOLT	B660P	626	SCH
1	EA	PULL	2412-2	630	STD
1	EA	PUSH PLATE	K11A - 5	630	STD
1	EA	SURFACE CLOSER	4031 HREG	689	LCN
1	EA	KICKPLATE	K10A 12" X WIDTH TO SUIT	630	STD
1	EA	WALL STOP	S121/S123	626	STD

.27 HW SET:27

4	EA	HINGE	3CB1HW 4.5 X 4	652	IVE
1	EA	ENTRANCE LOCK	ND92PD RHO	626	SCH
1	EA	OVERHEAD HOLDER	410H SERIES	630	GLY
1	EA	KICKPLATE	K10A 12" X WIDTH TO SUIT	630	STD
1	EA	DOOR BOTTOM	CT-52	628	KNC
1	SET	WEATHERSTRIP	W-21	BLK	KNC

.28 HW SET:28

3	EA	HINGE	3CB1HW 4.5 X 4 NRP	652	IVE
1	EA	PANIC HARDWARE	98L 996L X CYL	626	VON
1	EA	SURFACE CLOSER	4111 EDA	689	LCN
1	EA	KICKPLATE	K10A 12" X WIDTH TO SUIT	630	STD
1	EA	WALL STOP	S121/S123	626	STD

.29 HW SET:29

3	EA	HINGE	3CB1HW 4.5 X 4 NRP	652	IVE
1	EA	DEADBOLT	B660P	626	SCH
1	EA	CYL PULL	H411	628	STD
1	EA	WALL STOP	S121/S123	626	STD

.30 HW SET:30

3	EA	HINGE	3CB1HW 4.5 X 4	652	IVE
1	EA	ENTRANCE LOCK	ND92PD RHO	626	SCH
1	EA	SURFACE CLOSER	4031	689	LCN
1	EA	KICKPLATE	K10A 12" X WIDTH TO SUIT	630	STD
1	EA	FLOOR STOP	S101/S103	626	STD

ALL EXTERIOR DOORS TO BE SUPPLIED WITH BEST LOCK TEMPORARY CONSTRUCTION CYLINDERS AND PERMANENT CYLINDERS ARE TO BE SUPPLIED DIRECTLY TO THE CITY OF WINNIPEG IN BEST "WB" KEYWAY FOR FINAL KEYING.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Glass and glazing for hollow metal frames and screens, hollow metal doors, wood doors, aluminum doors, sidelights, aluminum glazed screens, entrances, curtainwall.
- .2 Mirrors.

1.2 RELATED SECTIONS

- .1 Section 08 06 00 - Door Schedule
- .2 Section 08 11 00 - Metal Doors and Frames.
- .3 Section 08 14 16 - Flush Wood Doors
- .4 Section 08 41 13 - Aluminum Entrances and Storefronts.
- .5 Section 08 44 13 - Glazed Aluminum Curtain Wall System.
- .6 Section 10 28 14 - Toilet and Bath Accessories: Mirrors.

1.3 REFERENCES

- .1 CAN/CGSB-12.1M - "Glass, Safety, Tempered or Laminated"
- .2 CAN/CGSB-12.3M - "Glass, Polished Plate or Float, Flat, Clear"
- .3 CAN/CGSB-12.11M - "Glass, Wired, Safety"
- .4 CAN/CGSB-12.8M – "Insulating Glass Units".

1.4 PERFORMANCE REQUIREMENTS

- .1 Size glass to withstand dead loads and positive and negative live loads acting normal to plane of glass as calculated in accordance with applicable code.
- .2 System to be designed to the NBC 2005 for a building importance category of post-disaster.
- .3 Limit glass deflection to 1/200 or flexure limit of glass with full recovery of glazing materials, whichever is less.

1.5 SUBMITTALS

- .1 Samples: Submit two samples 300 x 300 mm in size, exemplifying each type of glass specified.

1.6 QUALITY ASSURANCE

- .1 Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years documented experience.

1.7 WARRANTY

- .1 Provide a ten (10) year warranty to include coverage for sealed glass units from seal failure, interpane dusting or misting, and replacement of same.
- .2 Provide a ten (10) year warranty to include coverage for delamination of laminated glass and replacement of same.

Part 2 Products

2.1 FLAT GLASS MATERIALS

- .1 Float Glass (Type A): CGSB 12-GP-3M, transparent flat, 6 mm minimum thick.
- .2 Safety Glass (Type B): CAN/CGSB-12.1M; Clear, Type 2 fully tempered; 6 mm minimum thick.
- .3 Silvered mirror glass (Type C): to CAN/CGSB-12.5, 5 mm thick. Type 1A-Float glass for normal use.
- .4 Window protection (Type D): Clear acrylic polycarbonate ; UV resistant, Lexan XL 10 manufactured by GE Plastics; 6 mm thick.

2.2 SEALED INSULATING GLASS MATERIALS

- .1 Insulating Glass (type SG-1): CAN2-12.8M double pane; 6 mm outer pane of clear tempered glass; 6 mm inner pane of clear tempered glass with AFGD Comfort E2 Low E argon filled cavities. Total unit thickness 25 mm.
- .2 Insulating Glass (type SG-2): CAN2-12.8M double pane; 6 mm outer pane of clear glass; 6 mm inner pane of clear glass with AFGD Comfort-Ti-AC40 Low E argon filled cavities. Total unit thickness 25 44 mm.
- .3 Insulating Glass (type SG-3): CAN2-12.8M double pane; 6 mm outer pane of clear glass; 6 mm inner pane of clear tempered glass with AFGD Comfort E2 Low E argon filled cavities. Total unit thickness 25 mm.
- .4 Insulating Glass (type SG-4): CAN2-12.8M double pane; 6 mm outer pane of clear glass; 6 mm inner pane of clear glass with AFGD Comfort-Ti-AC40 Low E, argon filled cavities. Total unit thickness 25 mm. Glazed into curtain wall with one pane of Type D polycarbonate to the exterior of assembly with 12 mm glazing stop between the polycarbonate and sealed unit for a total unit thickness of 44 mm. Provide drainage at bottom of polycarbonate for condensation. Allow space around polycarbonate for expansion and contraction.
- .5 Insulating Glass (type SG-5): CAN2-12.8M double pane; 6 mm outer pane of clear glass; 6 mm inner pane of clear tempered glass with AFGD Comfort-Ti-AC40 Low E on second surface, argon filled cavities. Total unit thickness 25 mm. Glazed into curtain wall with one pane of Type D polycarbonate to the exterior of assembly with 12 mm glazing stop between the polycarbonate and sealed unit for a total unit thickness of 44 mm. Provide drainage at bottom of polycarbonate for condensation. Allow space around polycarbonate for expansion and contraction.

- .6 All tinted or coloured glass units or glass units located in partial sun and subject to uneven heating shall be heat strengthened or tempered as required to maintain specified warranty.
- .7 Edge Seal Construction: silicone spacer; Architectural S class Superspacer manufactured by Edgetech, colour to be black.

2.3 GLAZING ACCESSORIES

- .1 Setting Blocks: Neoprene, 80 to 90 Shore A durometer hardness, length of 25 mm for each square meter of glazing or minimum 100 mm x width of glazing rabbet space minus 1.5 mm x height to suit glazing method and pane weight and area.
- .2 Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness, minimum 75 mm long x one half the height of the glazing stop x thickness to suit.
- .3 Glazing Tape: Preformed butyl compound with integral resilient tube spacing device; 10 to 15 Shore A durometer hardness; coiled on release paper; Tremco polyshim II; black colour.
- .4 Glazing Splines, Gaskets: Window manufacturers standard.

Part 3 Execution

3.1 EXAMINATION

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

3.2 PREPARATION

- .1 Clean contact surfaces with solvent and wipe dry.
- .2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- .3 Prime surfaces scheduled to receive sealant.
- .4 Select either or both of the following two paragraphs as appropriate.
- .5 Install sealant in accordance with manufacturer's instructions.

3.3 INSTALLATION - INTERIOR DRY METHOD (TAPE AND TAPE)

- .1 Cut glazing tape to length and set against permanent stops, projecting 1.6 mm above sight line.
- .2 Place setting blocks at 1/4 points with edge block no more than 150 mm from corners.
- .3 Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.

- .4 Place glazing tape on free perimeter of glazing in same manner described above.
- .5 Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
- .6 Knife trim protruding tape.

3.4 INSTALLATION – MIRRORS

- .1 Install mirrors using glazing tape strips vertically at 400 mm o.c.
- .2 Apply bead of silicone caulking 50 mm from edge around perimeter of mirror and vertically between glazing tape strips prior to setting mirror in place.
- .3 Butt sides tight to adjacent mirrors and walls. Cut mirrors to fit around steel cross bracing.

3.5 EXTERIOR GLAZING

- .1 To be installed window manufactures recommendations.

3.6 CLEANING

- .1 Remove glazing materials from finish surfaces.
- .2 Remove labels after Work is complete.
- .3 Clean glass and adjacent surfaces.

3.7 PROTECTION OF FINISHED WORK

- .1 After installation, mark pane with an 'X' by using removable plastic tape or paste. Do not mark heat absorbing or reflective glass units.

3.8 SCHEDULE

- .1 Glazing Type SG-1 Exterior Entrances and sidelights unless otherwise noted.
- .2 Glazing Type SG-2: Exterior sealed units not otherwise noted.
- .3 Glazing type SG-3: to Type H windows in gymnasium.
- .4 Glazing Type SG-4: to type R and Type S curtain wall above 3155 mm.
- .5 Glazing Type SG-5: to type R and Type S curtain wall below 3155 mm.
- .6 Glazing Type A: to all interior glazing not otherwise noted.
- .7 Glazing Type B:
 - .1 to all interior vestibule doors and vestibule glazing up to 2364 above finished floor.

- .2 to all interior type D and E doors.
- .3 to interior glazing up to 2364 mm in frame types 5; 8; 9; 10; 11; 12; and Window type 4.
- .8 Glazing Type C: all mirrors not scheduled in washroom accessory schedule, section 10 28 14.
- .9 Glazing Type D: To exterior of all exterior windows and curtain wall noted on drawings as having window protection. (included in glazing type SG-3 and SG-4 and as attached sulsash for windows where noted).

END OF SECTION