

City of Pickering

2460 Brock Road, Pickering, ON

Project Number: 24024

Permit and Tender

2024-08-23

PROJECT MANUAL

iN STUDIO - Toronto
354 Davenport Road, Suite 200
Toronto Ontario M5R 1K6
www.instudiocreative.com

iN STUDIO - Calgary
Floor 19, 700 2nd Street SW
Calgary, AB T2P 2W2

1. Materials Schedule	003 Pages
2. Millwork Schedule	001 Page
3. Equipment Schedule	002 Pages
4. Equipment Cut Sheets	015 Pages
5. Washroom Accessories Schedule	001 Page
6. Door Schedule	001 Page
7. Hardware Schedule	008 Pages
8. Project Specifications	143 Pages








MATERIALS AND PRODUCTS SCHEDULE

City of Pickering - 2460 Brock Road

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ID CODE	MATERIAL or PRODUCT	CSC/CSI CODE	MANUFACTURER/ DISTRIBUTOR	SERIES/STYLE/ PRODUCT CODE	SIZE	COLOUR/FINISH/ INSTALLATION	IMAGE	REP. CONTACT	COMMENTS
03 - CONCRETE									
Concrete Finishing, Concrete Maintenance (Stains & Resurfacing)									
CN-01	Fluid Applied Floor Coating (Concrete Polishing)	03 9920	Contractor's Choice	Series: - Style: - Product #: -	-	Colour: Natural Finish: Semi-Polished, Non-Slip		Name: - Email: - P: -	-
04 - STONE									
Included Masonry Materials, Unit Masonry, Stone									
05 - METALS									
Common Metal Materials, Metal Stairs, Architectural & Ornamental Fabrications									
06 - WOOD & PLASTIC PRODUCTS									
Common Wood Materials, Finish & Architectural Woodwork, Plastic Fabrications									
ML-01	Melamine	06 4000	Panolam	Series: TFL Style: - Product #: HP565 5D	-	Colour: Storm Grey Finish: Textured/Suede		Name: Adrian Beck Email: adrian_beck@panolam.com P: 416-970-4912	-
PL-01	Plastic Laminate	06 0560	Wilsonart	Series: - Style: - Product #: D427-60	-	Colour: Linen Finish: Matte		Name: Sherrie Beckford Email: beckfos@wilsonart.com P: 647-222-2384	-
PL-02	Plastic Laminate	06 0560	Wilsonart	Series: - Style: - Product #: 10657-60	-	Colour: Graphite Finish: Matte		Name: Sherrie Beckford Email: beckfos@wilsonart.com P: 647-222-2384	-
PL-03	Plastic Laminate	06 0560	Wilsonart	Series: - Style: - Product #: 8241-38	-	Colour: Norwegian Ash Finish: Fine Velvet		Name: Sherrie Beckford Email: beckfos@wilsonart.com P: 647-222-2384	-
SS-01	Simulated Stone / Solid Surface	06 6100	Corian	Series: - Style: - Product #: -	1-1/2" thick	Colour: Antarctica Finish: -		Name: Elmira Doust Email: elmirad@4willis.com P: 365-324-4926	-
08 - OPENINGS									
Thresholds, Glazing, Mirrors, Plastic Glazing, Window & Glass Films									
TS-01	Threshold / Transition Strip	08 7200	Schluter Systems	Series: VINPRO-STEP Style: - Product #: -	-	Colour: TBC Finish: TBC Install: Stair Nosing / Landing to LVT		Name: Genevieve Ricard Email: gricard@schluter.com P: 514-459-3200	Height to suit flooring condition. Butt join materials, feather up floor on the side with thinner floor finish, ensuring both finished surfaces are level and flush
TS-02	Threshold / Transition Strip	08 7200	Schluter Systems	Series: VINPRO-U Style: - Product #: -	-	Colour: TBC Finish: TBC Install: Exposed Concrete to LVT		Name: Genevieve Ricard Email: gricard@schluter.com P: 514-459-3200	Height to suit flooring condition. Butt join materials, feather up floor on the side with thinner floor finish, ensuring both finished surfaces are level and flush
GF-01	Glazing Film	08 8700	3M	Series: Glass Finishes Style: Crystal Glass Finishes Product #: 77255E-314	2" band	Colour: Dusted Crystal Finish: - Install: -		Name: Michael Slater Email: michael.slater@leveyindustries.com P: 905-829-8000	Install according to manufacturer specifications












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GL-01	Demountable Systems Glass	08 8000	PC350	Series: Elite Glass Wall Solutions Style: 2" Narrow Profile Product #: -	-	Frame Glazing: Black 1/2" Laminated Glass		Name: Tim Au-Yeung Email: tim@pc350.com P: 437-440-9440	Minimum STC 38
09 - FINISHES									
Tile									
TL-01	Wall Tile	09 3000	Centura	Series: Costa Nova Style: - Product #: CON28450	2" x 8"	Colour: Terra Finish: Glossy Install: TBD		Name: Elizabeth Livingston Email: elivingston@centura.ca P: 416-434-8626	Grout: TBD Any/all outside corners and/or cut edges to receive Schluter SCHIENE to suit. Provide profile and finish samples for selection. Provide tile layout diagram for review and approval
TL-02	Wall Tile	09 3000	Centura	Series: Simplicity Element Style: - Product #: SPWH1224GF7	12" x 24"	Colour: White Finish: Glossy Install: TBD		Name: Elizabeth Livingston Email: elivingston@centura.ca P: 416-434-8626	Grout: TBD Any/all outside corners and/or cut edges to receive Schluter SCHIENE to suit. Provide profile and finish samples for selection. Provide tile layout diagram for review and approval
Ceilings (Acoustic Ceilings, Ceiling Suspension Assemblies, Specialty Ceilings (Luminous, Suspended Decorative, Stretch Fabric))									
ACT-01	Acoustic Ceiling System	09 5100	Armstrong	Series: Mesa Square Lay-in with 15/16" Prelude Tee System Style: - Product #: -	24" x 24"	Colour: White Finish: - Install: -		Name: Ruth Shannon Email: Irshannon@armstrongceilings.com P: 416-540-5284	Install according to manufacturer specifications. Minimum 0.60 NRC
Flooring (Common Flooring Materials, Specialty Flooring, Masonry & Stone Flooring)									
CPT-01	Carpet Tile (Field)	09 6800	Interface	Series: Woven Gradience Style: WG100 Product #: 13127	50cm x 50cm (3.8mm)	Colour: Greige 108049 Finish: - Install: Ashlar		Name: Kim Jagger Email: kim.jagger@interface.com P: 416-458-5516	-
CPT-02	Carpet Tile	09 6800	Interface	Series: Woven Gradience Style: WG100 Product #: 13127	50cm x 50cm (3.8mm)	Colour: Blue Sage 108057 Finish: - Install: Ashlar		Name: Kim Jagger Email: kim.jagger@interface.com P: 416-458-5516	-
LVT-01	LVT	09 6500	Shaw Contract	Series: Nordic Collection Style: Nordic Product #: 4377V	7" x 48" (5mm)	Colour: Birch 77140 Finish: Exoguard Install: TBD		Name: Chelsea Sanchez Email: chelsea.sanchez@shawcontract.com P: 416-939-4557	-
SDT-01	Static-Dissipative Tile	09 6280	Roppe	Series: ESD Vinyl Static Control Tile Style: - Product #: -	24" x 24" (3.175mm)	Colour: Tornado Gray 757 Finish: - Install: TBD		Name: Elizabeth Livingston Email: elivingston@centura.ca P: 416-434-8626	-
RB-01	Resilient Base	09 6513	Johnsonite	Series: Traditional Vinyl 1/8" Style: TV Product #: -	4" high	Colour: Icicle W 08 (at PT-01) Finish: - Install: -		Name: Janet Sayers Email: janet.sayers@tarkett.com P: 647-542-2514	Toeless at carpet Toe at LVT/concrete
RB-02	Resilient Base	09 6513	Johnsonite	Series: Traditional Vinyl 1/8" Style: TV Product #: -	4" high	Colour: Platinum CG 21 (at PT-02) Finish: - Install: -		Name: Janet Sayers Email: janet.sayers@tarkett.com P: 647-542-2514	Toeless at carpet Toe at LVT/concrete
Wall Finishes (Wall Coverings, Special Wall Surfaces, Acoustical Treatments)									






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TB-01	Tack Board	-	Forbo	Series: Bulletin Board Style: - Product #: -	1/4" thick	Colour: Brown Rice 2187 Finish: - Install: -		Name: Ann Marie Hearn Email: annmarie.hearn@forbo.com P: 416-661-2351	Any/all outside corners and/or cut edges to receive Schluter SCHIENE to suit. Provide profile and finish samples for selection
Paints & Coatings									
PT-01	Paint	09 9100	Benjamin Moore	Series: - Style: - Product #: OC-65	-	Colour: Chantilly Lace Finish: Refer to General Notes		Name: Gloria Rinaldi Email: gloria.rinaldi@benjaminmoore.com P: 416-428-6461	-
PT-02	Paint	09 9100	Dulux	Series: - Style: - Product #: DLX1136-5	-	Colour: Spruce Shade Finish: Refer to General Notes		Name: Alpana Ansilio Email: alpana.ansilio@ppg.com P: 416-436-3681	-
PT-03	Paint	09 9100	TBD	Series: - Style: - Product #: TBD	-	Colour: TBD Finish: Refer to General Notes		Name: - Email: - P: -	-
10 - SPECIALTIES & EQUIPMENT									
Signage, Wall/Corner Protection									
WP-01	Stainless Steel Wall Protection	10 2600	Construction Specialties	Series: Stainless Steel Wall Covering Style: - Product #: -	48" high x 16 gauge	Colour: Stainless Steel Finish: Satin		Name: - Email: - P: -	All joints to be sealed and made water tight
CG-01	Corner Guard	10 2600	Construction Specialties	Series: CO Series Style: - Product #: CO-8	48" high x 16 gauge	Colour: Stainless Steel Finish: Satin		Name: - Email: - P: -	All joints to be sealed and made water tight. Provide 2" overlap on each side of outside corner
12 - FURNISHINGS									
FABRICS FOR FURNITURE - FOR REFERENCE ONLY - SUPPLIED BY FURNITURE MANUFACTURER									
GENERAL NOTES: 1. Please consider the environment when issuing samples (ie. three (3) samples max.). 2. Paint finishes to be as follows U.N.O., walls = eggshell, ceilings = flat, millwork (including wall base, doors and frames, other painted wood items, convectors) = semi gloss.									



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MILLWORK CODE	DWG REFERENCE	LOCATION	ROOM	DESCRIPTION	FINISH	DETAIL REFERENCE	COMMENTS
Typ. See Elev for Dimensions							
MW-01	ID30.02	Café	215	Storage Cabinets and Drawers	Interior - ML-01 Countertop - SS-01 Upper Cabinets - PL-01 Lower Cabinets - PL-03 Base - PL-03 Hardware Group - A	01/ID82.00	Coordinate equipment integration with equipment schedule, cut sheets and/or approval submittals
MW-02	ID30.02	Copy / Print	209	Storage Cabinets and Drawers	Interior - ML-01 Countertop - PL-02 Upper Cabinets - PL-01 Lower Cabinets - PL-02 Base - PL-02 Hardware Group - A	02/ID82.00	-

Millwork Notes:

- Contractor to verify all areas listed in this schedule with construction plans, typical.
- Contractor to provide detailed shop drawings of each millwork piece for approval by designer prior to fabrication.
- Millwork drawings to include all dimensions - site verified by contractor.
- Direction of wood grain to be vertical, unless otherwise noted.
- Provide Blum Blumotion soft close hinges and Blum Movento soft close undermount glides, typical.
- Provide Hafele large plastic levellers - 637.80.351 and 637.79.301, typical.

Hardware Groups:

- A Cabinet Pulls: Richelieu Modern Aluminum Edge Pull BP989880990 - Brushed Black, 100mm



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PRODUCT NAME	ID CODE	MANUFACTURER	SERIES/STYLE	PRODUCT CODE	FINISH/EFFECT	SIZE (W x D x H)	LOCATION USED	COMMENTS
Equipment								
Full-height Column Fridge	EQ-01	Frigidaire	Single Door Refrigerator 19 cu.ft.	FPRU19F8WF	Stainless Steel	32-7/8" x 27" x 72-1/2"	Café 215	Qty: 1 Right hand hinge
Dishwasher	EQ-02	Bosch	800 Series Bar Handle ADA-Compliant Dishwasher	SGX78C5SUC	Stainless Steel	23-9/16" x 22-9/16" x 32-1/16"	Café 215	Qty: 1
Microwave	EQ-03	Panasonic	Evolved Microwave with Cyclonic Inverter Technology	NN-ST785S	Stainless Steel	21.9" x 19.4" x 12"	Café 215	Qty: 1
Coffee Machine (by Client)	EQ-04	Keurig	-	-	-	-	Café 215	Qty: 1
Multifunction Printer (by Client)	EQ-05	Ricoh	Colour Laser Multifunction Printer	IM C3010	-	23" x 27" x 37.9"	Copy/Print 209	Qty: 1
Secure Shredding (by Client)	EQ-06	-	-	-	-	-	Copy/Print 209	Qty: 1
Recycling Bin (by Client)	EQ-07	-	-	-	-	-	Copy/Print 209	Qty: 1
Manual Roller Shades	EQ-08	Altex	G-Line / Altex Absolute Chain Operated Shade System	-	Aluminum Fascia (3"), TexScreen 10,000 Series Sun Control Fabric, 1% openness colour TBC, weighted bottom bar colour TBC	+/- 67-1/2" High x Width of Existing Windows	Refer to Construction Plan	Final mounting details to be reviewed and approved by Landlord prior to installation
Intercom System	EQ-09	2N	IP Force and Indoor View	-	Black	-	Elev Lobby 100 Admin 202	OPTIONAL PRICE #4: Intercom and door release. Refer to Power and Communications Plan and Door Schedule for more information
Plumbing (for reference only - carried by Mechanical)								
Water Closet	WC-01	American Standard	Glenwall VorMax Elongated Toilet	-	White	-	Gender Neutral WC 210 Gender Neutral WC 211 Universal WC 214	Refer to Mechanical Specifications for additional information
Washroom Sink	S-01	American Standard	Murro Wall-Hung EverClean Sink	-	White	-	Gender Neutral WC 210 Gender Neutral WC 211 Universal WC 214	Refer to Mechanical Specifications for additional information
Undercounter Sink	S-02	Franke	Kitchen Systems Sink	-	Stainless Steel	-	Café 215	Refer to Mechanical Specifications for additional information



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Janitor Sink	S-03	Franke	Commercial Sink	-	Stainless Steel	-	Janitor/Stor. 212	Refer to Mechanical Specifications for additional information
Washroom Faucet	F-01	Sloan	Basys Electronic No Touch Faucet	-	Chrome	-	Gender Neutral WC 210 Gender Neutral WC 211 Universal WC 214	Refer to Mechanical Specifications for additional information
Café Faucet	F-02	Grohe	Concetto Single-Handle Pull Down Kitchen Faucet Dual Spray	-	Chrome	-	Café 215	Refer to Mechanical Specifications for additional information
Janitor Faucet	F-03	Chicago Faucets	Manual Sink Faucets	-	Rough Chrome Plated	-	Janitor/Stor. 212	Refer to Mechanical Specifications for additional information
Cold Water Spigot	F-04	Danamark	Premium Drinking Water System	-	Chrome	-	Café 215	Refer to Mechanical Specifications for additional information



19 Cu. Ft. Single-Door Refrigerator

All Refrigerator

Available Products: FPRU19F8WF

Available Colors: Stainless Steel

Version: 07/23

Product Specifications

Refrigerator

Air Filter	Yes
Crisper Color	Smokey
Door Bin Color	Smokey
Humidity Controls	Automatic
Interior Lighting	LED
Shelf Material	Glass
Water Filter	Yes
Number of Other Door Bins	4
Total Number of Door Bins	4
Number of Adjustable Shelves	2
Number of Fixed Shelves	1
Number of Pull Out Shelves	1
Number of Crispers	2

Dimensions and Volume

Height With Hinge	72 1/2"
Height Without Hinge	71 1/2"
Width of Cabinet	32 7/8"
Depth With Door	27"
Depth With Door 90° Open	58 1/4"
Fresh Food Capacity	18.9 Cu. Ft.
Total Capacity	18.9 Cu. Ft.

General Specifications

Annual Energy	301 kWh
Condenser Type	Dynamic
Cooling System	Single Evaporator
Leveling Legs	Yes
Prop 65 Label	Yes
Refrigerant Type	R-600A
Warranty - Labor	2 Years
Warranty - Parts	2 Years

Safety Certifications and Approvals

CSA Listed	Yes
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Controls

Air Filter Indicator	Yes
Digital Display	Yes
Door Ajar Alarm	Yes
Power Failure Alarm	Yes
Sabbath Mode	Yes
Vacation Mode	Yes
Water Filter Indicator	Yes

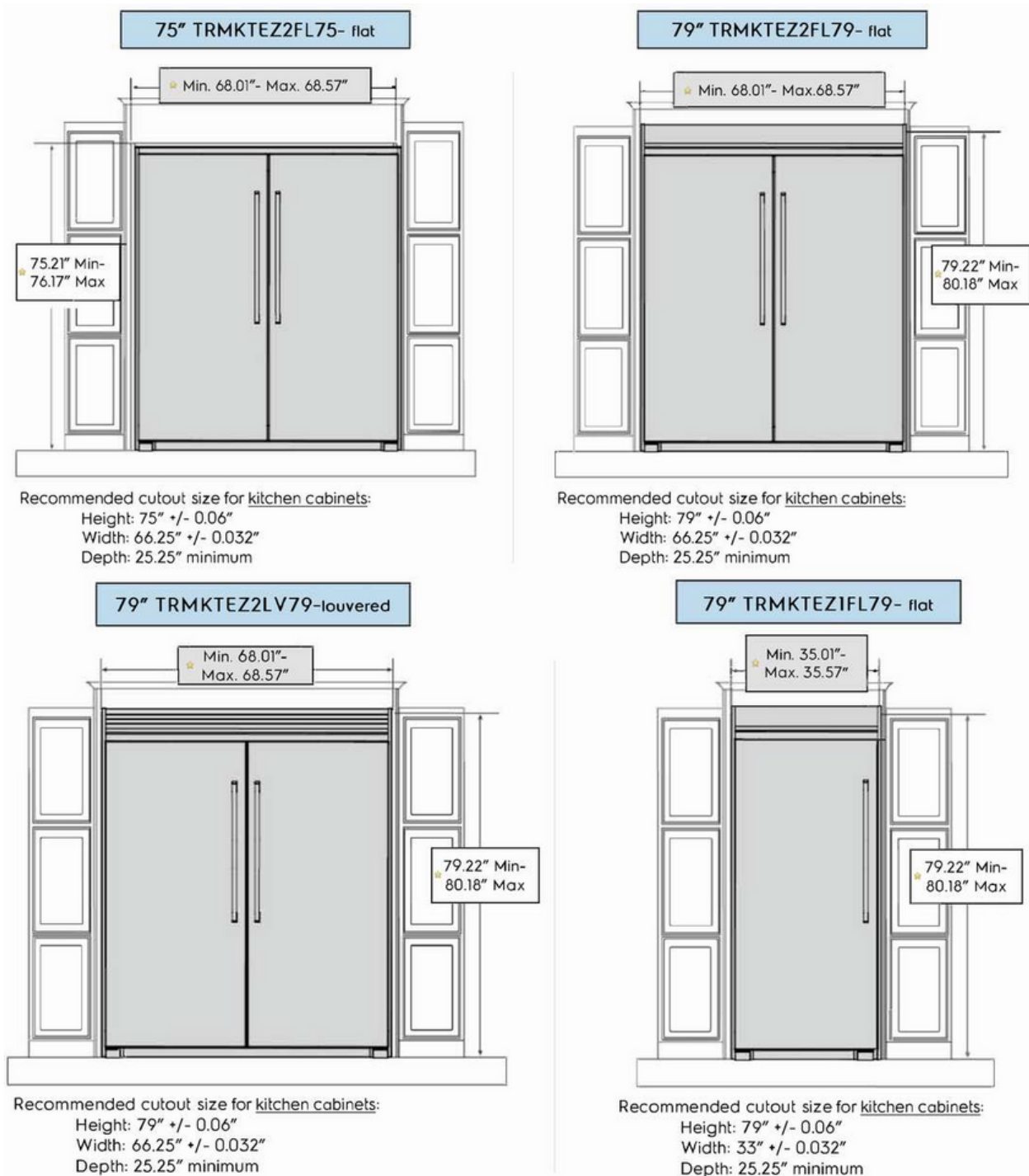
Electrical Specifications

Minimum Circuit Required	15 Amps
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Performance Certifications and Approvals

ENERGY STAR Certified	Yes
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Installation Diagram



* Denotes trim kit dimensions only

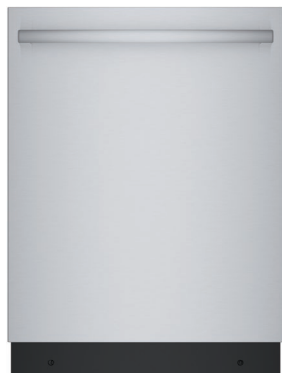
** For replacement business, we can accommodate a 66" cutout width, but it will be a very tight fit.

24" Bar Handle ADA-compliant Dishwasher



BOSCH
Invented for life

800 Series – Stainless Steel SGX78C55UC



SGX78C55UC
Stainless Steel

This lower height dishwasher is ADA Compliant for ease of use.

Features & Benefits

42 dBA: dishwasher runs quietly so your kitchen conversations aren't interrupted.

Patented CrystalDry™ technology transforms moisture into heat to get dishes, including plastics, 60% drier.*

Get hands-free voice operation with Amazon Alexa or Hey Google, smart reordering of detergent tabs via the Amazon Alexa app, plus so much more—all with the Home Connect™ app on your smartphone.

3rd rack provides the perfect space for silverware and large utensils while its V shape leaves room below for taller items.

AquaStop Plus® detects leaks with a dual sensor system, and then contains them for premium protection.

General Properties

Number of wash cycles	6
Number of options	5
Special Program	Machine Care
dBA	42
Wash system	PrecisionWash®
Drying system	CrystalDry™
Third rack	Standard
Rack adjustability	RackMatic®
Tub material	Stainless steel
Control type	Buttons
Concealed water heating element	Yes
Leak protection system	24/7 AquaStop® Plus
NSF®-certified† sanitize option	Yes
Water softener	Yes
Five-level wash	Yes
Child Lock button suspension	No
Home Connect™ (Wi-Fi enabled)	Yes
Anti-Fingerprint Finish	No
Special features	InfoLight®, CrystalDry™, Favorite button

Efficiency

Water usage per cycle	3.2 gal
ENERGY STAR® certified	Yes
Total annual energy consumption	240 kWh

Capacity

Number of place settings	15
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Home Connect



Technical Details

Watts	1440 W
Current	12 Amps
Volts	120 V
Frequency	60 Hz
Power cord full length	67"
Power cord install length from edge of unit when facing the door	Left – 47 1/4" Right – 47 1/4"
Minimum water pressure	7 lb/sin
Length inlet hose	65"
Length outlet hose	74 3/4"

Dimensions & Weight

Overall appliance dimensions (HxWxD)	32 1/16" x 23 9/16" x 22 9/16"
Required cutout size (HxWxD)	32 1/8" x 24" x 24"
Adjustable feet	Yes
Net weight	83 lbs

Accessories—Optional

Junction Box	SMZPCJB1UC
Dishwasher Softener Salt (4.4 lbs)	SGZ9091UC
Dishwasher Drain Hose Extension	SGZ1010UC
Accessory Kit	SMZ5000
Anti-tarnish Silverware Cassette	SMZ5002
Edge Protector + Power Cord Clip Install Kit	SMZEPCC1UC



*Based on aggregate average drying performance of Bosch Dishwashers with CrystalDry on combined household load including plastics, glass, steel, and porcelain as compared to Bosch Dishwashers with PureDry. Drying performance may vary by dish type.

Accessories: To purchase Bosch accessories, cleaners & parts please visit www.bosch-home.com/us/store or call 1-800-944-2904 (Mon to Fri 5 am to 6 pm PST, Sat 6 am to 3 pm PST).

Notes: All height, width and depth dimensions are shown in inches. BSH reserves the absolute and unrestricted right to change product materials and specifications, at any time, without notice. Consult the product's installation instructions for final dimensional data and other details prior to making cutout.

Warranties: Please see Use & Care manual or Bosch website for statement of limited warranty.

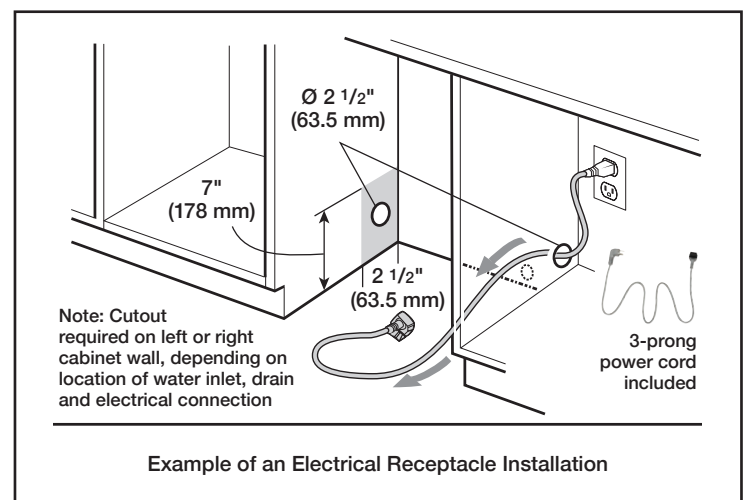
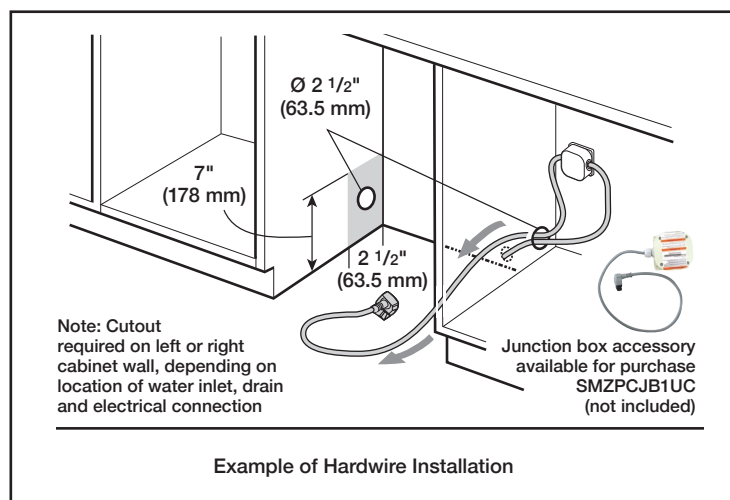
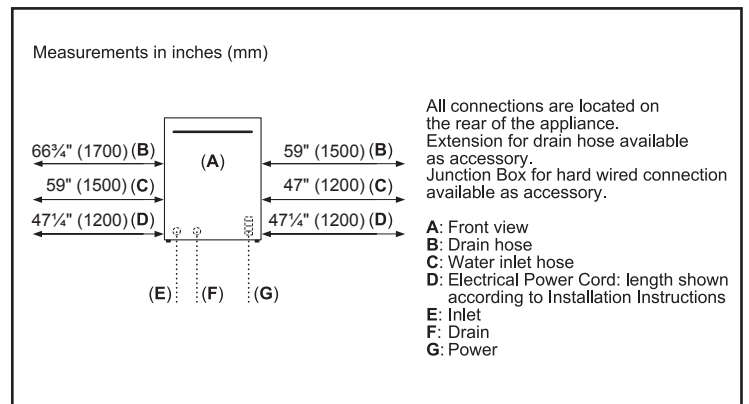
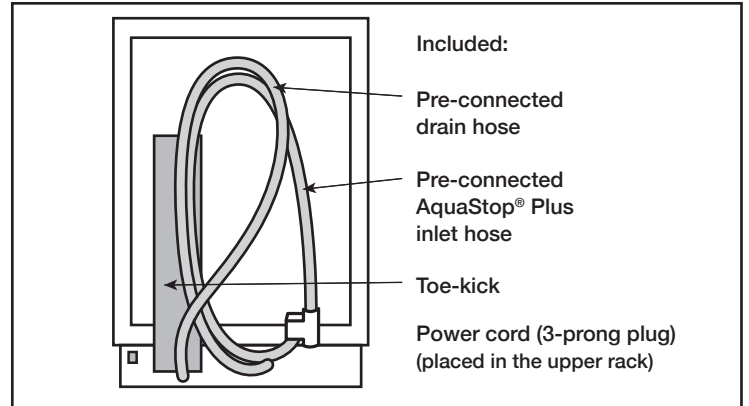
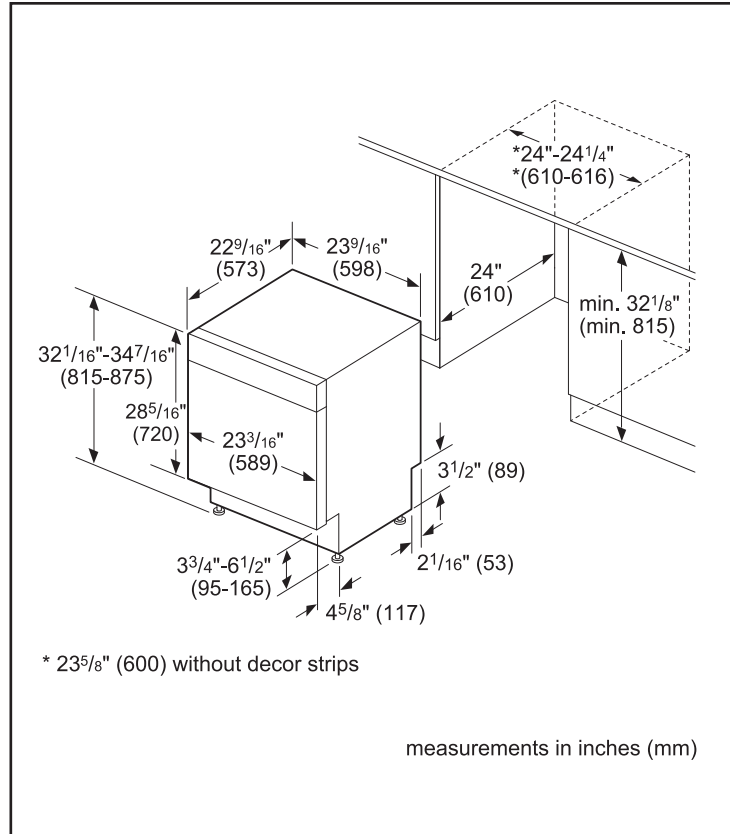
For more information on our entire line of products, go to www.bosch-home.com/us or call 1-800-944-2904

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24" Bar Handle ADA-compliant Dishwasher

800 Series – Stainless Steel SGX78C55UC

Installation Details



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Warranties: Please see Use & Care manual or Bosch website for statement of limited warranty.

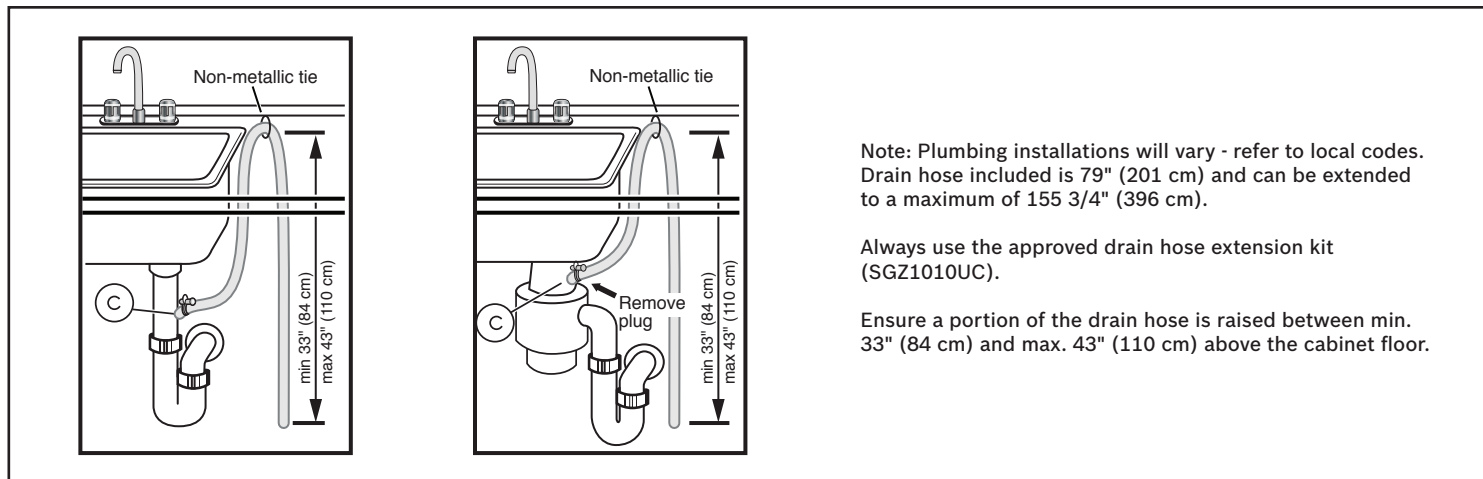
For more information on our entire line of products, go to www.bosch-home.com/us or call 1-800-944-2904

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24" Bar Handle ADA-compliant Dishwasher

800 Series – Stainless Steel SGX78C55UC

Installation Details



Accessories: To purchase Bosch accessories, cleaners & parts please visit www.bosch-home.com/us/store or call 1-800-944-2904 (Mon to Fri 5 am to 6 pm PST, Sat 6 am to 3 pm PST).

Notes: All height, width and depth dimensions are shown in inches. BSH reserves the absolute and unrestricted right to change product materials and specifications, at any time, without notice. Consult the product's installation instructions for final dimensional data and other details prior to making cutout.

Warranties: Please see Use & Care manual or Bosch website for statement of limited warranty.

For more information on our entire line of products, go to www.bosch-home.com/us or call 1-800-944-2904

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Countertop NN-ST785S

MODEL & SIZE	Model Number	NN-ST785S	
	Type	Family-size	
	Installation	Countertop or built-in	
	Oven Capacity	1.6 cu. ft.	
	Cooking Power	1200W	
	Turntable Diameter	380mm	
PANASONIC TECHNOLOGY	Panasonic Inverter	Cyclonic Inverter	
	Genius Sensor	Genius®	
DESIGN	Colour	Stainless Steel	
	Control Panel	Full Button (Chrome)	
	Display Panel	New 4 Digit + Icon LCD / Blue	
STYLE	Door Window	Smoked Glass	
	Door Release	Push Open	
	Oven Interior	Paint White	
PERFORMANCE	Multi-stage Cooking	3 stage	
PROGRAMMABLE FEATURES	Sensor Cook	Yes	
	Sensor Reheat	Yes	
	Auto Cook / Reheat	Yes	
	More / Less Control	Yes	
	Inverter Turbo Defrost	Yes	
	Keep Warm Button	Yes	
	Popcorn Button	Yes	
	Quick Minute	Yes	
SPECIFICATIONS	Cavity Dimensions (W x D x H)	Approx. 418 x 470 x 228 mm 15.7 x 18.5 x 8.3 inch	
	Unit Dimensions (W x D x H)	555 x 493 x 304 mm 21.9 x 19.4 x 12 inch	
	Carton Dimensions (W x D x H)	627 x 540 x 360 mm	
ACCESSORIES	TRIM KITS	27" Model Number	NN-TK722S
		30" Model Number	NN-TK732S
	Accessory	Glass Tray	



IM C2510/IM C3010/IM C3510/IM C4510/IM C6010

MAIN SPECIFICATIONS

	IM C2510	IM C3010	IM C3510	IM C4510	IM C6010
GENERAL					
Warm-up time	24 seconds	25 seconds	25 seconds	24 seconds	24 seconds
First output speed: B/W	4.5 seconds	4.0 seconds	4.0 seconds	3.2 seconds	2.4 seconds
First output speed: full colour	7.0 seconds	6.6 seconds	6.6 seconds	5.2 seconds	3.8 seconds
Continuous output speed	25 ppm	30 ppm	35 ppm	45 ppm	60 ppm
Memory: standard	Mainframe 2GB+SOP 4GB	Mainframe 4GB + SOP 4GB	Mainframe 4GB + SOP 4GB	Mainframe 4GB + SOP 4GB	Mainframe 4GB + SOP 4GB
SSD: standard			256 GB		
SPDF capacity			220 sheets		
Weight	96.1 kg / 211.9 lbs.	99.3 kg / 218.9 lbs.	99.3 kg / 218.9 lbs.	100.8 kg / 222.2 lbs.	100.8 kg / 222.2 lbs.
Dimensions:WxDxH		23.1" x 27.6" x 37.9" (587 mm x 701 mm x 963 mm)			
Power source		120V-127V, 60Hz			
COPIER					
Multiple copying		Up to 999 copies			
Resolution		600 dpi			
Zoom		From 25%-400% in 1% increments			
PRINTER					
CPU	Intel Apollo Lake 1.3 GHz	Intel Apollo Lake 1.3 GHz	Intel Apollo Lake 1.3 GHz	Intel Apollo Lake 1.6 GHz	Intel Apollo Lake 1.6 GHz
Printer language: standard	PCL5c, PCL6, PostScript®3™ Emulation, PDF Direct Print Emulation				
Printer language: option	Genuine Adobe® PostScript®3™, Adobe® PDF Direct Print				
Print resolution: maximum	Up to 1200 x 1200 dpi				
Network interface: standard	Ethernet 10 base-T/100 base-TX/1000 base-T, USB Host I/F Type A, USB Device I/F Type B				
Mobile printing capability	Apple AirPrint™, Mopria, Ricoh Smart Device Connector				
Windows® environments	Windows 8.1/10/11; Windows Server 2012/2012 R2/2016/2019/2022				
Mac OS environments	macOS v10.15 or later				
UNIX environments	UNIX Sun® Solaris, HP-UX, SCO OpenServer, RedHat® Linux Enterprise, IBM® AIX				
SAP® environments	SAP R/3, SAP S/4				
Other supported environments	IBM iSeries AS/400-using OS/400 Host Print Transform				
SCANNER					
Scanning speed: SPDF	150 ipm (simplex)/300 ipm (duplex)				
Resolution: maximum	Up to 1200dpi				
Compression method File Formats	Single Page: TIFF, JPEG, PDF, PDF/A, High Compression PDF, encryption PDF, Searchable PDF (Option required) Multi Page: TIFF, PDF (Default), PDF/A, High Compression PDF, encryption PDF, Searchable PDF (Option required)				
Scan destination types	E-mail, Folder, USB, URL, FTP				
FAX (Optional)					
Circuit	PSTN, PBX				
Transmission speed	3 seconds				
Modem speed: maximum	33.6 Kbps				
Resolution: standard	8x3.85 line/mm, 200x100 dpi				
Maximum Resolution: option	16x15.4 line/mm, 400x400 dpi				
Compression method	MH, MR, MMR, JBIG				
Scanning speed	94 spm				
Memory: standard	4 MB, (320 pages)				
Memory: maximum	60 MB, (4,800 pages)				
PAPER HANDLING					
Recommended paper size	1st Paper Tray: 8.5" x 11" (A4) 2nd Paper Tray: 5.5" x 8.5"- 12" x 18" (A3-A6, B4-B6), Envelopes Bypass: Up to 12" x 18", Envelopes Custom Sizes: Width:3.5" - 12.6" (90 - 320 mm), Length: 5.8" - 49.6" (148 - 1260mm)				
Paper input: standard	1,200 sheets (2 x 550 sheets+ 100-Sheet Bypass Tray)				
Paper input: maximum	2,300 sheets	4,700 sheets	4,700 sheets	4,700 sheets	4,700 sheets
Paper output: standard	500 sheets 8.5" x 11"(A4) or smaller; 250 sheets (B4) or larger				
Paper output: maximum	1,625 sheets	1,625 sheets	1,625 sheets	3,625 sheets	3,625 sheets
Paper weight	Standard Trays: 16 - 80 lb. /166 lb. Index (60 - 300 g/m2) Bypass Tray: 14 - 80 lb. /166 lb. Index (52 - 300 g/m2)				
	Duplex Unit: 14-45 lb. /142 lb. Index (52-169 g/m²)	Duplex Unit: 14 - 68 lb. /142 lb. Index (52 - 256 g/m²)	Duplex Unit: 14 - 68 lb. /142 lb. Index (52 - 256 g/m²)	Duplex Unit: 14 - 68 lb. /142 lb. Index (52 - 256 g/m²)	Duplex Unit: 14 - 68 lb. /142 lb. Index (52 - 256 g/m²)
Paper types	Plain, Recycled, Special, Coloured, Letterhead, Cardstock, Pre-printed, Coated, Envelope, Label, Gloss				

IM C2510/IM C3010/IM C3510/IM C4510/IM C6010

MAIN SPECIFICATIONS

	IM C2510	IM C3010	IM C3510	IM C4510	IM C6010
ENVIRONMENTAL FEATURES					
Power consumption: maximum	Less than 1,584 W				
Power consumption operation: B&W	462 W	473 W	488 W	582 W	748 W
Power consumption operation: Full colour:	509 W	522 W	549 W	672 W	876 W
Power consumption: ready/sleep	40.9 W/0.3 W	46.2 W/0.3 W	46.2 W/0.3 W	47.2 W/0.3 W	47.2 W/0.3 W
TEC*	0.25 kWh/week	0.30 kWh/week	0.35 kWh/week	0.45 kWh/week	0.69 kWh/week

* It is a reference value based on the ENERGY STAR Ver.3.0 test method.

CONSUMABLES

Toner (black)	16,500 prints	31,000 prints	31,000 prints	42,000 prints	42,000 prints
Toner (cyan/magenta/yellow)	10,500 prints	19,000 prints	19,000 prints	28,000 prints	28,000 prints

Consumable yields based on 3 pages/job and 5% coverage on A4 paper

PAPER SUPPLIES AND FINISHER OPTIONS

2x 550-sheet paper tray, 2,000-sheet Large capacity tray, 1,500-sheet Side large capacity tray, 1,000-sheet Hybrid finisher, 1,000-sheet Booklet finisher, 500-sheet Internal finisher, Internal shift tray, One-bin tray, 3,000-sheet finisher (IM C4510/IM C6010 only)

OTHER OPTIONS

Fax unit, G3 Interface, Fax memory unit, Cabinet, Stapleless unit, Punch units, Internal Multi-fold unit, Genuine Adobe PostScript(R) 3, IEEE 802.11 a/b/g/n/ac, OCR unit, 320 GB HDD, Enhanced Security SSD, Counter I/F unit, Card Reader Cover, IPDS Unit, Fiery Color Controller, Fiery Impose, Fiery Compose, Fiery Hot Folders

Some options may not be available at the time of market release.

Specifications are subject to change without notice.

For maximum performance and yield, we recommend using genuine Ricoh parts and supplies.

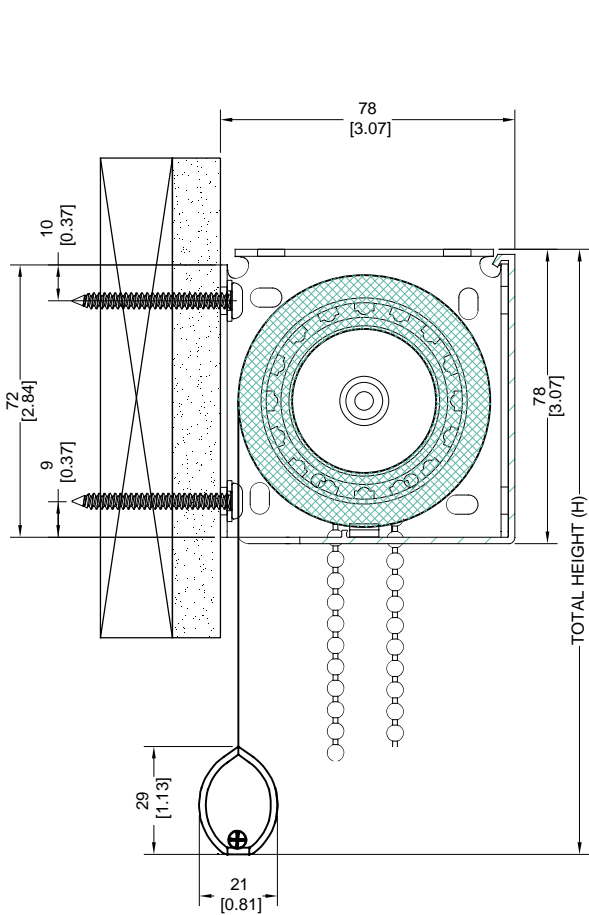
Some features may require additional options and/or charges.



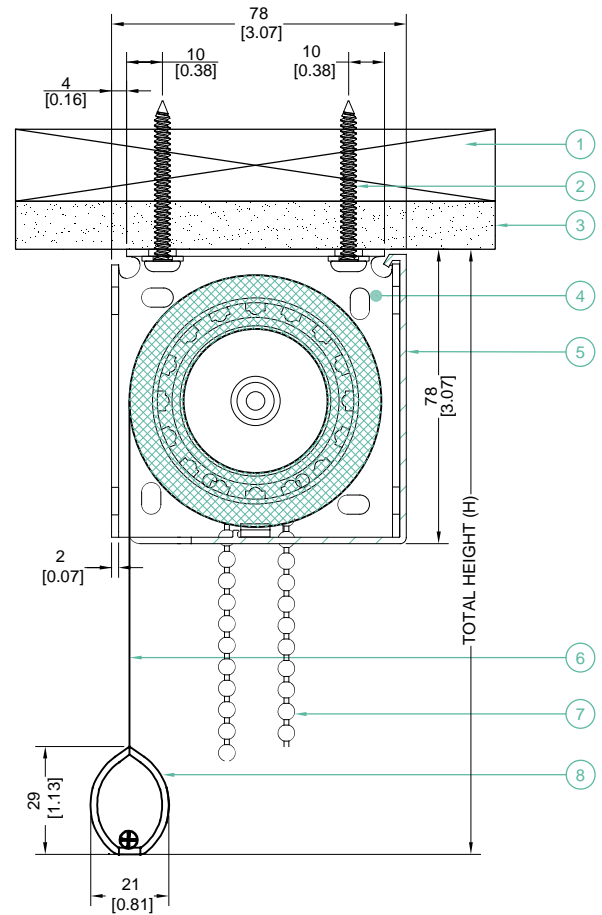
CONTRACT SHADE - MANUAL CHAIN OPERATED

WITH FASCIA - FACE MOUNT APPLICATION

EQ-08



WALL MOUNT



CEILING MOUNT

NOTES:

- 1) DRAWING FOR REFERENCE AND QUOTATION PURPOSES ONLY
- 2) FINAL DIMENSION VERIFICATION REQUIRED BY G-LINE INC.
- 3) FOR PRODUCT DETAILS AND CASE STUDIES VISIT www.glineinc.com
- 4) FOR PROJECT SHOP DRAWINGS CONTACT GLINE INC.
- 5) UNSPECIFIED DIMENSION TOLERANCES $\pm 1.5\text{mm}[1/16"]$

#	DESCRIPTION
1	WOOD BLOCKING THICK 19mm [0.75"] GRADE "A" BY OTHERS
2	MOUNTING SCREW #8X1.75" ZINC
3	DRYWALL - TYPICAL
4	STEEL SHADING BRACKET (ZINC) OR POWDER CTD. GREY
5	ALUMINUM FASCIA, COLOUR T.B.D. Clear Anodized
6	FABRIC, TYPE AND COLOUR T.B.D.
7	CHAIN. TYPE T.B.D.
8	ALUMINUM BOTTOM BAR, COLOUR T.B.D

TO BE CONFIRMED BY ARCHITECT / CONTRACTOR / CLIENT	
FABRIC COLOUR	
ALUMINUM FINISH	Clear Anodized
	*Fabric-Greenguard Certified
SIGNED: _____	DATE: _____

PROJECT:		MODEL: GL-30-MCH	D.108
TITLE:	TYPICAL SECTION DETAIL	FILE NO:	
		DRAWN BY:	SCALE: N/A
			GR#: 100

10,000 series

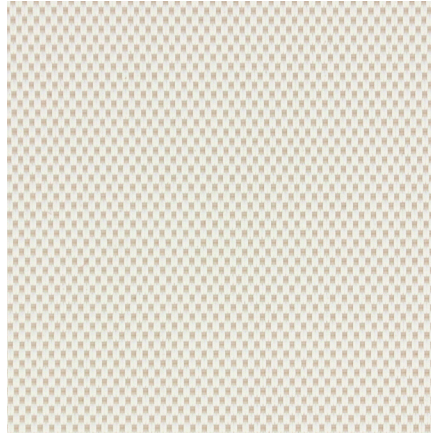
Available in 1%, 3% and 5% openness factors

LIMESTONE



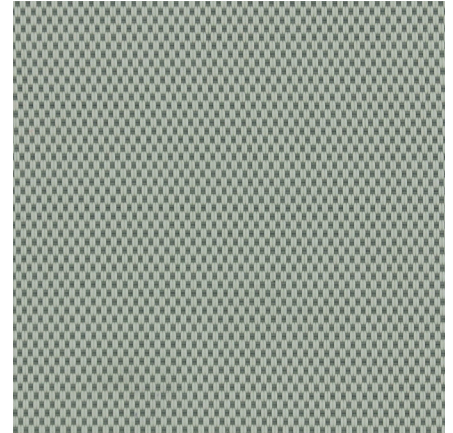
O.F. 1% 10101-01
O.F. 3% 10103-01
O.F. 5% 10105-01

LIMESTONE BEIGE



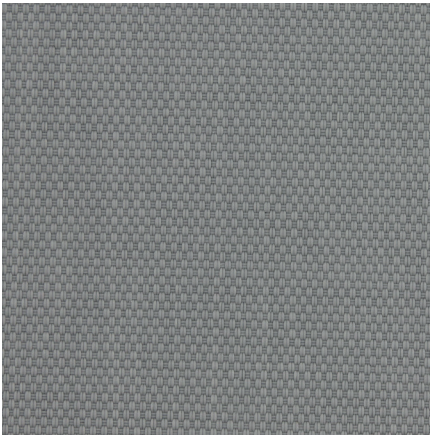
O.F. 1% 10101-02
O.F. 3% 10103-02
O.F. 5% 10105-02

IVORY GREY



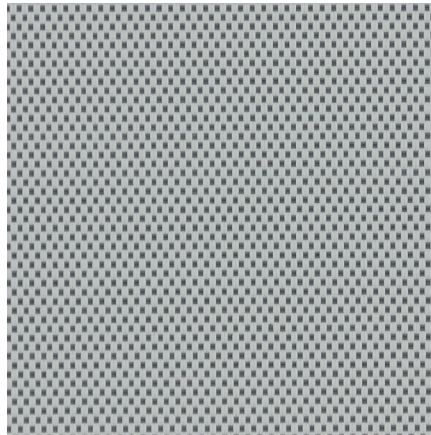
O.F. 1% 10101-03
O.F. 3% 10103-03
O.F. 5% 10105-03

LIGHT GREY



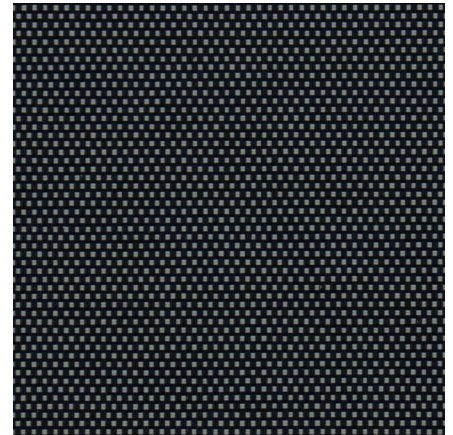
O.F. 1% 10101-04
O.F. 3% 10103-04
O.F. 5% 10105-04

LIMESTONE GREY



O.F. 1% 10101-05
O.F. 3% 10103-05
O.F. 5% 10105-05

SLATE GREY



O.F. 1% 10101-06
O.F. 3% 10103-06
O.F. 5% 10105-06

IMPORTANT: Due to monitor differences, actual colours may vary from colour samples shown above. Contact your sales representatives for fabric samples.



2N® IP FORCE

TOUGHEST IP INTERCOM IN THE WORLD

2N® IP Force is an extremely durable IP intercom that can withstand even the most demanding conditions. It provides for visitor communication monitoring and access control. Take advantage of its superior features for maximum site security.



- **Built for extreme conditions**
- **Professional night vision**
- **Clear sound in noisy environments**
- **Durable access control solution**
- **Wide-angle HD camera**
- **Easy integration into CCTV and VMS**

VARIANTS



1 button

With HD camera 01337-001
Without camera 01336-001



1 button,
keypad

01339-001
01338-001



4 buttons

01343-001
01342-001



2 buttons,
card reader ready

01340-001
01341-001



1 button, pictograms,
card reader ready

01334-001
01335-001

TECHNICAL PARAMETERS

Signalling protocol

SIP (UDP, TCP, TLS)

Button

Button design Transparent, white backlit buttons with easily replaceable label
Count of buttons 1, 2 or 4
Numerical keypad Optional

Audio

Microphone 2 integrated microphones
Amplifier 10 W (class D)
Speaker 10 W
Volume control Adjustable with automatic adaptive mode
Full duplex Yes (AEC)

Audio stream

Protocols RTP/RTSP
Codecs G.711, G.722, G.729, L 16/16kHz

Camera HD

Sensor 1/3" colour CMOS
JPEG resolution 1280 (H) x 960 (V)
Video resolution 640 (H) x 480 (V)
Frame rate Up to 30 snapshots/s
Sensor sensitivity 5.6 V/lux-sec (550 nm) / 1.9 V/lux-sec (550 nm)
View angle 135° (H), 109° (V)
Infrared light Yes

Video stream

Protocols RTP/RTSP/HTTP
Codecs H.263, H.263+, H.264, MPEG-4, M-JPEG
IP camera function Yes, ONVIF v2.4 profile S compatible

Interface

Power supply 12 V / 2A DC or PoE
PoE PoE 802.3af (Class 0 - 12,95 W)
LAN 10/100BASE-TX with Auto-MDIX, RJ-45
Recommended cabling Cat-5e or higher
Passive switch NO/NC contacts, max. 30 V/1A AC/DC
Active switch output 9 up to 13 V DC depending on power supply, max. 700 mA

RFID card reader

Supported frequencies 125kHz and 13.56MHz
125 kHz EM4100, EM4102, HID Proximity
13.56 MHz ISO14443A, ISO14443B, ISO15693, NFC support
reads UID (CSN)
reads PACs ID (iCLASS SIO-enabled cards)
- only secured cards

Mechanical properties

Mechanical properties Robust aluminium casting
Cover
Operating temperature -40°F to 131 °F
Storage temperature -40 °F to 158 °F
Operating relative humidity 10 % - 95 % (non-condensing)
Dimensions 8.543 x 4.291 x 3.268 inch
9.528 x 5.354 x 3.268 inch incl. frame
Weight Netto max. 4.409 lb / brutto max. 5.511 lb
Covering level IP69K and IK10

2N® INDOOR VIEW

ANSWERING UNIT WITH FULL SCREEN VIDEO

The main benefit of the 2N® Indoor View answering unit is a 7" touchscreen with wide viewing angle. The unit's tempered glass surface and award-winning design perfectly match any luxury residential project. To install the device, all you need is a UTP cable and an installation box. Our custom operating system is your guarantee that the unit will operate reliably and simple configuration.



- **7" HD touchscreen**
- **Full screen video calls**
- **Award-winning design**
- **Residents' privacy in safe hands**
- **First configuration from the convenience of your office**
- **Produced and developed in Europe**

VARIANTS



BLACK
02087-001



WHITE
02088-001

TECHNICAL PARAMETERS

Power supply

Type	12 V / 1 A DC or PoE
PoE	802.3af
Reverse polarity protection	Yes

User interface

Controls	capacitive touch panel
Operation	Press and hold the RESET button to restore factory settings, 3 LED status indicators

Audio

Microphone	Integrated
Speaker	Integrated, 2W
Induction loop output	600 mV RMS
Codecs	G.711, G.722, G.729, L16/16kHz

Video

Display	7" display, resolution 1024x600 pixels
Codecs	H.264, MJPEG

Interface

LAN	10/100BaseT, RJ-45
Recommended cabling	Cat5e or higher

Doorbell Input

Input type	Switching contact (button/relay)
Contact type	Normally open (NO)
Contact parameters	Up to 50V/5mA, DC

Mechanical properties

Operating temperature	32 °F to 122 °F
Storage temperature	-4 °F to 158 °F
Relative operating humidity	10 to 90 % (non-condensing)
Recommended altitude	0 to 6 561.68 ft
Dimensions (W x H x D)	7.598 x 6.181 x 1.969 inch
Weight	1.224 lb

Warranty

5-years warranty see https://www.2n.com/en_GB/support/warranty-and-repairs

PROJECT: City of Pickering
2460 Brock Road

Page 1 of 1

WASHROOM ACCESSORY SCHEDULE

ACCESSORIES	LEGEND	NOTES	GENDER NEUTRAL WASHROOM 210	GENDER NEUTRAL WASHROOM 211	UNIVERSAL WASHROOM 214	TOTAL
24" x 36" Mirror Bobrick B-290 2436 Stainless Steel Frame			1	1	1	3
Surface Mounted Shelf Gamco MS-18 Satin-Finish Stainless Steel					1	1
24" Grab Bar Standard Metal G203-70-P Satin Stainless Steel					1	1
L-Shaped Grab Bar 30" x 30" Standard Metal G218-70-P Satin Satin Stainless Steel					1	1
Sanitary Napkin Disposal		Supplied by Client. Installed by General Contractor	1	1	1	3
Soap Dispenser		Supplied by Client. Installed by General Contractor	1	1	1	3
Paper Towel Dispenser and Waste Receptacle		Supplied by Client. Installed by General Contractor	1	1	1	3
Toilet Tissue Dispenser		Supplied by Client. Installed by General Contractor	1	1	1	3

Door Schedule - City of Pickering

Project Number: 24024
Division 08: 08 71 11

Issued for: **PERMIT AND TENDER**
Issued Date: **23-Aug-24**
Revised Date:
Revision Number:

Hardware Abbreviations					
Bars: PB = Push Bar	Hooks: CH = Coat Hook	Pulls: DP = Door Pull	Tracks: SDT = Sliding Door Track	Strips: WMS = Wall-mount Stop	
Catche: MC = Magnetic Catch	Locks: CL = Cylinder Lock	DS = Dummy Set	SG = Sound Gasket	DSS = Door Silencer Strip	
RC = Roller Catch	MT = Mortise Lock	REP = Recessed Edge Pull	Lockset	PS = Perimeter Seals	
Closers CC = Concealed Closer	EH = Electric Hinge	ADB = Auto. Dr. Bottom	Functions: OLS = Office/Entry Lock Set	DWS = Door Weather Strip	
SC = Surface-Mtd. Clsr.	CPH = Center Pivot Hinge	FMS = Floor-mount Stop	PSS = Passage Set		
HOC = Hold Open Closer	DC = Door Closer	MFS = Magnetic Floor Stop	SRL = Store Rm Lock Set		
ADO = Automatic Door Opener	Locks: FB = Flush Bolt	OS = Overhead Stop	PVL = Privacy Set		
Hinges: BH = Butt Hinge	PL = Patch Lock	DBS = Door Bottom Seal	TDD = Trim Dummy		
PH = Pivot Hinge	SDL = Sliding Door Lock	TBR = Top Bottom Rail	CLS = Classroom Set		
LH = Leaf Hinge	Plates: PP = Push Plate	DSP = Door Sweep	DG = Door Gasket		
	KP = Kick Plate		OI = Occupancy Indicators		

Materials					
AL = Aluminum	PT = Paint Finish (Shop Lacquer)	TEX = Textile Fabric	ST = Stained Finish		
GL = 3/8" Thick Tempered Glass	SCW = Solid Core Wood	WD = Wood Veneer/Solid Wood	PLAM = Plastic Laminate		
GLX = 1/8" Tempered Glass	SS = Stainless Steel	MW = Millwork	MTL = Acoustic Steel Door		

Security Devices					
AC = Alarm Contact	DB = Door Bell	HA = Hold Open Alarm	PB = Push Button	DO = Auto Door Operator	
CPK = Code Punch Keypad	EB = Exit Button	EL = Electric Lock	RB = Release Button	FP = Fire Pull Station	
CR = Card Reader	ES = Electric Strike	ML = Magnetic Lock	DC = Door Contact	KL = Key Lock	

Rev	Door								Room #	Area	Frame			Security Devices	Comments
	Door #	Type	Width	Ht.	Thk.	Material	Finish	Hardware			Type	Material	Finish		
1ST FLOOR															
	BBD100A	EX	EX	EX	EX	EX	EX	Refer to Schedule	100	Elevator Lobby	EX	EX	EX	ES, REX, DC, CR	OPTIONAL PRICE #4: Intercom and door release. Refer to Power and Communication Plan and Equipment Schedule for more information
	BBD100B	EX	EX	EX	EX	EX	PT-01	Refer to Schedule	100	Elevator Lobby	EX	EX	EX	-	Paint finish on Tenant side only.
	BBD100C	EX	EX	EX	EX	EX	PT-03	Refer to Schedule	100	Elevator	EX	EX	EX	-	Landlord to ensure door is to remain locked at all times
2ND FLOOR															
	BBD51	EX	EX	EX	EX	EX	PT-01	Refer to Schedule	BB-51	Stair 1	EX	EX	PT-01	-	-
	BBD52	EX	EX	EX	EX	EX	PT-01	Refer to Schedule	BB-52	Stair 2	EX	EX	PT-01	-	Paint finish on Tenant side only. Landlord to ensure door is to remain locked at all times, free egress from Tenant side
	BBD200	EX	EX	EX	EX	EX	PT-03	Refer to Schedule	200	Elevator	EX	EX	EX	-	-
	D201	-	1860 SV	2134	45	HM	PT-01	Refer to Schedule	201	Elevator Equipment	-	HM	PT-01	-	Keyed to base building. 1-hour rating including fire rated grilles
	D203	A	965	2134	45	SCW	PL-03	Refer to Schedule	203	Office	A	AL	Black	-	Refer to Construction Plan for demountable partition assembly specification details
	D205	A	965	2134	45	SCW	PL-03	Refer to Schedule	205	Meeting Room	A	AL	Black	-	Refer to Construction Plan for demountable partition assembly specification details
	D206	A	965	2134	45	SCW	PL-03	Refer to Schedule	206	Office	A	AL	Black	-	Refer to Construction Plan for demountable partition assembly specification details
	D207	A	965	2134	45	SCW	PL-03	Refer to Schedule	207	Office	A	AL	Black	-	Refer to Construction Plan for demountable partition assembly specification details
	D208	A	965	2134	45	SCW	PL-03	Refer to Schedule	208	Office	A	AL	Black	-	Refer to Construction Plan for demountable partition assembly specification details
	D210	B	965	2134	45	SCW	PT-01	Refer to Schedule	210	Gender Neutral WC	B	SCW	PT-01	OI	Provide undercut as required per Mechanical
	D211	B	965	2134	45	SCW	PT-01	Refer to Schedule	211	Gender Neutral WC	B	SCW	PT-01	OI	Provide undercut as required per Mechanical
	D212	B	965	2134	45	SCW	PT-01	Refer to Schedule	212	Janitor / Storage	B	SCW	PT-01	-	-
	D213	B	965	2134	45	SCW	PT-01	Refer to Schedule	213	Electrical Closet	B	SCW	PT-01	-	Keyed to base building
	D214	B	965	2134	45	SCW	PT-01	Refer to Schedule	214	Universal Washroom	B	SCW	PT-01	ES, DC, DO, PB	Provide undercut as required per Mechanical
	D217	B	965	2134	45	SCW	PT-01	Refer to Schedule	217	Storage	B	SCW	PT-01	-	-
	D218	B	965	2134	45	SCW	PT-01	Refer to Schedule	218	IT Room	B	SCW	PT-01	ES, REX, DC, CR	-

- Notes**
- This schedule is to be read in conjunction with the ID30 Series Construction Plan(s) and ID91 Series Door and Frame Details.
 - Refer to Hardware Schedule prepared by 8+ for all hardware configurations.
 - Door hardware for entrances must be keyed to building's master keying. Only Property Mgr's locksmith will produce keys. Glass entrances must have interchangeable cores keyed to base building grand master.
 - All fire-rated doors and frames shall bear the required ULC label(s).
 - All hardware to have black finish, unless noted otherwise.
 - EX = Existing to Remain, NEW = New, REL = Relocated, FH = Full Height, SV = Site Verify
 - All doors and frames to receive new paint inside and outside, unless noted otherwise.
 - Security vendor TBD.
 - All painted doors to be shop finished, unless otherwise noted.
 - All glazing film to conform to OBC requirements.
 - Full height to refer to the dimension from the line of finished floor to underside of t-bar and/or gwb ceiling, 2134mm (7'-0") approx. Site verify ceiling dimensions.



Weiss Architecture & Urbanism Limited scope of work and responsibility is limited to the design and configuration of the 1 hour FRR enclosure of Elevator Equipment Closet Room 201. 1 hour FRR required as per OBC 3.5.3.3. Fire Separations for Elevator Machine Rooms.

Schedule of Finishing Hardware
For
City of Pickering
2460 Brock Rd.
Pickering, ON

Architect/Designer: iNStudio
354 Davenport Rd.
Suite 200
Toronto ON M5R 1K6
Contact: Betty Chor
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Construction Manager:

Contact:
Phone:
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Schedule By: 8+ inc.
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Toronto, On, M3B 2V1
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Issued for 90%: August 1, 2024
Issued: August 9, 2024
Revised: August 15, 2024
Issued for Tender: August 23, 2024

1 Sgl Door BBD100A Exterior from Elevator Lobby RHR

TYPE: Existing x x x

Existing Frame, Door and Hardware to remain except add the following:

- 1 Storeroom Lock AR Deadlatch To fit existing ALDR Prep 32D
- 1 Cylinder Keyed to Base Building and Tenant Requirements x AR Cam 26D
- 1 Automatic Operator Relay Camden CX12 Plus
- 1 Electric Strike Adam's Rite Electric Strike to fit frame and suit Deadlatch 32D
- 1 Card Reader Not included in Hardware Contract. By General Contractor
- 1 Request to Exit Not included in Hardware Contract. By General Contractor
- 1 Door Contact Not included in Hardware Contract. By General Contractor

General Contractor to rework the existing door and frame to accept new security hardware

1 Sgl Door BBD100B
1 Sgl Door BBD100C

TYPE: Existing x x x

Existing Frame, Door and Hardware to remain.

- 1 Sgl Door BBDS1 Stair
- 1 Sgl Door BBDS2 Stair

TYPE: Existing x x x

Existing Frame, Door and Hardware to remain.

- 1 Pair Door D201 Corridor 204 From Elev. Equip. Closet LHR Active

TYPE: C 2 @ 965 x 2134 x 45 HMD x HMF 60MIN

- 2 Spring Hinge - for active leaf Stanley 2060R 4-1/2" x 4" Black
- 4 Hinges Stanley CB1900R 4-1/2" x 4" C1D
- 2 Flush Bolts Standard Metal F65UL C26D
- 1 Mortise Storeroom Lock Schalge L9080 M52 A 622
- 1 Mortise Cylinder Keyed to Base Building and Tenant Requirements x L Cam Black
- 2 Door Louvre KN Crowder SDL-FP 24" x 24" TBD
- 25' Door Gasket Pemko S88 Black

- 1 Sgl Door D203 Office

TYPE: A x x PC350 DR x PC350 FR

Door, Frame and hardware supplied by PC350 except add the following:

- 3 Hinges Not included in Hardware Contract. Supplied by PC350
- 1 Cylindrical Office Lock Schalge ALX53P6 BRW 622
- 1 Cylindrical KIL Cylinder KIL Keyed to Base Building and Tenant Requirements Black
- 1 Automatic Door Bottom Not included in Hardware Contract. Supplied by PC350
- 1 Floor Stop Not included in Hardware Contract. Supplied by PC350
- 21' Door Gasket Not included in Hardware Contract. Supplied by PC350

1 Sgl Door D205 Meeting Room

TYPE: A x x PC350 DR x PC350 FR

Door, Frame and hardware supplied by PC350 except add the following:

- 3 Hinges Not included in Hardware Contract. Supplied by PC350
- 1 18" Ladder Pull Set Not included in Hardware Contract. Supplied by PC350
- 1 Automatic Door Bottom Not included in Hardware Contract. Supplied by PC350
- 1 Floor Stop Not included in Hardware Contract. Supplied by PC350
- 21' Door Gasket Not included in Hardware Contract. Supplied by PC350

1 Sgl Door D206 Office

1 Sgl Door D207 Office

1 Sgl Door D208 Office

TYPE: A x x PC350 DR x PC350 FR

Door, Frame and hardware supplied by PC350 except add the following:

- 9 Hinges Not included in Hardware Contract. Supplied by PC350
- 3 Cylindrical Office Lock Schalge ALX53P6 BRW 622
- 3 Cylindrical KIL Cylinder KIL Keyed to Base Building and Tenant Requirements Black
- 3 Automatic Door Bottom Not included in Hardware Contract. Supplied by PC350
- 3 Floor Stop Not included in Hardware Contract. Supplied by PC350
- 63' Door Gasket Not included in Hardware Contract. Supplied by PC350

1 Sgl Door D210 Copy/Print 209 To GN WC 210

LH

TYPE: B 965 x 2134 x 45 SCWD x WDFR

- 3 Hinges Stanley CB1900R 4-1/2" x 4" C1D
- 1 Mortise Privacy Set / Indicator Schlage L9044 M52 A x OS-OCC LH 622
- 1 Door Closer Dorma 8616 AF86P FC - mount on pull side of door 693
- 1 Coat Hook Taymor Allusion 04-32501BLK Black
- 1 Floor Stop CBH 87 K29
- 21' Door Gasket Pemko S88 Black

1 Sgl Door D211 Copy/Print 209 To GN WC 211 LH

TYPE:	B	965	x	2134	x	45	SCWD	x	WDFR
3	Hinges						Stanley CB1900R 4-1/2" x 4"		C1D
1	Mortise Privacy Set / Indicator						Schlage L9044 M52 A x OS-OCC LH		622
1	Door Closer						Dorma 8616 AF86P FC - mount on pull side of door		693
1	Coat Hook						Taymor Allusion 04-32501BLK		Black
1	Floor Stop						CBH 87		K29
21'	Door Gasket						Pemko S88		Black

1 Sgl Door D212 Copy/Print 209 From Janitor/Storage 212 LHR

TYPE:	B	965	x	2134	x	45	SCWD	x	WDFR
3	Hinge						Stanley CB1900R 4-1/2" x 4"		C1D
1	Cylindrical Storeroom Lock						Schlage ND80P6 BRW		622
1	Cylindrical KIL Cylinder						KIL Keyed to Base Building and Tenant Requirements		Black
1	Door Closer						Dorma 8616 AF86P FC - mount on push side of door		693
1	Kick Plate						CBH 903 12" x 36-1/2" x Tape - mount on PUSH side of Door		C32D
1	Mop Plate						CBH 903 8" x 37" x Tape - mount on PULL side of Door		C32D
1	Floor Stop/Hold Open						Canaropa DC24D		C26D
21'	Door Gasket						Pemko S88		Black

1 Sgl Door D213 Café 215 From Elec. Closet 213 LHR

TYPE:	B	965	x	2134	x	45	SCWD	x	WDFR
3	Hinge						Stanley CB1900R 4-1/2" x 4"		C1D
1	Cylindrical Storeroom Lock						Schlage ND80P6 BRW		622
1	Cylindrical KIL Cylinder						KIL Keyed to Base Building and Tenant Requirements		Black
1	Door Closer						Dorma 8616 AF86P FC - mount on push side of door		693
1	Floor Stop						CBH 87		K29
21'	Door Gasket						Pemko S88		Black

1 Sgl Door D214 To Universal WC 214 RH

TYPE:	B	965	x	2134	x	1-3/4"	SCWD	x	WDFR
3	Hinges						Stanley CB1900R 4-1/2" x 4"		C1D
1	Storeroom Lock						Schlage L9080L M52 A		622
1	Mortise Cylinder						Keyed to Base Building and Tenant Requirements x L Cam		Black
1	Coat Hook						Taymor Allusion 04-32501BLK		Black
21'	Door Gasket						Pemko S88		Black
1	Floor Stop						CBH 87		K29
1	Surface Mount Automatic Door Operator						Rhinotek 7000 surface mount pull side of door. Black		Black
1	Push Actuator Illuminated - mount in corridor						Camden CM-45/455SE1-SGLR flush illuminated enclosure with sign CM-55i		C32D
1	Push To Lock/ Push to Open						Camden CM-2520/4855SE1 x flush mount illuminated enclosure with sign CM-55i		C32D
1	Power Supply Module						Camden CX-PS13-V3		
1	Concealed Door Contact						Camden CX-MDH		
1	Electric Strike - Fail Safe						RCI S6508 Fail Safe		C32D
1	Emergency Call System Kit						Camden CX-WEC10BK2 - emergency button requires a double gang electrical box.		

RHINOTEK - electric strike to release upon activation of Emergency Kit.

1 Sgl Door D217 Corridor 204 To Storage 217 LH

TYPE:	B	965	x	2134	x	45	SCWD	x	WDFR
3	Hinge						Stanley CB1900R 4-1/2" x 4"		C1D
1	Cylindrical Storeroom Lock						Schlage ND80P6 BRW		622
1	Cylindrical KIL Cylinder						KIL Keyed to Base Building and Tenant Requirements		Black
1	Door Closer						Dorma 8616 AF86P FC - mount on pull side of door		693
1	Kick Plate						CBH 903 12" x 36-1/2" x Tape - mount on PUSH side of Door		C32D
1	Mop Plate						CBH 903 4" x 37" x Tape - mount on PULL side of Door		C32D
1	Floor Stop/Hold Open						Canaropa DC24D		C26D
21'	Door Gasket						Pemko S88		Black

1 Sgl Door D218 Corridor 204 To IT Room 218 LH

TYPE:	A	965	x	2134	x	45	SCWD	x	WDFR
3	Hinge						Stanley CB1900R 4-1/2" x 4"		C1D
1	Cylindrical Storeroom Lock						Schlage ND80P6 BRW		622
1	Cylindrical KIL Cylinder						KIL Keyed to Base Building and Tenant Requirements		Black
1	Door Closer						Dorma 8616 AF86P FC - mount on pull side of door		693
1	Floor Stop						CBH 87		K29
21'	Door Gasket						Pemko S88		Black
1	Electric Strike - Fail Secure						RCI S6508 Fail Secure		C32D
1	Card Reader						Not included in Hardware Contract. By General Contractor		
1	Request to Exit						Not included in Hardware Contract. By General Contractor		
1	Door Contact						Not included in Hardware Contract. By General Contractor		

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 00 21 13 – Instructions to Bidders: Site visit and inspection prior to bidding.

1.2 DEFINITIONS

- .1 Information Documents means information of any type and in any form, related to the Project and identified in this Section as such and do not include the Contract Documents.
- .2 Contract Documents are as defined in the contract and include the Agreement, Definitions, Supplementary Conditions and General Conditions, Divisions 1 through 33 of the specifications, Schedules and Drawings.
- .3 Contractor is synonymous with Bidder.

1.3 STATUS OF INFORMATION DOCUMENTS

- .1 Information Documents, or any part thereof, are not part of the Contract unless specifically incorporated into Contract Documents by means of copying, transcribing or referencing.

1.4 USE OF AND RELIANCE UPON INFORMATION DOCUMENTS

- .1 Information Documents are made available to Bidder by Owner for the purpose of providing Bidder with access to information available to Owner.
- .2 Information Documents shall not be considered a representation or warranty that information contained therein is accurate, complete or appropriate, and do not form a part of the Contract Documents.
- .3 Bidder shall interpret and draw its own conclusions about Information Documents and is encouraged to obtain specialist advice with respect thereto. Prime Consultant assumes no responsibility for such interpretations and conclusions.
- .4 Information contained in Information Documents may be time sensitive and dates shall be considered when interpreting Information Documents.
- .5 Bidder may rely upon the data contained in Information Documents, or parts thereof, which are specifically incorporated into Contract Documents by means of copying, transcribing or referencing, but shall draw his own conclusions from such data and shall not rely on opinions or interpretations contained therein.

1.5 INFORMATION DOCUMENTS

- .1 Information Documents, in whole or in part, consist of the following:
- .2 Review Office Tenant Design and Construction Manual as provided by the Building Management per the construction address.
- .3 Direct inquiries during bid period to person identified in Instructions to Bidders issued by general contractor to receive inquiries.

- Part 2** **Products**
- 2.1** **NOT USED**

- Part 3** **Execution**
- 3.1** **NOT USED**

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

- .1 Submit to Consultant submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with Work affected by submittal until review is complete.
- .3 Present Shop Drawings, product data, samples and mock-ups per documented units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .6 Notify Consultant in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent Work are co-ordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant review.
- .10 Keep one reviewed copy of each submission on site.

1.2 ACTION SUBMITTALS / INFORMATIONAL SUBMITTALS

- .1 Product Data / Shop Drawings
 - .1 Refer to CCDC 2 GC 3.
 - .2 The term "Shop Drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
 - .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
 - .4 Allow 10 working days for Consultant's review of each submission.
 - .5 Adjustments made on Shop Drawings by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in

- writing to Consultant prior to proceeding with Work. Owner to review and approve.
- .6 Make changes in Shop Drawings as Consultant may require, consistent with Contract Documents. When resubmitting, notify Consultant in writing of revisions other than those requested.
 - .7 Accompany submissions with transmittal letter containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
 - .8 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
 - .9 After Consultant's review, distribute copies.
 - .10 Submit electronic copy of Shop Drawings for each requirement requested in specification Sections and as Consultant may reasonably request.
 - .11 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Consultant where Shop Drawings will not be prepared due to standardized manufacture of product.
 - .12 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Consultant.

- .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
- .2 Testing must have been within 3 years of date of contract award for project.
- .13 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Consultant.
 - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - .2 Certificates must be dated after award of project contract complete with project name.
- .14 Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Consultant.
 - .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
- .15 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Consultant.
 - .1 Documentation of the testing, inspection, and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .16 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Consultant.
- .17 Delete information not applicable to project.
- .18 Supplement standard information to provide details applicable to project.
- .19 If upon review by Consultant, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If Shop Drawings are rejected, noted copy will be returned and resubmission of corrected Shop Drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .20 Samples:
 - .1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.
 - .2 Deliver samples prepaid to Consultant's business address.
 - .3 Notify Consultant in writing, at time of submission of deviations in samples from requirements of Contract Documents.
 - .4 Where colour, pattern or texture is criterion, submit full range of samples.

- .5 Adjustments made on samples by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.
- .6 Make changes in samples which Consultant may require, consistent with Contract Documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.3 QUALITY ASSURANCE

- .1 Mock-Ups:
 - .1 Erect mock-ups in accordance with 01 45 00 - Quality Control and in coordination with the Consultant.
- .2 Photographs: Digital Format.
 - .1 Provide weekly dated high resolution digital colour photographs, showing all work in progress and distributed as directed by Consultant.
 - .2 Progress Photographs:
 - .1 Sizes: minimum 2 mega pixel image file size, jpeg image file.
 - .2 Format: USB flash drive or email (*.jpg).
 - .3 Viewpoints: A minimum of four (4) photographs from three (3) different viewpoints will be required.
 - .4 Number of photo sets: one (1) set per week.
 - .5 Identification: referenced to photo file with name, location, purpose, and number of project and date of exposure.
 - .6 Viewpoints: interior and exterior locations: viewpoints determined by Consultant.
 - .7 Frequency: As required by Consultant.
 - .8 Distribution: e-mail or upload to file sharing platform.
- .3 Certificates and Transcripts:
 - .1 Immediately after award of Contract, submit Workers' Compensation Board status.
 - .2 Submit transcription of insurance immediately after award of Contract.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 02 41 20 – Selective Interior Demolition
- .2 Section 03 35 00 – Concrete Finishing
- .3 Section 09 21 16 – Gypsum Board Assemblies

1.2 REFERENCES

- .1 Definitions
 - .1 Cutting: Removal of existing construction necessary to permit installation or performance of other Work.
 - .2 Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.3 ACTION SUBMITTALS / INFORMATIONALSUBMITTALS

- .1 Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
 - .1 Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
 - .2 Changes to Existing Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
 - .3 Products: List products to be used and firms or entities that will perform the Work.
 - .4 Dates: Indicate when cutting and patching will be performed.
 - .5 Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.
 - .6 Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure to the Consultant prior to making cuts or modifications.
 - .7 Consultant's Acceptance: Obtain acceptance of cutting and patching proposal before cutting and patching. Review and acceptance of cutting and patching proposal does not waive right to later require removal and replacement of unsatisfactory work.

1.4 QUALITY ASSURANCE

- .1 Structural Elements: Do not cut and patch structural elements in a manner that could change their load carrying capacity or load deflection ratio.
- .2 Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety, including but not limited to the following:
 - .1 Primary operational systems and equipment.

- .2 Air or smoke barriers.
 - .3 Fire protection systems.
 - .4 Control systems.
 - .5 Communication systems.
 - .6 Electrical wiring systems.
- .3 Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety, including but not limited to the following:
- .1 Water, moisture, or vapour barriers.
 - .2 Membranes and flashings.
 - .3 Exterior curtain wall construction.
 - .4 Equipment supports.
 - .5 Piping, ductwork, vessels, and equipment.
 - .6 Noise and vibration control elements and systems.
- .4 Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Consultant's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner. If possible, retain original Installer or fabricator to cut and patch exposed Work listed below. If it is impossible to engage original Installer or fabricator, engage another recognized, experienced, and specialized firm, including but not limited to the following:
- .1 Processed concrete finishes.
 - .2 Masonry.
 - .3 Ornamental metal.
 - .4 Firestopping and smoke seals.
 - .5 Finished flooring.
 - .6 Finished coatings.
 - .7 Wall covering.
 - .8 HVAC enclosures, cabinets, or covers.
- .5 Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.5 WARRANTY

- .1 Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

Part 2 Products

2.1 MATERIALS

- .1 General: Comply with requirements specified in other Sections of these Specifications.
- .2 Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible:
 - .1 If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

Part 3 Execution

3.1 EXAMINATION

- .1 Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed:
 - .1 Provide X-ray or other approved methods to determine locations of existing services and reinforcing in existing concrete slabs and block walls before cutting and renovations. Advise Consultant of findings before proceeding with the Work and revise penetration locations as required and directed by Consultant. Existing concrete slab thickness is to be confirmed by Contractor.
 - .2 Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - .3 Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

- .1 Temporary Support: Provide temporary support of Work to be cut.
- .2 Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- .3 Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- .4 Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to minimize interruption of services to occupied areas.

3.3 PERFORMANCE

- .1 General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay:
 - .1 Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

- .2 Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations:
 - .1 In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - .2 Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - .3 Concrete or Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond core drill.
 - .4 Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 - .5 Proceed with patching after construction operations requiring cutting are complete.

- .3 Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications:
 - .1 Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
 - .2 Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - .3 Floors and Walls: Where walls or partitions that are removed extend from one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, colour, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform colour and appearance.
 - .4 Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 - .5 Ceilings: Patch, repair, or re-hang existing ceilings as necessary to provide an even plane surface of uniform appearance.
 - .6 Maintain existing fire ratings as required.
 - .7 Maintain fireproofing for disturbed areas affected by demolition and new construction.

END OF SECTION

Part 1 General

1.1 INTENT

- .1 This Section includes, but not limited to, the following:
 - .1 Demolition, removal completely from site, and disposal of all identified components, materials, equipment and debris.
 - .2 Selective demolition to allow new walls, bulkheads, ceilings and other materials to meet existing construction as indicated.
 - .3 Repair procedures for selective demolition operations.
- .2 This Section does not include the following:
 - .1 Removal of hazardous materials or asbestos abatement.
 - .2 Demolition of exterior building components or structural elements.
 - .3 Mechanical or electrical equipment, except as required to make minor modifications to allow the work to be completed.

1.2 RELATED REQUIREMENTS

- .1 Section 01 74 21 – Waste Management and Disposal
- .2 Section 09 21 16 – Gypsum Board Assemblies
- .3 Section 09 30 13 – Tiling
- .4 Section 09 51 13 – Acoustical Panel Ceilings
- .5 Section 09 65 00 – Resilient Flooring
- .6 Section 09 68 00 – Carpeting
- .7 Division 20 – Mechanical
- .8 Division 26 – Electrical

1.3 REFERENCES

- .1 American National Standards Institute (ANSI)
 - .1 ANSI A10.8-2011, Safety Requirements for Scaffolding.
- .2 Canadian Federal Legislation
 - .1 Motor Vehicle Safety Act (MVSA), 1995
 - .2 Hazardous Materials Information Review Act, 1985
- .3 Canadian Standards Association (CSA)
 - .1 CSA S350-M1980 (R2003), Code of Practice for Safety in Demolition of Structures.
- .4 National Fire Protection Association (NFPA)
 - .1 NFPA 241-2013, Standard for Safeguarding Construction, Alteration, and Demolition Operations.
- .5 Provincial Legislation
 - .1 Legislation specific to Authority Having Jurisdiction for work governed by this Section

- .6 Definitions
 - .1 Demolish: Detach items from existing construction and legally dispose of them off site, unless indicated to be removed and salvaged or removed and reinstalled.
 - .2 Remove and Salvage: Detach items from existing construction and deliver them to Owner.
 - .3 Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
 - .4 Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-Demolition Meeting: Conduct a pre-demolition meeting at Project site in accordance with requirements listed in Section 01 31 19 – Project Meetings, to confirm extent of salvaged and demolished materials; and to review Contractor's demolition plan prepared by a professional engineer.
- .2 Coordination:
 - .1 Coordinate selective demolition work so that work of this Section adheres to aesthetic criteria established by the Drawings and specified dimensions with all elements in planes as drawn, maintaining their relationships with all other building elements.
 - .2 Coordinate with Owner's building manager and other tenants ongoing site operations and limit the number of interruptions during regular business hours.
 - .3 Coordination with Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
 - .4 Coordination for shutoff, capping, and continuation of utility services.

1.5 ACTION SUBMITTALS / INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Qualification Data: For firms and persons specified below to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses and other information specified.
- .3 Prior to beginning of Work on site submit detailed Waste Reduction Workplan in accordance with Section 01 74 21 - Waste Management and Disposal and indicate:
 - .1 Descriptions of and anticipated quantities in percentages of materials to be salvaged, reused, recycled and landfilled.
 - .2 Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity.
 - .3 Schedule of selective demolition.
 - .4 Number and location of dumpsters.
 - .5 Anticipated frequency of tippage.

- .6 Name and address of haulers, waste facilities, and waste receiving organizations.
- .4 Proposed Dust Control and Noise Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Owner reserves the right to make modifications where proposed methods interfere with the Owner's ongoing operations.
- .5 Follow base building protocols regarding mitigation to reduce vibration and limit excessive noise creation.
- .6 Inventory: Submit a list of items that have been removed and salvaged after selective demolition is complete.
- .7 Pre-demolition Photographs or Videotape: Submit [photographs or videotape indicating existing conditions of adjoining construction and site improvements prior to starting Work. Include finish surfaces that may be misconstrued as damage caused by selective demolition operations.

1.6 QUALITY ASSURANCE

- .1 Regulatory Requirements: Perform work as follows; use most restrictive requirements where differences occur between the municipal, provincial and federal jurisdictions:
 - .1 Provincial and Federal Requirements: Perform work in accordance with governing environmental notification requirements and regulations of the Authority Having Jurisdiction.
 - .2 Municipal Requirements: Perform hauling and disposal operations in accordance with regulations of Authority Having Jurisdiction.
- .2 Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project:
 - .1 Conform to the Workers Compensation Act and the Occupational Health and Safety Regulations under the Act.
 - .2 Conform to City of Toronto bylaws and regulations governing this type of work.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Waste Management and Disposal.
- .2 Except where otherwise specified, all materials indicated or specified to be permanently removed from the Place of the Work shall become Contractor's property. Maximize to the fullest extent possible, salvage, and recycling of such materials, consistent with proper economy and expeditious performance of the Work.
- .3 To reduce the quantity of material otherwise destined for disposal at a landfill, the Contractor is encouraged to consider utilizing the services of businesses and non-profit organizations that specialize in salvage and recycling of used building materials but does so at his own option and risk.

1.8 SITE CONDITIONS

- .1 Visit and examine the site and note all characteristics and irregularities affecting the work of this Section.
- .2 Owner will occupy portions of building immediately adjacent to selective demolition area:
 - .1 Conduct selective demolition so that Owner's operations will not be disrupted.
 - .2 Provide not less than 72 hours notice to Owner of activities that will affect Owner's operations.
- .3 Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities:
 - .1 Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from authorities having jurisdiction.
- .4 Should material resembling spray or trowel applied asbestos or other designated substance listed as hazardous as defined in the Hazardous Product Act be encountered, stop work, take preventative measures, and notify Consultant and Owner immediately.

Part 2 Products

2.1 TEMPORARY SUPPORT STRUCTURES

- .1 Design temporary support structures required for demolition work and underpinning and other foundation supports necessary for the project using a qualified professional engineer registered or licensed in province of the Work.

2.2 DEBRIS

- .1 Make all arrangements for transport and disposal of all demolished materials from the site.

2.3 EQUIPMENT

- .1 Provide all equipment required for safe and proper demolition of the building.

2.4 REPAIR MATERIALS

- .1 Use repair materials identical to existing materials:
 - .1 If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 - .2 Use material whose installed performance equals or surpasses that of existing materials.
 - .3 Comply with material and installation requirements specified in individual Specification Sections.
- .2 Floor Patching and Levelling Compounds: Cement based, trowelable, self-levelling compounds compatible with specified floor finishes. Gypsum based products are not acceptable for work of this Section.

- .3 Concrete Unit Masonry: Lightweight concrete masonry units and mortar, cut and trimmed to fit existing opening to be filled. Provide standard hollow core units, square end units and bond beam units as indicated on drawings.
- .4 Prefinished Sheet Steel: Prefinished sheet steel, colour to match existing radiation cabinets, bent and profiled to match existing radiation cabinets.
- .5 Gypsum Board Patching Compounds: Joint compound to ASTM C475, bedding and finishing types thinned to provide skim coat consistency to patch and prepare existing gypsum board walls ready for new finishes in accordance with Section 09 21 16 – Gypsum Board Assemblies.
- .6 Hoarding and Dust Screens: Refer to Section 01 56 00 –Temporary Barriers and Enclosures for stud framing and gypsum board sheathing materials.

2.5 EXISTING MATERIALS

- .1 Items to be retained for re-use in new construction include, but are not limited to the following:
 - .1 In ceiling components
 - .2 Blinds will be removed by Landlord
 - .3 Confirm with Consultant any materials that appear to be in re-usable condition prior to disposal.
 - .4 Confirm with Consultant any materials scheduled for re-use that are not in re-usable condition prior to installation.

Part 3 Execution

3.1 EXAMINATION

- .1 Inspect building with Consultant and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.
- .2 Locate and protect utilities. Verify that utilities have been disconnected and capped as required.
- .3 Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- .4 Notify the Consultant where existing mechanical, electrical, or structural elements conflict with intended function or design:
 - .1 Investigate and measure the nature and extent of conflict and submit a written report to Consultant.
 - .2 Consultant will issue additional instructions or revise drawings as required to correct conflict.
- .5 Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 PREPARATION

- .1 Identify and mark all equipment and materials identified to be retained by Owner or to be re-used in subsequent construction. Separate and store items to be

- retained in an area away from area of demolition and protect from accidental disposal. Exact location will be determined at time of demolition commencement.
- .2 Post warning signs on electrical lines and equipment that must remain energized to serve other areas during period of demolition.
 - .3 Confirm that all electrical and telephone service lines entering building are not disconnected – Tenant will provide additional instructions as required at time of demolition commencement.
 - .4 Do not disrupt active or energized utilities crossing the demolition site.
 - .5 Provide and maintain barricades, warning signs, protection for workmen and the public during the full extent of the Work. Read drawings carefully to ascertain extent of protection required.
 - .6 Mark all materials required to be re-used, store in a safe place until ready for re-installation.
 - .7 Adjust all junction boxes, receptacles and switch boxes flush with new wall construction where additional layers to existing construction are indicated.
 - .8 Protection of In-Place Conditions
 - .1 Take precautions to guard against damage to adjacent work. Be liable for any damage or injury caused.
 - .2 Cease operations and notify Consultant if safety or any adjacent work appears to be endangered. Do not resume operations until reviewed with Consultant.
 - .3 Ensure safe passage of building occupants around and through area of demolition.
 - .4 Keep noise, dust, and inconvenience to occupants to minimum.
 - .5 Protect building systems, services and equipment.
 - .6 Provide temporary dust screens, covers, railings, supports and other protection as required.
 - .7 Provide and maintain fire prevention equipment and alarms accessible during demolition.
 - .8 Do Work in accordance with Landlord Construction Procedures.
 - .9 Utility Services
 - .1 Coordinate existing services indicated to remain and protect them against damage during selective demolition operations.
 - .2 Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
 - .1 Arrange to shut off affected utilities with utility companies.
 - .2 If utility services are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary utilities that bypass area of selective demolition and that maintain continuity of service to other parts of building.
 - .3 Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

- .4 Cut off pipe or conduit to a minimum of 25 mm below slab, and remove concrete mound.
- .3 Coordinate with mechanical and electrical sections for shutting off, disconnecting, removing, and sealing or capping utilities.
- .4 Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.3 CONCRETE SLAB REINFORCING

- .1 Locate location of reinforcing steel in concrete slabs prior to cutting or coring using non-destructive, nonionizing radio frequency locators.
- .2 Core concrete slabs to avoid reinforcing steel, electrical conduit or water pipes; adjust core location and coordinate with Engineer where slab features interfere with core drilling.
- .3 Notify the Engineer immediately for further instructions where coring or cutting will damage existing slab features.

3.4 SELECTIVE DEMOLITION

- .1 Demolish and dismantle work in a neat and orderly manner and in strict accordance with all regulations.
- .2 At end of each day's work, leave Work in safe condition so that no part is in danger of toppling or falling.
- .3 Demolish in a manner to minimize dusting and to prevent migration of dust.
- .4 Selling or burning of materials on the site is not permitted.
- .5 Remove concrete bases by cutting and chipping, take precautions against slab cracking and degradation. Grind edges smooth, fill and make level with self levelling grout.
- .6 Fill all openings in concrete block walls with concrete masonry units, coursing to match existing, prepare ready to receive new finishes to match existing.
 - .1 Provide bond beams in new openings cut into existing concrete masonry unit walls.
 - .2 Provide finished end masonry units to patch and repair for new jamb sections in existing concrete masonry unit walls.
- .7 Fill all openings in gypsum board walls with gypsum board and steel framing to match existing, skim coat to make wall smooth and even.
- .8 Demolish existing flooring and adhesive remnants as follows:
 - .1 Vacuum existing flooring thoroughly, prior to removal, using vacuum equipped with power head/sweeper.
 - .2 Apply fine mist water spray to floors to minimize dust generation during removal. Avoid spraying near electrical outlets.
 - .3 Demolish existing residual floor finishes, remove and dispose of off-site.
 - .4 Remove adhesive to the greatest extent possible using scrapping tools and as follows:
 - .1 Do not use solvent based cleaners to remove adhesive remnants.

- .2 Lightly shot blast or grind floor using machine designed for purpose to remove adhesive remnants.
- .3 Vacuum floor ready for application of skim coating.
- .4 Repair all slab depressions and damage with cementitious patching compound.
- .5 Skim coat floor with minimum 1 mm thick cementitious floor underlayment compatible with new flooring materials.
- .5 Floor substrate shall be smooth, free from ridges and depressions, and adhesive remnants that could telegraph through flooring materials.
- .9 Demolish existing tile finishes. Remove setting bed or adhesive to the greatest extent possible using mechanical scrapping tools and as follows:
 - .1 Saw cut edge of tile for clean and even transition joint between existing tile to remain and new flooring materials.
 - .2 Lightly shot blast or grind floor to remove remnants of setting materials.
 - .3 Vacuum floor ready for application of skim coating.
 - .4 Repair all slab depressions and damage with cementitious patching compound. Skim coat floor with minimum 1 mm thick cementitious floor underlayment compatible with new flooring materials.
- .10 Demolish ceiling finishes as indicated on drawings.
- .11 Remove all wall coverings scheduled for demolition. Patch and repair wall surfaces with skim coat of gypsum board joint compound leaving wall surfaces smooth and even ready for new wall finishes.
- .12 Patch and repair all walls, floor and ceilings damaged during demolition with material matching adjacent walls, prepare ready for new finishes.
- .13 Patch and repair all mechanical equipment and electrical fixtures damaged or exposed during demolition to match adjacent finished surfaces.

3.5 CORING, DRILLING AND SAW-CUTTING CONCRETE

- .1 Complete an ultrasound/x-ray inspection of affected concrete area before coring. Employ the services of an experienced inspector. Confirm with Owner before coring or drilling, location of reinforcing steel and raceways that may be present.
- .2 Perform inspection work, x-ray, coring, and drilling after normal working hours, unless specified otherwise. Confirm x-ray, coring and drilling times with Owner.
- .3 Wet or dry core drilling and saw-cutting are acceptable. Reduce amount of cooling water used to minimum required and collect water used in suitable containers, or use a suitable vacuum system that will collect water.
- .4 Do not core structural beams or cut conduits or reinforcing steel without written permission from Landlord.

3.6 PATCHING AND REPAIRING

- .1 Floors and Walls:
 - .1 Where walls or partitions that are demolished extend from one finished area into another, patch and repair floor and wall surfaces in the new space.

- .2 Provide a level and smooth surface having uniform finish colour, texture, and appearance.
 - .3 Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform colour and appearance.
 - .4 Patch with durable seams that are as invisible as possible.
 - .5 Provide materials and comply with installation requirements specified in other Sections of these Specifications.
 - .6 Where patching occurs in a painted surface, apply primer and intermediate paint coats over patch and apply final paint coat over entire unbroken surface containing patch. Provide additional coats until patch blends with adjacent surfaces.
 - .7 When requested, test and inspect patched areas after completion to demonstrate integrity of installation.
- .2 Ceilings: Patch, repair, or re-hang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.7 CLEANUP

- .1 Promptly as the Work progresses, and on completion, clean up and remove from the site all rubbish and surplus material. Remove rubbish resulting from demolition work daily.
- .2 Maintain access to exits clean and free of obstruction during removal of debris.
- .3 Keep surrounding and adjoining roads, lanes, sidewalks, municipal rights-of-way clean and free of dirt, soil or debris that may be a hazard to vehicles or persons.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 02 07 50 – Cutting and Patching
- .2 Section 02 41 20 – Selective Demolition
- .3 Section 03 30 00 – Cast-in-Place Concrete
- .4 Section 09 30 13 – Tiling
- .5 Section 09 65 00 – Resilient Flooring
- .6 Structural Drawings / Specifications

1.2 REFERENCES

- .1 American Concrete Institute (ACI):
 - .1 ACI 117-10 (R2015), ACI Manual of Practice: Specifications for Tolerances for Concrete Construction and Materials, (ACI 117-10) and Commentary.
 - .2 ACI 301-16, Specification for Structural Concrete.
 - .3 ACI 302.1R-15, ACI Manual of Practice: Guide for Floor and Slab Construction.
- .2 American Society for Testing and Materials International (ASTM)
 - .1 ASTM D1751-04(2013)e1, Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
 - .2 ASTM D1752-04a(2013), Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction.
- .3 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-25.20-95, Surface Sealer for Floors.
- .4 Canadian Standards Association (CSA)
 - .1 CSA-A23.1- 05/A23.2-14, Concrete Materials and Methods of Concrete Construction/Testing Methods and Standard Practices for Concrete, Includes Update No. 1 (2015).
- .5 International Concrete Repair Institute (ICRI)
 - .1 ICRI 310.2R-2013, Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings and Polymer Overlays and Concrete Repair – Guide Only
- .6 South Coast Air Quality Management District (SCAQMD), California State
 - .1 SCAQMD Rule 1113-16, Architectural Coatings.

1.3 PERFORMANCE REQUIREMENTS

- .1 Product quality and quality of work in accordance with Section 01 11 00 – General Requirements, Common Product Requirements.

- .2 Submit written declaration that components used are compatible and will not adversely affect finished flooring products and their installation adhesives.

1.4 SUBMITTALS

- .1 Submit product data in accordance with Section 01 11 00 – General Requirements, Submittal Procedures.
 - .1 Submit manufacturer's printed product literature, specifications and data sheet for each product specified.
 - .2 Submit WHMIS MSDS Material Safety Data Sheets. WHMIS MSDS acceptable to Labour Canada and Health and Welfare Canada for concrete floor treatment materials. Indicate VOC content.
 - .3 Include application instructions for concrete floor treatments.
- .2 Submit samples in accordance with Section 01 11 00 – General Requirements, Submittal Procedures.
 - .1 Provide manufacturer's printed recommendations for general maintenance, including cleaning instructions and submit a complete list of floor care products that will be required for on-going maintenance.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 11 00 – General Requirements, Waste Management and Disposal.

1.6 ENVIRONMENTAL REQUIREMENTS

- .1 Temporary lighting:
 - .1 Minimum 1200 W light source, placed 2.5 m above floor surface, for each 40 sq m of floor being treated.
- .2 Electrical power:
 - .1 Provide sufficient electrical power to operate equipment normally used during construction.
- .3 Work area:
 - .1 Make the work area water-tight protected against rain and detrimental weather conditions.
- .4 Temperature:
 - .1 Maintain ambient temperature of not less than 10 degree C from 7 days before installation to at least 48 hours after completion of work and maintain relative humidity not higher than 40% during same period.
- .5 Moisture:
 - .1 Ensure concrete substrate is within moisture limits prescribed by flooring manufacturer.
- .6 Safety:
 - .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.

- .7 Ventilation:
 - .1 Arrange for ventilation system to be operated during installation of concrete floor treatment materials by use of approved portable supply and exhaust fans.
 - .2 Ventilate enclosed spaces in accordance with Section 01 11 00 – General Requirements, Temporary Utilities.
 - .3 Provide continuous ventilation during and after coating application.

Part 2 Products

2.1 PERFORMANCE/DESIGN CRITERIA

- .1 F3 Finishing: Floors having a straightedge value of ± 5 mm over 3050 mm with overall F-number of $F_F 30 \times F_L 25$; meeting requirements for CSA A23.1 Class C slab finishing.

2.2 LEVELLING MATERIALS

- .1 Levelling Materials: Refer to Section 09 30 13 – Tiling for minimum floor flatness requirements and levelling materials for large format tiles.
- .2 Underlayment: Cementitious, self-levelling, single component, polymer modified underlayment and manufacturer's low VOC recommended primer, for application thicknesses to a minimum feather edge to 13 mm; acceptable materials as follows:
 - .1 CustomTech TechLevel150, Custom Building Products
 - .2 Eucofloor SL160, by Euclid Chemical.
 - .3 Novoplan 2 Plus, MAPEI Inc.
 - .4 NXT Level, Laticrete
 - .5 Sikafloor Level 125, Sika Canada Ltd.
 - .6 Sure-Flo ST, Gemite.
- .3 Patching and Flash Patching Materials: Cementitious based, polymer modified, fine aggregate, single component, rapid curing, early strength floor patching compounds having high adhesion with manufacturer's recommended primer and surface profile; for application in thicknesses to a minimum of 4 mm to 25 mm, and as follows:
 - .1 Acceptable Materials:
 - .1 GenPatch, Custom Building Products
 - .2 NXT Patch, Laticrete
 - .3 Planitop 18 ES, MAPEI Inc.
 - .4 SD-P, Ardex
 - .5 SikaQuick 1000, Sika
 - .6 Sealtight Meadow-Crete H, W.R. Meadows

2.3 CRACK REPAIR MATERIALS

- .1 Crack repair and filler: two-component, non-shrink, 100% solids, moisture-insensitive, VOC free, and meeting the requirements of ASTM C881.

- .1 Basis-of-Design:
 - .1 Planibond EBA, MAPEI Canada Inc.

2.4 HARDENERS

- .1 Type: 1, Sodium silicate, permanent penetrating sealer and hardener
 - .1 Liquid applied, water based, chemically reactive.
 - .2 Non-toxic, non-flammable, and anti-dusting have low or no VOC.
 - .3 Colour: colourless
 - .4 Acceptable Materials:
 - .1 Ashford Formula, Curecrete
 - .2 Euco Diamond Hard, Euclid Chemical Company
 - .3 Mapecrete Hard SB, Mapei Inc.
 - .4 Seal Hard, L&M Construction Company
 - .5 Sealtight Liqui-Hard, W.R. Meadows
 - .6 Sikafloor 3S, Sika Canada
 - .2 Water: potable.

2.5 SEALING COMPOUNDS

- .1 Surface sealer: to CAN/CGSB25.20, Type 2 water based, clear.
 - .1 Surface sealers manufactured or formulated with aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, hexavalent chromium and their compounds are not acceptable.
 - .2 Surface sealer shall be compatible with the hardener and shall be manufactured by hardener manufacturer.
 - .3 Surface sealer shall have less than 100g/l of VOC in accordance with SCAQMD Rule #1113.

2.6 MIXES

- .1 Mixing, ratios and application in accordance with manufacturers' instructions.

2.7 ACCESSORIES

- .1 Joint Filler Strips:
 - .1 Floor Isolation Joints: ASTM D1751, bituminous impregnated fibreboard, or ASTM D1752, cork or self-expanding cork, 13 mm thick minimum.
 - .2 Edge Joint Filler: ASTM D1751, bituminous impregnated fibreboard, 13 mm thick minimum.
- .2 Control Joint Filler:
 - .1 Two component, epoxy-urethane, load bearing, self-levelling sealant.
 - .1 Acceptable Materials:
 - .1 Euco Qwikjoint UVR, by Euclid Chemical
 - .2 Loadflex, Sika Canada
 - .3 Planiseal Rapid Joint 15, MAPEI Inc.

.4 Rezi-Weld Flex, WR Meadows

Part 3 Execution

3.1 EXAMINATION

- .1 Prepare floor surface in accordance with CSA A23.1.
- .2 Verify that slab surfaces are ready to receive work and elevations are as instructed by manufacturer.

3.2 REPAIRS

- .1 Inspect surfaces for defects immediately after removal of forms. Repair or patch defects within 48 hours of removal of forms with cure repairs same as new concrete with Consultants permission.
- .2 Defective Areas: where patches are allowed, repair and patch areas to match surrounding areas in texture and colour.

3.3 PREPARATION OF EXISTING SLAB

- .1 Rub exposed sharp edges of concrete with carborundum to produce 3 mm radiused edges unless otherwise indicated.
- .2 Saw cut control joints to CSA-A23.1, 24 hours maximum after placing of concrete.
- .3 The tops of all floor slabs, including slabs on grade, are to be brought to an even, level or sloping surface as indicated on the drawings, ready to receive the specified finish.
- .4 Minimum Floor Flatness: Floors having a straightedge value of ± 6 mm over 3050 mm with overall F-number of $F_F 25 \times F_L 20$; Floors having an SWI of 3 mm; similar to CSA A23.1 Class B Slab Finishing.
- .5 Interior floors indicated as exposed concrete are to be finished in accordance with the slab finishing schedule on the structural drawings. For slab areas not noted in the finishing schedule, slabs shall be smooth concrete with steel trowel finish.
- .6 Depress floor slabs where shown and as required for floor finishes.
- .7 Remove any curing agents used during concrete installation a minimum of 28 days prior to installation of flooring materials.
- .8 Use mechanical stripping to remove chlorinated rubber or existing surface coatings.
- .9 Use protective clothing, eye protection, and respiratory equipment during stripping of chlorinated rubber or existing surface coatings.

3.4 FINISHING FORMED SURFACES

- .1 Requirements listed below apply to normal structural concrete; refer to Section 03 30 00 for additional requirements for formed exposed architectural concrete.

- .2 Unspecified Finish: Provide following finishes as applicable when finish of formed surfaces is not specifically indicated:
 - .1 Unexposed Surfaces:
 - .1 Rough form finish for concrete not exposed to view.
 - .2 Exposed Surfaces:
 - .1 Smooth form finish for concrete surfaces exposed to view.
- .3 Rough Form Finish: Leave surfaces with texture imparted by forms; patch tie holes and defects; remove fins longer than 6 mm high.
- .4 Smooth Form Finish: Coordinate as necessary to secure form construction using smooth, hard, uniform surfaces with number of seams kept to a minimum, uniformly spaced in an orderly pattern; patch tie holes and defects; completely remove fins.
- .5 Related Unformed Finish: Strike-off concrete smooth and finish with using texture matching adjacent formed surfaces at tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces; continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces.

3.5 FINISHING FLOORS AND SLABS

- .1 Finish floors and slabs in accordance with CSA A23.1 and ACI 302.1R recommendations for screeding, re-straightening, and finishing operations for concrete surfaces; do not wet concrete surfaces.
- .2 Unspecified: Provide following finishing classes as applicable when finishing requirements for floors is not specifically indicated:
 - .1 Interior Slabs: F3-Finishing Class with a trowelled finish.
- .3 Scratch Finishing:
 - .1 Texture concrete surface that have been screeded and bull-floated or darbied while still plastic.
 - .2 Use stiff brushes, brooms, or rakes to produce a profile amplitude of 6 mm in 1 direction.
 - .3 Apply scratch finishing to surfaces to receive concrete floor toppings and to receive mortar setting beds for bonded cementitious floor finishes.
- .4 Float (Initial) Finishing:
 - .1 Consolidate surface with power driven floats or by hand floating if area is small or inaccessible to power driven floats.
 - .2 Re-straighten, cut down high spots, and fill low spots.
 - .3 Repeat float passes and re-straightening until surface is left with a uniform, smooth, granular texture.
 - .4 Apply float finishing to surfaces indicated and receiving trowel finishing.

- .5 Trowel (Final) Finishing:
 - .1 Commence trowel finishing after all bleed water has disappeared and when the concrete has stiffened sufficiently to prevent the working of excess mortar to the surface.
 - .2 Apply first trowelling and consolidate concrete by hand or power-driven trowel after applying float finishing; continue trowelling passes and restraighen until surface is free of trowel marks and uniform in texture and appearance; repair or smooth any surface defects that would telegraph through applied coatings or floor covering.
 - .3 Apply a trowel finishing to surfaces indicated, exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film finish coating system.
 - .4 Finish surfaces to the tolerances indicated above.

3.6 APPLICATION: GENERAL

- .1 After floor treatment is dry, seal control joints and joints at junction with vertical surfaces with sealant.
- .2 Apply floor treatment in accordance with Sealer manufacturer's written instructions.
- .3 Clean overspray. Clean sealant from adjacent surfaces.
- .4 Cure concrete in accordance with manufacturers recommended procedures.

3.7 APPLICATION: LIQUID APPLIED FLOOR HARDENER

- .1 Apply liquid floor hardener in accordance with manufacturer's written instructions after initial floating.
- .2 Cure concrete in accordance with manufacturer's recommended instructions.
- .3 Apply hardener to horizontal and vertical exposed concrete to remain unfinished.

3.8 PROTECTION

- .1 Protect finished installation in accordance with manufacturer's instructions.

3.9 MAINTENANCE

- .1 Provide training to Owners' representative based on written manufacturers' instructions as indicated in Section 01 11 00 – General Requirements, Closeout Submittals.

END OF SECTION

PART 1 GENERAL

1.1 Summary

- .1 This Section includes requirements regarding the appearance and surface preparation for architecturally exposed priming, and finishing of the following metal items and assemblies:
 - .1 Ornamental metal fabrications
- .2 Architecturally exposed structural steel welds require a higher degree of workmanship and finishing than standard exposed structural steel or metal fabrication components.
- .3 Architecturally exposed structural steel is identified on the Structural and Architectural Drawings as AESS1, AESS2, AESS3 or AESS4 depending on the level of finish identified in this Section; definitions for AESS applies equally to metal fabrications and ornamental metal fabrications.
- .4 Architecturally exposed structural steel specifications and guidelines listed in this Section are based on recommended practices and procedures prepared by the Canadian Institute of Steel Construction ([CISC](#))

1.2 RELATED SECTIONS

- .1 Section 05 05 00 – Common Work Results for Metals: Qualifications, testing and inspection requirements for this Section.
- .2 Section 05 70 00 – Ornamental Fabrications
- .3 Section 09 91 00 – Painting
- .4 Structural Drawings and Specifications

1.3 DEFINITIONS

- .1 Architecturally Exposed Structural Steel: The following finish levels for architecturally exposed structural steel as defined by CISC Code of Standard Practice, Table 1 are required by this specification, and apply to all metal structures and metal fabrications identified:
 - .1 AESS1 Basic Elements: Steel structure requiring enhanced workmanship having surface preparation to SSPC-SP6, sharp edges ground smooth, continuous weld appearance, and using standard structural bolts and with weld spatters removed.
 - .2 AESS2 Feature Elements Viewed at a Distance greater than 6 metres: Steel structure requiring enhanced workmanship as listed above for AESS1 and having fabrication tolerances reduced to ½ of standard, fabrication marks not apparent and with welds uniform and smooth.
 - .3 AESS3 Feature Elements Viewed at Distance 6 metres and less: Steel structure requiring enhanced workmanship as listed above for AESS1 and AESS2 having mill marks removed, butt and plug welds ground smooth and filled, cross sectional abutting surfaces aligned, and joint gap tolerances minimized and all connections welded.
 - .4 AESS4 Showcase Elements: Steel structure requiring enhanced workmanship as listed above for AESS1 through AESS3 having no

seams apparent for HSS members, welds contoured and blended, surfaces filled and sanded glove smooth, and weld show-through minimized.

- .5 AESSC Custom Elements: Steel structure requiring enhanced workmanship as listed above for AESS1 through AESS4 and having [list additional custom finishing requirements.
- .2 Usage Classifications: NAAMM AMP 510 provides four usage classifications for finishing of metal stair and railing systems as follows, and as listed in Section 05 05 19:
 - .1 Architectural Class: NAAMM Architectural Class stairs are intended to serve as an architectural feature and can be located in either an open area or in and enclosed stairway in an institutional or commercial building where appearance and finish are of prime importance.

1.4 REFERENCE STANDARDS

- .1 American Society for Testing and Materials ([ASTM](#)):
 - .1 ASTM A123/A123M-08, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
 - .2 STM A780-01 (2006), Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
 - .3 ASTM B833-06, Standard Specification for Zinc and Zinc Alloy Wire for Thermal Spraying (Metallizing) for the Corrosion Protection of Steel
 - .4 ASTM B943-05, Standard Specification for Zinc and Tin Alloy Wire Used in Thermal Spraying for Electronic Applications
 - .5 ASTM D4417-03, Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel
- .2 Canadian General Standards Board ([CGSB](#)):
 - .1 CAN/CGSB 1.40-97, Anticorrosive Structural Steel Alkyd Primer
 - .2 CAN/CGSB-1.181, Single Component Organic Zinc Rich Primer
 - .3 CAN/CGSB 85.10-99, Protective Coatings for Metals
- .3 Canadian Standards Association ([CSA](#)):
 - .1 CSA W47.1-92 (R1998), Certification of Companies for Welding of Steel Structures
 - .2 CSA W48-01, Filler Metals and Allied Materials for Metal Arc Welding
 - .3 CSA W55.3-1965 (R1998), Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings
 - .4 CSA W59-M1989 (R1998), Welded Steel Construction (Metal Arc Welding)
 - .5 CSA W178.2-1996, Certification of Welding Inspectors
- .4 Canadian Welding Bureau ([CWB Group Industry Services](#)):
 - .1 CWB 113E, 94-1, Weld Quality and Examination Methods Study Guide
- .5 Canadian Institute of Steel Construction ([CISC](#)):

- .1 CISC/CPMA 1-73a 1975, A Quick-Drying One-Coat Primer for Use on Structural Steel
- .2 ISC/CPMA Standard 2-75, A Quick-drying Primer For Use On Structural Steel
- .3 CISC Code of Standard Practice 7th Edition, 2009
- .6 CISC Code of Standard Practice, Appendix 1, Architecturally Exposed Structural Steel (AESS)
- .7 Surface Preparation Guidelines:
 - .1 SSPC-SP 1, Solvent Cleaning
 - .2 SSPC-SP2, Hand Tool Cleaning
 - .3 SSPC-SP3, Power Tool Cleaning
 - .4 SSPC-SP5/NACE No.1, White Metal Blast Cleaning
 - .5 SSPC-SP6/NACE No. 3, Commercial Blast Cleaning
 - .6 SSPC-SP10/NACE No.2, Near White Metal Blast Cleaning
- .8 Application, Inspection and Quality Control Guidelines
 - .1 SSPC-QP 1, Standard Procedure for Evaluating Painting Contractors (Field Application to Complex Industrial Structures)
 - .2 SSPC-QP 2, Standard Procedure for the Qualification of Painting Contractors (Field Removal of Hazardous Coatings from Complex Structures)
- .9 Metallizing Guidelines:
 - .1 SSPC-AB 2, Specification for Cleanliness of Recycled Ferrous Metallic Abrasives
 - .2 SSPC-AB 3, Ferrous Metallic Abrasive
 - .3 SSPC-CS 23.00, Specification for the Application of Thermal Spray Coatings (Metallizing) of Aluminum, Zinc, and Their Alloys and Composites for the Corrosion Protection of Steel
- .10 Master Painter's Institute ([MPI](#)):
 - .1 Architectural Painting Specification Manual
- .11 The National Association of Architectural Metal Manufacturers ([NAAMM](#)):
 - .1 AMP 505-88, Applied Coatings
 - .2 AMP 550-89, Metal Product Outline
 - .3 AMP 555-92, Code of Standard Practice for Architectural Metal Industry, including Miscellaneous Iron

1.5 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-Construction Meetings: Schedule and conduct a pre-installation conference at the project site in accordance with Section 01 31 19 – Project Meetings with Contractor, Subcontractor responsible for fabrication and erection, Subcontractor responsible for finish painting, and the Consultant:

- .1 Agenda for meeting shall include; but not be limited to, verifying project requirements, fabricator's installation instructions and manufacturer's warranty requirements.
- .2 Coordinate with Section 05 05 19 for additional requirements.
- .2 Manufacturer's representative shall also provide frequent inspection visits during the course of work of this Section to assure quality and competence of installation.
- .1 Coordination: Coordinate coating requirements with affected Division 05 Sections with requirements specified for Section 09 91 00; establish responsibilities, pre-coating requirements and site finishing requirements.
 - .1 The use of bulk shop primers and temporary coatings for all exterior and interior architecturally exposed structural steel work will not be permitted unless it forms a part of a painting system specified in Section 09 91 00.
 - .2 Where non-complying primers are used, this section of work shall completely remove deficient primer from surfaces, and prepare and prime surfaces in accordance with the requirements of Section 09 91 00 for painted steel work at no additional cost to the Consultant or Owner.
 - .3 Coordinate compatible shop primer for architecturally exposed structural steel with Section 09 91 00 as follows:
 - .1 This section will be responsible for surface preparation and application of compatible primer systems.
 - .2 Structural steel and metal fabrication fabricator may use painting contractor for application of primer provided that Bid Price is coordinated through Contractor.
 - .3 Metal fabricators will be responsible for applying primer to match shop applied materials at site welds, immediately after completion of welds.
 - .4 Section 09 91 00 will perform minor site touch-up and repair to priming system, and apply finish coats of paint.
 - .5 This method of finishing has been specified to minimize primer and finish coating incompatibility, and to satisfy primer "open-time" limits for proper application of finish coats.
 - .6 The primers specified are intended to form a part of a total system and shall be compatible with and be produced by the same manufacturer as the finish coats.
- .2 Coordinate installation of anchors for AESS members that connect to the work of other trades as follows:
 - .1 Furnish setting drawings, templates, and directions for installing anchors, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry.
 - .2 Deliver such items to the project site in time for installation.
- .3 Indicate anchorage concepts on shop drawings.

1.6 SUBMITTALS

- .1 In addition to submittal items listed in Section 05 05 00, submit in accordance with Section 01 33 00 – Submittals.
- .2 Action Submittals: Provide the following submittals before starting any work of this Section:
 - .1 Submit components and application procedures of the paint system as a single coordinated submittal and indicate compatibility and maximum recoat times for each product.
 - .2 Identify required surface preparation, primer, intermediate coat (if applicable) and finish coat.
 - .3 Coordinate submittal information with finish coat specified in Section 09 91 00.
- .3 Product Data: Submit product data for each type of coating products and primers that will receive subsequent architectural coatings indicating:
 - .1 Submit components and application procedures of the paint system as a single coordinated submittal and indicate compatibility and maximum recoat times for each product.
 - .2 Identify required surface preparation, primer, intermediate coat (if applicable) and finish coat.
 - .3 Coordinate submittal information with finish coat specified in Section 09 91 00.
- .4 Shop Drawings: Submit shop drawings detailing fabrication of AESS components, as follows:
 - .1 Provide erection drawings clearly indicating item assembly, anchoring and integral attachment.
 - .2 Include details that clearly identify requirements listed in for Fabrication and Erection; provide connections for exposed AESS consistent with concepts shown on the architectural or structural drawings.
 - .3 Indicate welds by standard CWB symbols, distinguishing between shop and site welds, and show size, length and type of each weld; identify grinding, finish and profile of welds as defined in this Section.
 - .4 Indicate type, size, finish and length of bolts, distinguishing between shop and site bolts; identify high strength bolted slip critical, direct tensioned shear/bearing connections; indicate which direction bolt heads should be oriented in final assembly.
 - .5 Clearly indicate which surfaces or edges are exposed and class of surface preparation.
 - .6 Indicate special tolerances and erection requirements as noted on the drawings or defined herein.
- .5 Samples: Submit samples indicating welds and finishing techniques prior to starting any architecturally exposed welding and finishing work, as follows:
 - .1 Submit sample of finish frame members indicating AESS4 welds, using same sized section as detailed on drawings.
 - .2 Finish samples with primer listed in for use in this Section.
 - .3 Prepare samples free of tool marks, foundry identification marks, pits and scale and other defects detrimental to finished appearance.
 - .4 Sample will be used by the Consultant to determine acceptability of welds and surface preparation for architecturally exposed structural steel fabrications on site.
 - .5 Consultant may request modifications to the submitted sample; fabricator shall make the changes as indicated until acceptance is obtained from the Consultant.

- .6 Informational Submittals: Provide the following submittals when requested by the Consultant:
- .1 Qualification Statement: Submit qualification data for firms and persons fabricating and erecting AESS demonstrating their capabilities and experience when requested by the Consultant; include lists of completed project names and address, names and addresses of consultants and owners, and other information specified; and photographs showing detail of installed AESS in referenced projects.
 - .2 Certification: Submit SSPC certification listing qualifications of finish coating and metallizing application for finish systems and type of work specified in this Section.

1.7 PROJECT CLOSEOUT SUBMISSIONS

- .1 Maintenance Materials: Provide extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1.8 QUALITY ASSURANCE

- .1 Qualifications: Provide proof of qualifications when requested by Consultant:
- .1 Metallizing Applicator: Use a SSPC-QP 6SM Certified Contractor indicating that they have the technical capabilities and organizational structure necessary to perform the work of this Section.
 - .2 Fabricator: In addition to qualifications specified in Section 05 05 00, engage a firm experienced in fabricating AESS similar to that indicated for this Project with a record of successful in-service performance, as well as sufficient production capacity to fabricate AESS without delaying the Work.
 - .3 Erector: In addition to qualifications listed in Section 05 05 00, engage an experienced erector who has completed AESS work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

1.9 MOCK-UPS

- .1 Construct mock-ups to demonstrate aesthetic effects as well as qualities of materials and execution at least four (4) weeks prior to fabricating AESS using materials indicated for final Work.
- .1 Construct mock-ups of each of the following elements: **Slab edge bent plate, Guardrail, Railing.**
 - .1 Locate mock-ups at fabricator's shop.
 - .2 Mock-ups shall be full size pieces unless the Consultant specifically accepts smaller models representative of the work.
 - .3 Notify the Consultant one week in advance of the dates and times when mock-ups will be available for review.
 - .4 Demonstrate the proposed range of aesthetic effects regarding each element specified or indicated on the drawings.

- .5 Construct mock-up with final finished surface including surface preparation and paint system.
- .6 Obtain Consultant's acceptance of mock-ups before starting fabrication of final units.
- .7 Retain and maintain mock-ups during construction in an undisturbed condition as a standard for judging the completed work.
- .2 Accepted samples in an undisturbed condition at the time of Substantial Performance may become part of the completed work.

1.10 DELIVERY, STORAGE AND HANDLING

- .1 Delivery and Acceptance Requirements: Use special care in handling to prevent twisting or warping of AESS members:
 - .1 Erect pre-painted finish pieces using padded slings or other methods to protect them from damage arising from handling including, but not limited to, the following:
 - .1 Provide padding as required to protect while rigging and aligning member's frames.
 - .2 Weld tabs for temporary bracing and safety cabling only at points concealed from view in the completed structure or where approved by the Consultant during the pre-installation meeting.
 - .3 Submit methods of removing temporary erection devices and finishing, and refinishing pre-painted pieces for review and acceptance by the Consultant prior to erection.
 - .2 Storage and Handling Requirements: Store materials to permit easy access for review and identification; store steel members off ground by using pallets, platforms, or other supports; protect steel members and packaged materials from erosion and deterioration.

1.11 WARRANTY

- .1 Manufacturer Warranty: Submit manufacturer's standard 5 year warranty covering loss of colour, and physical and mechanical properties arising from installation, fabrication or manufacture. Manufacturer's warranty is in addition to; and not a limitation of, other rights contained within the Contract Documents.
- .2 Special warranties specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.
- .3 Special Finish Warranty: Submit a written warranty, signed by manufacturer, covering failure of the factory-applied exterior finish on metal fabrications within the specified warranty period and agreeing to repair finish or replace wall panels that show evidence of finish deterioration. Deterioration of finish includes, but is not limited to, colour fade, chalking, cracking, peeling, and loss of film integrity for a period of 20 years from date of Substantial Performance.

Part 2 Products

2.1 METAL MATERIALS

- .1 Coordinate requirements of this Section with related requirements of referenced Division 5 – Metals technical specification sections.

2.2 SHOP FINISHING; EXPOSED METAL

- .1 Clean and prepare exposed metal surfaces in accordance with coating manufacturer's recommended profile and surface specification requirements; where they are more stringent than the minimums listed in this Section, and for the following environmental exposure classes:
 - .1 Zone 0: Leave uncoated
 - .2 Zone 3: Shop prime using MPI EXT 5.1F High Build Epoxy Primer over minimum SSPC-SP10 ready for site applied high build epoxy and double coat of high build chemical resistant polyurethane coating specified in Section 09 91 00
 - .3 Zone 4: Coordinate with painting specialist for specific surface preparation and coating requirements relating to any special conditions for specific exposed metal assemblies.

2.3 SHOP PRIMING; ARCHITECTURALLY EXPOSED METAL

- .1 Clean and prepare architecturally exposed metal surfaces in accordance with coating manufacturer's recommended profile and surface specification requirements; where they are more stringent than the minimums listed in this Section.
- .2 Exposure Class: Zone 4, as defined above for exposed metal
- .1 Primer and Finish System for bare metal: Non-MPI Coating System, as follows:
 - .1 Surface preparation: Minimum SSPC-SP6 for bare metal for galvanized steel as required by Paint Finish System as follows:
 - .2 Zinc Rich Anticorrosive Primer: Epoxy based, high solids 2 component organic zinc primer, applied to minimum 75 µm dry film thickness; type as recommended by finish coating manufacturer.
 - .3 Siloxane Based Coating System: Acrylic modified polysiloxane, 2 component, isocyanurate-free base and curing agent, providing superior gloss and colour retention, long term impact resistance and flexibility, applied to a minimum 125 µm dry film thickness
 - .4 Colour: Selected by Consultant from manufacturer's standard product range.
 - .1 Gloss Level: G6
 - .2 Edge Treatment: Stripe coat all edges to maintain minimum dry film thickness requirements
 - .3 Acceptable Material:
 - .1 Carboline, Carboxane 2000 System
 - .2 International Protective Coatings, Interfine 979 System

2.4 SHOP COATS

- .1 Zinc Rich Paint: Single component organic zinc anticorrosive primer in accordance with CAN/CGSB-1.181 and as follows:
 - .1 Clean metal to SSPC SP10-Near White Blast Cleaning in accordance with surface preparation requirements and environmental exposure limitations listed in CAN/CGSB-1.181
 - .2 Apply one (1) coat zinc rich paint to all surfaces exposed after assembly to manufacturer's minimum dry film thickness.
 - .3 Apply coating immediately after cleaning
- .2 Isolation Coating: Acid and alkali resistant asphaltic paint to CAN/CGSB-1.108.
- .3 Apply an isolation coating to contact surfaces of following components in contact with cementitious materials and dissimilar metals except stainless steel:
 - .1 Exterior components abutting concrete.
- .4 Use primer as prepared by manufacturer without thinning or adding admixtures. Paint on dry surfaces, free from rust, scale, grease, do not paint when temperature is below 7°C.

2.5 FABRICATION OF ARCHITECTURALLY EXPOSED METAL SURFACES

- .1 Fabricate and assemble of finish frame members in the shop to the greatest extent possible in accordance with CISC requirements for Categories listed for the project and as follows:
 - .1 Detail assemblies to minimize site handling and expedite erection.
 - .2 Fabricate architecturally exposed metal fabrications with exposed surfaces smooth, square and of surface quality consistent with the accepted sample.
 - .3 Use special care in handling and shipping of exposed metal fabrications both before and after shop painting.

2.6 SHOP CONNECTIONS

- .1 Bolted Connections: Make in accordance with Section 05 05 00 and 05 12 00
 - .1 Provide bolt type and finish as specified in this section; align bolt heads as indicated on shop and erection drawings.
- .2 Welded Connections:
 - .1 Comply with requirements specified in Section 05 05 00 and 05 12 00.
 - .2 Make appearance and quality of welds consistent with mock-up.
 - .3 Assemble and weld built-up sections by methods that maintain alignment of members without warp exceeding tolerances of this section.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 EXAMINATION

- .1 Verify that Site conditions are acceptable and are ready to receive work. Verify exposure of metal components, architectural or non-exposed, and finish assemblies as specified.
- .2 Report any discrepancy and potential problem areas to Consultant for direction before commencing finishing operations.

3.3 APPLICATION OF PRIMERS AND COATINGS

- .1 Primer: Spray applied at fabrication shop by this Section, touch-up and recoating by Section 09 91 00, and as follows:
 - .1 Work primer into all corners
 - .2 Touch-up bare or worn areas on site after installation
 - .3 Leave surfaces unpainted as follows:
 - .1 Surfaces that are embedded in concrete or mortar; prime partially embedded members to a depth of 50 mm only.
 - .2 Surfaces that will be site welded.
 - .3 Surfaces that will be high strength bolted with slip critical connections.
- .2 Surfaces that will receive sprayed applied fire resistant material..

3.4 INSTALLATION OF ARCHITECTURALLY EXPOSED METAL FABRICATIONS

- .1 Set exposed metal components accurately in locations and to elevations indicated in accordance with CISC requirements for Category listed for the project and as follows:
- .2 Bolted Connections: Install bolts of specified type and finish in accordance with Section 05 12 00 and as follows:
 - .1 Bolt Head Alignment is indicated on Drawings: Orient bolt heads for each connection as indicated on erection drawings and verify orientation on site.
 - .2 Bolt Head Alignment is not indicated on Drawings; Orient bolt heads for each connection to one side acceptable to the Consultant.
- .3 Welded Connections: Comply with CWB procedures for appearance; refer to Section 05 05 00 for other requirements, and as follows:
 - .1 Assemble and weld built-up sections by methods that will maintain true alignment of axes without warp.
 - .2 Verify that weld sizes, fabrication sequence, and equipment used for exposed metal components will limit distortions to allowable tolerances.

- .3 Obtain Consultant's acceptance for appearance of welds in repaired or site modified work.
 - .4 Make site welded profiles, quality, and finish consistent with mock-ups accepted prior to fabrication.
 - .5 Splice members only where indicated, or where found acceptable by the Consultant.
 - .6 Obtain permission for any torch cutting or site fabrication from the Consultant; finish sections thermally cut during erection to a surface appearance consistent with the mock up.
 - .7 Do not enlarge unfair holes in members by burning or by using drift pins; ream holes that must be enlarged to admit bolts; replace connection plates that are misaligned where holes cannot be aligned with acceptable final appearance.
- .4 Site Quality Control: Perform testing and inspections in accordance with Section 05 05 00 to verify structural requirements for detailed bolt and weld connections.
 - .5 Acceptance of finish frame members Appearance: Consultant will observe of finish frame members in place and determine acceptability based on mock-up and samples; repair, or remove and replace materials not meeting standard of workmanship up at no additional cost to the Owner or Consultant.

3.5 ADJUSTING AND CLEANING

- .1 Site Touch-Up and Repair Shop Primer Finishes:
 - .1 Touch-Up Painting: Cleaning and touch-up painting of bolted connections, and abraded areas of shop paint shall be completed to blend with the adjacent surfaces in accordance with manufacturer's instructions as specified in Section 09 91 00.

3.6 CLEANING

- .1 Remove strippable film coating (if used) as soon as possible after surrounding material has been installed.
- .2 As installation is completed, wash thoroughly using clean water and soap; rinse with clean water.
- .3 Do not use acid solution, steel wool, or other harsh abrasives.
- .4 If stain remains after washing, remove finish and restore in accordance with NAAMM Metal Finishes Manual.

3.7 CLOSEOUT ACTIVITIES

- .1 Remove and replace panels that are damaged and cannot be repaired; coordinate with Contractor for responsibility of repairs not caused by work of this Section. Remove stained or otherwise defective work and replace with material that meets specification requirements
- .2 Touch-up damaged finishes with manufacturer's recommended touch-up paint; touch-up painting will only be permitted where damaged finishes are visible in final installation

3.8 PROTECTION

- .1 Protect installed materials and finish surfaces from damage by other subcontractors for the duration of construction.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 – Submittal Procedures
- .2 Section 06 10 00 – Rough Carpentry
- .3 Section 06 20 00 – Finish Carpentry
- .4 Section 06 40 00 – Architectural Woodwork
- .5 Section 09 21 16 – Gypsum Board Assemblies
- .6 Section 09 91 00 – Painting

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM A53/A53M-12, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 - .2 ASTM A153/A153M-16a, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - .3 ASTM A269/A269M-15a, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
 - .4 ASTM A276/A276M-17, Standard Specification for Stainless Steel Bars and Shapes.
 - .5 ASTM A307-14, Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 PSI Tensile Strength.
 - .6 ASTM A653/A653M-15e1, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .7 ASTM A780/A780M-09(2015), Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
 - .8 ASTM A666-15, Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate and Flat Bar.
 - .9 ASTM B221-14, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - .10 ASTM F593-13ae1, Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
 - .11 ASTM F3125/F3125M-15A, Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions.
- .2 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-G40.20-13/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CAN/CSA-G164-M92 (R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CSA-S16-14, Design of Steel Structures.

- .4 CSA W47.1-09 (R2014), Certification of Companies for Fusion Welding of Steel.
- .5 CSA W48-14, Filler Metals and Allied Materials for Metal Arc Welding.
- .6 CSA W59-13, Welded Steel Construction (Metal Arc Welding), Includes Update No. 1 (2014), Update No. 3 (2015), Update No. 4 (2015).
- .3 National Association of Architectural Metal Manufacturers (NAAMM)
 - .1 NAAMM AMP 555-92, Code of Standard Practice for the Architectural Metal Industry (Including Miscellaneous Iron).
- .4 The Environmental Choice Program
 - .1 CCD-047a-98, Paints, Surface Coatings.
 - .2 CCD-048-98, Surface Coatings - Recycled Water-borne.

1.3 SUBMITTALS

- .1 Submit product data in accordance with Section 01 11 00 – General Requirements, Submittals:
 - .1 Submit manufacturer's printed product literature, specifications and data sheets.
 - .2 Provide two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with WHMIS acceptable to Labour Canada, and Health and Welfare Canada and indicate VOC content for:
 - .1 Finishes, coatings, primers and paints.
- .2 Submit shop drawings in accordance with Section 01 33 00 Submittal Procedures:
 - .1 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.
 - .2 For items where design is delegated to fabricator, provide shop drawings signed and sealed by the professional engineer registered in Province of Work, responsible for the design.

1.4 QUALITY ASSURANCE

- .1 Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties – refer to Section 01 33 00 – Submittal Procedures.
- .2 Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Detail and fabricate metal fabrications in accordance with the NAAMM AMP 555.
- .4 Perform Work to the highest standard of modern shop and field practice, by personnel experienced in this Work. Accurately fit joints and intersecting members in true planes with adequate fastening. Build and erect the Work plumb, true, square, straight, level, accurate to the sizes shown, and free from distortion or defects.

- .5 Fabricator Qualifications: A firm experienced in producing metal fabrications similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- .6 Welding: Qualify procedures and personnel according to the following:
 - .1 Welders shall be qualified by Canadian Welding Bureau for classification of work being performed.
 - .2 The fabricator shall be certified to CSA W47.1, Division 1 or 2.1.
 - .3 Do welding inspection to CSA W178.
 - .4 Resistance welding: to CSA W55.3.
 - .5 Fusion welding: to CSA W59.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Exercise due care in storing, handling and erecting all materials and support all materials properly at all times so that no piece will be bent, twisted or otherwise damage structurally or visibly.
- .2 Correct damaged material and where the Consultant deems damage irreparable, replace the affected items at no additional expense to the Consultant or Owner.
- .3 Apply protective covering to face of all exposed finished metalwork before it leaves shop, covering to remain until item installed.
- .4 Fabricate large assemblies so they can be safely and easily transported and handled to their place of installation.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 11 00 – General Requirements, Waste Management and Disposal.

1.7 JOB CONDITIONS

- .1 Coordinate this Work with the remainder of the Work and exercise the necessary scheduling to ensure that all Work is carried out and all items incorporated during the appropriate construction phase.
- .2 Provide instructions and drawings to other trades for setting bearing plates, anchors bolts, and other members that are built in to work of other trades.
- .3 Protect other Sections of the Work from damage by this Section of the Work.

Part 2 Products

2.1 MATERIALS

- .1 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade 300W.
- .2 Hollow Structural Sections: In accordance with CAN/CSA G40.20/G40.21, Grade 350W, Class C.

- .3 Steel pipe: to ASTM A53/A53M, standard weight (Schedule 40), unless another weight is indicated or required by structural loads, finish as directed by Consultant.
- .4 Welding materials: to CSA W59.
- .5 Welding electrodes: to CSA W48 Series.
- .6 Fasteners: Bolts, nuts, washers, rivets, lock washers, anchor bolts, machine screws, and machine bolts.
 - .1 Unfinished fasteners: In areas not exposed to public, use unfinished bolts conforming to ASTM A307, Grade A, with hexagon heads and nuts. Supply bolts of lengths required to suit the thickness of the material being joined, but not projecting more than 6 mm beyond nut, without the use of washers.
 - .2 Finished fasteners:
 - .1 In areas exposed to public use, bolts, nuts, washers, rivets, lock washers, anchor bolts, machine screws and machine bolts to be hot dip galvanized in accordance with ASTM A153/A153M or CAN/CSA-G164.
 - .2 For joining stainless steel components use stainless steel fasteners of same type.
- .7 Structural bolts: to ASTM F3125.
- .8 Stainless steel fasteners, washers and nuts: to ASTM F593, 18-8 austenitic stainless steel (Grade 8 - B8/B8A), sized as required for purpose intended, or as otherwise indicated. Cold finished: Condition B, cold worked, per ASTM A276.
- .9 Aluminum Extrusions: ASTM B221/B221M, alloy 6063-T6.
- .10 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.

2.2 FABRICATION

- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .2 Use self-tapping shake-proof flat, round, or oval headed screws on items requiring assembly by screws or as indicated.
- .3 Where possible, fit and shop assemble work, ready for erection.
- .4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush. Seal exterior steel fabrications to provide corrosion protection in accordance with CAN-S16.
- .5 Welding is to conform to CSA W59 and the fabricator certified to CSA W47.1. Include for welding inspection in the Contract.
- .6 File or grind all exposed welds smooth and flush. Repair or fill all pits, cracks and holes. Grind and polish all handrails to a smooth, even surface. Smooth all inside corners, returns.
- .7 Insulate when necessary to prevent electrolysis due to metal to metal contact or metal to masonry or concrete contact. Use bituminous paint or other approved method.

- .8 Provide fastenings, including anchor bolts, bolts, lag screws, expansion bolts, straps, brackets, etc. required for the fabrication and erection of work of this Section.

2.3 FINISHES

- .1 Prior to priming steel, prepare all surfaces in conformance with SSPC SP-3 – Power Tool Cleaning for non-exposed locations and SSPC SP-5 – White-metal Blast Cleaning for exposed architectural finished locations. Adjust blast grit to suit primer coat thickness specified in Section 09 91 00 – Painting.
- .2 Hot dip galvanizing: galvanize steel, where indicated, to ASTM A123, minimum zinc coating of 600 g/m². (Severe, unprotected exposures)
- .3 Electrolytic galvanizing: galvanize steel, where indicated, to ASTM A591, minimum zinc coating of 180 g/m². (Non-severe, unprotected exposures)
- .4 Wipe coat galvanizing: galvanize steel, where indicated to CSA G189, minimum zinc coating of 75 g/m². (Non-severe, protected exposures)
- .5 Shop Primers: Provide primers that are compatible with paint systems specified.
- .6 Touch up galvanized surfaces with zinc rich coating, to ASTM A780: DOD-P-21035 zinc rich paint, minimum DFT 8 mils.
- .7 Zinc Rich Paint: Conforming to DOD-P-21035 zinc rich paint.
 - .1 Clean metal to equivalent of commercial sand blast SSPC-SP6, remove sandblast in residue.
 - .2 Apply one coat of zinc rich paint to surfaces exposed after assembly to minimum dry film thickness of 60 µm (2.5 mil). Apply coating immediately after cleaning.
- .8 Isolation Coating: Apply an isolation coating to contact surfaces in contact with cementitious materials, wood materials and dissimilar metals except stainless steel.
- .9 Paint: Prepare the Work and paint in accordance with CAN/CSA-S16, primed ready for site finish as specified in Section 09 91 00 – Painting. Leave surfaces to be welded unpainted.

2.4 ROUGH HARDWARE

- .1 Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes as required. Fabricate items to sizes, shapes, and dimensions required.

2.5 MISCELLANEOUS FABRICATIONS

- .1 Miscellaneous Framing and Supports: Provide steel framing and supports for applications indicated that are not a part of structural steel framework, as required to complete work.

- .2 Fabricate units to sizes, shapes, and profiles indicated and required to receive adjacent other construction retained by framing and supports. Fabricate from structural steel shapes, plates, and steel bars of welded construction using mitred joints for field connection. Cut, drill, and tap units to receive hardware, hangers, and similar items.
- .3 Equip units with integrally welded anchors for casting into concrete or building into masonry. Furnish inserts if units must be installed after concrete is placed.
- .4 Miscellaneous Steel Trim: Provide shapes and sizes indicated for profiles shown. Unless otherwise indicated, fabricate units from structural steel shapes, plates, and steel bars, with continuously welded joints and smooth exposed edges. Use concealed field splices wherever possible. Provide cutouts, fittings, and anchorages as required for coordination for assembly and installation with other work.

Part 3 Execution

3.1 ERECTION

- .1 Install Work in accordance with manufacturer's/fabricator's written instructions and Contract Documents.
- .2 Do welding work in accordance with CSA W59 unless specified otherwise.
- .3 Supply finished items to be built-in to those trades along with instructions for proper installation.
- .4 Apply architectural metal work using hidden mechanical fasteners. Installation shall be by skilled Architectural metal workers experienced in highest quality work.
- .5 Fasteners to draw adjoining sections together in proper, true alignment, and are capable of field adjustment.
- .6 All fasteners, mountings to be non-loosening and installed so that they will be hidden at completion.
- .7 Install all Work to true, straight lines, accurate to profile, all properly aligned.
- .8 Isolate dissimilar metals in a manner approved by the Consultant to prevent electrolytic action or corrosion.
- .9 Install finish hardware supplied under other Sections required for completion of components of this Section.
- .10 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .11 Provide suitable means of anchorage acceptable to Consultant such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
- .12 Make field connections with high tensile bolts to CSA-S16.1 and weld to prevent loosening.
- .13 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.

- .14 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.
- .15 Repair galvanized areas damaged by welding, flame cutting or during handling, transport or erection in accordance with ASTM A780. Touch-up with organic zinc-rich paint to DOD-P-21035 zinc rich paint, minimum DFT 8 mils.

3.2 MISCELLANEOUS ITEMS

- .1 Provide steel angle frame, hanging rods and bracing for supporting bulkheads and shelving.
- .2 Provide bracket backing supports for vanities.
- .3 Supply and install miscellaneous metal items as indicated or specified, or as otherwise required for a complete job, in accordance with the design intent of the project.

3.3 CLEANING

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- .1 This Section includes requirements for supply and installation of ornamental metal fabrications and miscellaneous metals required by related metal sections.

1.2 RELATED SECTIONS

- .1 Section 03 30 00 – Cast-in-Place Concrete
- .2 Section 09 91 00 – Painting

1.3 DEFINITIONS

- .1 Site Dimensions: Actual dimensions measured on site and used by fabricator to construct required assemblies.
- .2 Established Dimensions: Dimensions derived from drawings or that can be reasonably determined from adjacent construction where actual dimensions required by components fabricated in this section are not available; dimensions shall have suitable tolerances so that assemblies can be adjusted on site to fit actual Site dimensions.
- .3 Usage Classifications: NAAMM AMP 510 provides four usage classifications for finishing of metal stair and railing systems as follows, and as listed in Section 05 05 19:
 - .1 Architectural Class: NAAMM Architectural Class stairs are intended to serve as an architectural feature and can be located in either an open area or in an enclosed stairway in an institutional or commercial building where appearance and finish are of prime importance.

1.4 REFERENCE STANDARDS

- .1 Aluminum Association (AA):
 - .1 ABH-21 Aluminum Brazing Handbook
 - .2 ASD-1 Aluminum Standards and Data
 - .3 DAF-45 Designation System for Aluminum Finishes
 - .4 SAA-46 Standards for Anodized Architectural Aluminum
- .2 American Architectural Manufacturers Association (AAMA):
 - .1 AAMA 607.1, Voluntary Guide Specifications and Inspection Methods for Clear Anodic Finishes for Architectural Aluminum
- .3 American National Standards Institute ([ANSI](#)):
 - .1 ANSI A58.1 Minimum Design Loads in Buildings and Other Structures.
 - .2 ANSI A117.1 Accessible and Usable Buildings and Facilities.
- .4 American Society for Testing and Materials ([ASTM](#)):
 - .1 ASTM A167-99(2004), Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - .2 ASTM A269-04, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

- .3 ASTM A276-05a, Standard Specification for Stainless Steel Bars and Shapes.
- .4 ASTM A312/A312M-05a, Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes.
- .5 ASTM A666-03, Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
- .6 ASTM B26/B26M-05, Standard Specification for Aluminum-Alloy Sand Castings.
- .7 ASTM B221-06, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- .8 ASTM B483/B483M-03, Standard Specification for Aluminum and Aluminum-Alloy Drawn Tubes for General Purpose Applications.
- .9 ASTM C595-06, Standard Specification for Blended Hydraulic Cements
- .10 ASTM F593-02e2, Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
- .5 American Iron and Steel Institute (AISI):
 - .1 AISI No. 9002: A Designers' Handbook Series No. 9 002, Welding of Stainless Steel and Other Joining Methods.
- .6 American Welding Society, Inc. (AWS):
 - .1 AWS D1.6, Structural Welding Code - Stainless Steel.
- .7 Canadian Standards Association (CSA):
 - .1 CSA W47.1-03, Certification of Companies for Fusion Welding of Steel.
 - .2 CSA W59-03, Welded Steel Construction (Metal Arc Welding).
 - .3 CSA W55.3-1965 (R2003), Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings.
- .8 The National Association of Architectural Metal Manufacturers (NAAMM):
 - .1 AMP 555-92, Code of Standard Practice for Architectural Metal Industry, including Miscellaneous Iron

1.5 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-Construction Meetings: Schedule and conduct a pre-installation conference at the project site in accordance with Section 01 31 19 – Project Meetings with Contractor, Subcontractor responsible for fabrication and erection, Subcontractor responsible for finish painting, and the Consultant:
 - .1 Agenda for meeting shall include; but not be limited to, verifying project requirements, fabricator's installation instructions and manufacturer's warranty requirements.
 - .2 Coordinate with Section 05 05 19 for additional requirements.

1.6 SUBMITTALS

- .1 In addition to submittal items listed in Section 05 05 00, submit in accordance with Section 01 33 00 – Submittals.

- .2 Action Submittals: Provide the following submittals before starting any work of this Section:
 - .1 Product Data: Submit product data for products used in metal fabrications including; but not limited to, paint products, grout and fasteners.
 - .2 Shop Drawings: Submit detailed shop and erection drawings of each ornamental metal fabrication including plans, elevations, sections, and details of ornamental metal fabrications and their connections and as follows:
 - .1 Show anchorage and accessory items.
 - .2 Submit shop drawings stamped by a structural professional engineer, licensed in the province of the work for load bearing ornamental metal fabrications.
- .3 Informational Submittals: Provide the following submittals when requested by the Consultant:
 - .1 Welding Certificates: Submit copies of welder certificates signed by Contractor certifying that welders are certified and have the necessary experience to complete work specified in this Section.
 - .2 Submit qualification data for ornamental fabrication firm demonstrating their capabilities and experience.
- .4 Submit Samples for Verification: Submit samples of paint and power coat finish colours in accordance with Section 01 33 00 – Submittals; For each type of finish application and in each colour and gloss indicated.
 - .1 Submit duplicate 200 x 300 mm sample panels of each paint clear coating and special finish with specified paint or coating in colours, gloss/sheen and textures required to MPI Architectural Painting Specification Manual standards submitted on following substrate materials:
 - .1 3 mm plate steel for finishes over metal surfaces.
 - .2 Label each sample with Contract number and title, colour name and number, sheen name and gloss values, date, and name of manufacturer.
 - .3 Label each Sample for location and application area.
 - .4 Submit full range colour sample chips to indicate where colour availability is restricted.
- .5 Retain reviewed samples on-site to demonstrate acceptable standard of quality for appropriate on-site surface.

1.7 PROJECT CLOSEOUT SUBMISSIONS

- .1 Maintenance Materials: Provide extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1.8 QUALITY ASSURANCE

- .1 Qualifications: Provide proof of qualifications when requested by Consultant:
 - .1 Fabricator: Use ornamental metal fabricators experienced in successfully producing ornamental metal fabrications similar to those indicated for the

Project, with sufficient production capacity to produce required units without causing delay in the work.

- .2 Powder Coating: Use applicators using appropriate facilities, spray equipment, oven and controlled environment and having experience with similar materials and extent as that required for the project.
- .3 Materials: Use only materials free of lead and asbestos fibres, or other materials deleterious to the environment or public health.

1.9 **MOCK-UPS**

- .1 Construct mock-ups to demonstrate aesthetic effects as well as qualities of materials and execution at least four (4) weeks prior to fabricating AESS using materials indicated for final Work.
 - .1 Construct mock-ups of each of the following elements:
 - .1 Locate mock-ups on site or at fabricator's shop as directed.
 - .2 Mock-ups shall be full size pieces unless the Consultant specifically accepts smaller models representative of the work.
 - .3 Notify the Consultant one week in advance of the dates and times when mock-ups will be available for review.
 - .4 Demonstrate the proposed range of aesthetic effects regarding each element specified or indicated on the drawings.
 - .5 Construct mock-up with final finished surface including surface preparation and paint system.
 - .6 Obtain Consultant's acceptance of mock-ups before starting fabrication of final units.
 - .7 Retain and maintain mock-ups during construction in an undisturbed condition as a standard for judging the completed work.
 - .2 Accepted Mock-ups in an undisturbed condition at the time of Substantial Performance may become part of the completed work.

1.10 **DELIVERY, STORAGE AND HANDLING**

- .1 Delivery and Acceptance Requirements: Deliver materials to the job site in good condition and properly protected against damage to finished surfaces.
- .2 Storage and Handling Requirements: Storage on Site: Store materials in a location and in a manner to avoid damage:
 - .1 Store metal components and materials in a clean, dry location
 - .2 Cover with waterproof paper, tarpaulin or polyethylene sheeting in a manner that will permit circulation of air inside the cover.
 - .3 Keep handling on-site to a minimum
 - .4 Exercise care to avoid damage to finishes of material.

1.11 **SITE CONDITIONS**

- .1 Site Measurements: Verify dimensions by Site measurements before fabrication and indicate measurements on shop drawings where metal fabrications are indicated to fit walls and other construction; coordinate fabrication schedule with construction progress to avoid delaying the Work.

- .2 Established Dimensions: Establish dimensions and proceed with fabricating metal fabrications without Site measurements where Site measurements cannot be made without delaying the Work; coordinate construction to ensure that actual dimensions correspond to established dimensions; allow for trimming and fitting.

Part 2 Products

2.1 STAINLESS STEEL MATERIALS

- .1 Stainless steel: austenitic stainless steel, ASTM/AISI Type 304, No.8 non-directional grain and as follows:
 - .1 Sheet and strip, stretcher levelled: In accordance with ASTM A666 having a nominal thickness of 1.6 mm or as denoted on drawings.
 - .2 Tubing: In accordance with ASTM A269.
 - .3 Angle, bars and shapes: In accordance with ASTM A276.
 - .4 Plate: In accordance with ASTM A666.
 - .5 Fasteners, Washers and Nuts: In accordance with ASTM F593, 18-8 austenitic stainless steel (Grade 8 - B8/B8A), sized as required for purpose intended, or as otherwise indicated. Cold finished: Condition B, cold worked, per ASTM A276.
 - .1 Provide concealed fasteners at locations as noted.
 - .6 Miscellaneous welding materials:
 - .1 Welding materials: to CSA W59.
 - .2 Welding electrodes: to CSA W48 Series.
- .2 Provide mirror reflective finish to components as indicated on drawings.

2.2 BRONZE

- .1 Copper Alloy Castings to ASTM B824
- .2 Aluminum Bronze Castings to ASTM B148
- .3 Aluminum Bronze Rods, Bars, and Shapes to ASTM B150
- .4 Manganese Bronze Castings to ASTM B1776
- .5 Rolled Manganese Bronze and Manganese Bronze Forgings to ASTM B138
- .6 Manganese Bronze Rods, Bars, and Shapes to ASTM B138

2.3 ACCESSORIES

- .1 Concrete Anchors: Stainless Steel Bolts with Hilti HY20 – 114mm embedment. – or accepted alternative.
- .2 Stainless steel flathead fasteners countersunk flush as follows:
 - .1 Accepted materials: McMaster-Carr Fasteners
Website <https://www.mcmaster.com/#standard-flat-head-screws/=168lq5m>

2.4 FABRICATION

- .1 Custom Fabrication: Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements. Work to dimensions indicated or on approved shop drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of each metal fabrication and as follows:
 - .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
 - .2 Shear and punch metals cleanly and accurately; remove burrs.
 - .3 Ease exposed edges to a radius of approximately 0.8 mm; form bent metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
 - .4 Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible; use exposed fasteners of type indicated; or if not indicated, Phillips flat head (countersunk) screws or bolts; locate joints where least conspicuous.
 - .5 Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use.
 - .6 Provide concealed fasteners at locations as noted.
- .2 Shop Assembly: Preassemble items in shop to greatest extent possible to minimize site splicing and assembly; disassemble units only as necessary for shipping and handling limitations; use connections that maintain structural value of joined pieces; clearly mark units for reassembly and coordinated installation and as follows:
 - .1 Cut, reinforce, drill and tap miscellaneous metal work as indicated to receive finish hardware, screws, and similar items.
 - .2 Accurately form connections with exposed faces flush; mitres and joints tight.
 - .3 Fabricate joints that will be exposed to weather in a manner to exclude water, or provide weep holes where water may accumulate.
 - .4 Fasteners: Supply components required for anchorage of fabrications; fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise. Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.
 - .5 Secure assemblies faced with powder-coat finished aluminum panels to substrate framing assemblies to provide an installation free from exposed, visible fasteners. Refer to drawings for installation locations.
 - .6 Secure assemblies faced with mirrored stainless steel panels with self-adhesive tape and concealed fasteners to substrate framing assemblies. Mirrored stainless steel panels installation to be free from exposed, visible fasteners except as denoted. Refer to drawings for installation locations.

2.5 FINISHING

- .1 Metals to receive Powder Coatings:

- .1 Powder Coating: Polyester-urethane thermosetting resin based thermosetting powder coating, weather resistant intended for exterior and interior applications and as follows:
 - .1 Basis-of-Design Materials: refer to Section 05 05 13 – Shop-applied Powder Coatings for Metal.
 - .2 Colour: As indicated
- .2 Allow powder coating to cure sufficiently before moving to site.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 EXAMINATION

- .1 Verify that Site conditions are acceptable and are ready to receive work. Verify exposure of steel components, architectural or non-exposed, and finish assemblies as specified.
- .2 Report any discrepancy and potential problem areas to Consultant for direction before commencing finishing operations.

3.3 PREPARATION

- .1 Supply items required to be cast into concrete, and/or embedded in masonry with setting templates, to appropriate sections, including back plates for installations at steel stud and gypsum board assemblies.
- .2 Metals to receive Powder Coatings:
 - .1 Prepare and clean surfaces to receive powder coatings in accordance with manufacturer's application instructions. Refer to Section 05 05 13 – Shop-applied Powder Coatings for Metal.
 - .2 Apply powder coatings to recommended dry film thicknesses in accordance with manufacturer's application instructions to clean and prepared surfaces. Refer to Section 05 05 13 – Shop-applied Powder Coatings for Metal.
 - .3 Allow powder coating to cure sufficiently before moving to site.
- .3 Dissimilar Metals: Paint bronze, nickel-silver, and aluminum components that come into contact with dissimilar metals with a heavy coat of a proper primer; coat exposed aluminum components that come into contact with cement or lime mortar, with zinc chromate.

3.4 INSTALLATION

- .1 Install material and products in accordance with approved shop drawings, and manufacturer's specifications and guidelines.

- .1 Perform cutting, drilling, and fitting required for installation of miscellaneous metal fabrications; set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
 - .2 Erect work square, plumb, straight, and true, accurately fitted, with tight joints and intersections, and free from distortion or defects detrimental to appearance or performance.
 - .3 Supply and install suitable means of anchorage, such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
 - .4 Exposed fastening devices to match finish and be compatible with material through which they pass.
 - .5 Provide components, together with setting templates, for building by other trades in accordance with shop drawings and schedule.
 - .6 Provide concealed fasteners at locations as noted.
- .2 Install mirrored stainless steel sheet with concealed fasteners.
 - .1 Exposed fasteners will be acceptable at the sill edges of the sheets at or near ground level. Space fasteners at a maximum spacing to minimize the number of fasteners required.
 - .2 Install stainless steel fasteners with countersunk heads flush with the mirror sheet surface.

3.5 CLEANING

- .1 As installation is completed, wash thoroughly using clean water and soap; rinse with clean water.
- .2 Do not use acid solution, steel wool, or other harsh abrasives.
- .3 If stain remains after washing, remove finish and restore in accordance with NAAMM Metal Finishes Manual.

3.6 REPAIR OF DEFECTIVE WORK

- .1 Remove stained or otherwise defective work and replace with material that meets specification requirements

3.7 PROTECTION

- .1 Protect installed materials and finish surfaces from damage by other subcontractors for the duration of construction.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 06 20 00 – Finish Carpentry
- .2 Section 06 40 00 – Architectural Woodwork
- .3 Section 08 14 16 – Flush Wood Doors
- .4 Section 09 21 16 – Gypsum Board Assemblies
- .5 Section 09 91 00 – Painting

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A307-14, Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.
 - .2 ASTM A653/A653M-15e1, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanealed) by the Hot-Dip Process.
 - .3 ASTM C954-15, Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness
 - .4 ASTM D1761-12, Standard Test Methods for Mechanical Fasteners in Wood.
 - .5 ASTM D5456-17, Standard Specification for Evaluation of Structural Composite Lumber Products.
 - .6 ASTM E1333-14, Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates from Wood Products Using a Large Chamber.
 - .7 ASTM F1667-11ae1, Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.
- .2 American Wood Preservers Association (AWPA):
 - .1 AWPA Book of Standards, 2016
- .3 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-51.32-M77, Sheathing, Membrane, Breather Type.
 - .2 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
- .4 Canadian Standards Association (CSA International)
 - .1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
 - .2 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CAN/CSA O80 Series-15, Wood Preservation
 - .4 CSA O112 Series-M1977 (R2006), CSA Standards for Wood Adhesives.
 - .5 CSA O121-17, Douglas Fir Plywood.
 - .6 CSA O141-05 (R2014), Softwood Lumber.

- .7 CSA O151-17, Canadian Softwood Plywood.
- .8 CSA O153-13, Poplar Plywood.
- .9 CAN/CSA-O325-16, Construction Sheathing.
- .5 National Lumber Grading Association (NLGA):
 - .1 NLGA SPS2-2010, Special Products Standards on Machine Stress-Rated Lumber.
 - .2 Standard Grading Rules for Canadian Lumber 2010.
- .6 South Coast Air Quality Management District (SCAQMD), California State (SCAQMD)
 - .1 SCAQMD Rule 1113-16, Architectural Coatings.
 - .2 SCAQMD Rule 1168-05, Adhesive and Sealant Applications.
- .7 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC S102.2-10, Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

1.3 SUBMITTALS

- .1 Submit product data in accordance with Section 01 11 00 – General Requirements, Submittals:
 - .1 Submit manufacturer's printed product literature, specifications and data sheets.
 - .2 Submit MSDS sheets or official manufacturer literature stating no urea-formaldehyde was used in the manufacturing of composite wood.

1.4 QUALITY ASSURANCE

- .1 Lumber shall be graded and stamped by an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood, particleboard, OSB and wood based composite panels in accordance with CSA and ANSI standards.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver wood products bundled or crated to provide adequate protection during transit. Inspect wood products for damage upon delivery and remove and replace damaged materials.
- .2 Store materials a minimum of 150 mm off the ground on blocking. Keep materials under cover and dry. Provide for air circulation within and around stacks and under temporary coverings.
- .3 Protect sheet materials to prevent breaking of corners and damage to surfaces.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 11 00 – General Requirements, Waste Management and Disposal.

Part 2 Products

2.1 PANEL MATERIALS

- .1 Fire Rated Plywood Panels to CSA O325, Class A fire retardant produced under Performance Standard PS-1, certified by the American Plywood Association.
 - .1 Acceptable Materials:
 - .1 Purekor Fire Retardant Plywood.
 - .2 Plywood panels to CSA O325, thickness as indicated on drawings.
 - .3 Interior sheathing shall be ULC labelled fire resistant, provide grade stamp or certification as noted for fire retardant pressure treated lumber.

2.2 MISCELLANEOUS LUMBER

- .1 Provide lumber for support or attachment of other construction, including furring, blocking, nailing strips, ground, rough bucks, cants, curbs, fascia, backing sleepers, and similar members.
- .2 Fabricate miscellaneous lumber from dimension lumber of sizes indicated, and into shapes shown on drawings.
- .3 Moisture Content: 19% maximum for lumber items not specified to receive wood preservative treatment.
- .4 Grade: for dimension lumber sizes provide No. 2 or Standard grade lumber per NLGA. For board-sized lumber, provide sheathing grade, S2S.

2.3 WOOD PRESERVATIVE

- .1 Where lumber or plywood is indicated to be treated, treated in accordance with CAN/CSA O80.9M and AWPA.
- .2 Wood preservatives containing arsenic or chromium are not permitted.
- .3 Fire-Retardant Treatment: to CAN/SCA O80.9M, CAN/CSA O80.20M and CAN/CSA O80.27M, pressure impregnated, and as follows:
 - .1 Flame Spread Classification: FSC 25 maximum.
 - .2 Smoke developed of not more than: 75.
- .4 Complete fabrication of treated items before treatment where possible. If cut after treatment apply field treatment to cut surfaces.
- .5 Wood Preservatives: Maximum allowable VOC limit 350 g/L in accordance with SCAQMD Rule #1113 - Architectural Coatings.

2.4 ACCESSORIES

- .1 Polyethylene film: to CAN/CGSB-51.34, Type 1, 0.15 mm thick.
- .2 Air seal: closed cell polyurethane or polyethylene.
- .3 Sealants: in accordance with Section 07 92 00 – Sealants.
 - .1 Maximum allowable VOC limit 250 g/L in accordance with SCAQMD Rule 1168.
- .4 General purpose adhesive: to CSA O112 Series.

- .1 Maximum allowable VOC limit 70 g/L in accordance with SCAQMD Rule 1168.
- .5 Nails, spikes and staples: to ASTM F1667, hot dipped galvanized for pressure preservative and fire retardant treated materials.
- .6 Rough Hardware (bolts, nuts, washers, etc.): Hot dip galvanized in conformity to CSA G164 or Grade A low carbon steel, conforming to ASTM A307.
- .7 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs as recommended for purpose by manufacturer.

2.5 FASTENER FINISHES

- .1 Galvanizing: to CAN/CSA-G164, use galvanized fasteners for interior highly humid areas, pressure-preservative, fire-retardant, and treated lumber.
- .2 Bolts, lag screws, split rings and shear plates: No. 304 (18-8) stainless steel.

Part 3 Execution

3.1 INSTALLATION

- .1 Comply with requirements of Building Code supplemented by following paragraphs.
- .2 Install members true to line, levels and elevations, square and plumb.
- .3 Construct continuous members from pieces of longest practical length.
- .4 Install spanning members with "crown-edge" up.
- .5 Select exposed framing for appearance. Install materials so that grade-marks and other defacing marks are concealed or are removed by sanding where materials are left exposed.
- .6 Install blocking at locations indicated.
- .7 Install wall sheathing in accordance with manufacturer's printed instructions.
- .8 Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, facings, fascia, electrical equipment mounting boards, and other work as required.
- .9 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.
- .10 Use dust collectors and high quality respirator masks when cutting or sanding wood panels.

3.2 ERECTION

- .1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .2 Countersink bolts where necessary to provide clearance for other work.
- .3 Use nailing disks for soft sheathing as recommended by sheathing manufacturer.

3.3 POWER, TELECOMMUNICATIONS AND DATA PANEL BOARDS

- .1 Install 19 mm fire rated fir plywood boards on all walls in telephone and data rooms receiving wiring and equipment; minimum 1220 mm x 2440 mm panels on periphery walls over 300 mm wide, mounted 150 mm off of finished floor.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 The work of this section includes the supply, fabrication, and delivery to the job site finishing, and installation of site manufactured finish carpentry indicated on the drawings and as specified.
- .2 Finish carpentry work shall include all clear, kiln dried, dressed, or resawn material exposed to view in a finished building interior and exterior, including running and standing trim, wall bases, door frames, panelling, trim and other trim related products.

1.2 RELATED SECTIONS

- .1 Section 05 50 00 – Metal Fabrications
- .2 Section 06 10 00 – Rough Carpentry
- .3 Section 06 40 00 – Architectural Woodwork
- .4 Section 08 14 16 – Flush Wood Doors
- .5 Section 09 91 00 – Painting

1.3 REFERENCES

- .1 American National Standards Institute (ANSI)
 - .1 ANSI A208.2-2009, Medium Density Fibreboard (MDF) for Interior Applications.
 - .2 ANSI/HPVA HP-1-2009, Standard for Hardwood and Decorative Plywood.
- .2 American Society for Testing and Materials International (ASTM)
 - .1 ASTM E1333-14, Standard Test Method for Determining Formaldehyde Concentrations in Air and Emissions Rates from Wood Products Using a Large Chamber.
 - .2 ASTM F1667-17, Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.
- .3 Architectural Woodwork Manufacturers Association of Canada (AWMAC) and Architectural Woodwork Institute (AWI)
 - .1 AWMAC Architectural Woodwork Standards, Edition 2, 2014 and Errata.
- .4 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-11.3-M87, Hardboard.
- .5 Canadian Plywood Association (CanPly)
 - .1 The Plywood Handbook 2005.
- .6 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .2 CSA O121-08(R2013), Douglas Fir Plywood, Includes Update No. 1 (2013).

- .3 CAN/CSA O141-05 (R2014), Softwood Lumber.
- .4 CSA O151-17, Canadian Softwood Plywood.
- .5 CSA O153-13, Poplar Plywood.
- .6 CSA Z760-94 (R2001), Life Cycle Assessment.
- .7 National Hardwood Lumber Association (NHLA)
 - .1 Rules for the Measurement and Inspection of Hardwood and Cypress 2011.
- .8 National Lumber Grades Authority (NLGA)
 - .1 Standard Grading Rules for Canadian Lumber 2007.
- .9 South Coast Air Quality Management District (SCAQMD), California State (SCAQMD)
 - .1 SCAQMD Rule 1113-16, Architectural Coatings.
 - .2 SCAQMD Rule 1168-05, Adhesive and Sealant Applications.
- .10 Underwriters Laboratories of Canada (ULC)
 - .1 CAN4-S104-10, Standard Method for Fire Tests of Door Assemblies.
 - .2 CAN/ULC 105-09, Standard Specification for Fire Door Frames Meeting the Performance Required by CAN/ULC-S104 (CAN/ULC-s105:2016).

1.4 SUBMITTALS

- .1 Submit shop drawings in accordance with Section 01 11 00 – General Requirements, Submittals
 - .1 Indicate details of construction, profiles, jointing, fastening and other related details.
 - .2 Indicate materials, thicknesses, finishes and hardware.
- .2 Submit samples in accordance with Section 01 11 00 – General Requirements, Submittals.
 - .1 Submit samples, 300 mm x 300 mm of each wood species to receive finish, to the Consultant for review.
 - .2 Submit 250 mm long samples of each type of trim, moulding and handrail.
 - .3 Reviewed samples shall become the standard for the work.
- .3 Closeout Submittals:
 - .1 Provide operations and maintenance data in accordance with Section 01 11 00 – General Requirements, Operation and Maintenance Manuals.

1.5 QUALITY ASSURANCE

- .1 Architectural Woodwork Standards (AWS) published by the Architectural Woodwork Manufacturers Association of Canada, together with authorized additions and amendments will be used as a reference standard and shall form part of this project specification. Where differences occur between the drawings and specifications requirements and the AWS, the more restrictive requirement shall prevail.

- .2 Any reference to Custom or Premium grade in this specification shall be as defined in the AWS.
- .3 Any item not given a specific quality grade shall be Premium grade as defined in the AWS.
- .4 A copy of the AWS shall be made readily available for reference purposes on the job site.
- .5 References in this specification to part and item numbers mean those parts and items contained within the AWS.
- .6 Materials and installation shall be in Metric measurements as specified.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 The Architectural Woodwork Manufacturer and the Contractor shall be jointly responsible to make certain that architectural woodwork is not delivered until the building and storage areas are sufficiently dry so that the architectural woodwork will not be damaged by excessive changes in moisture content.
- .2 Architectural woodwork delivery, storage and handling shall be in accordance with Section 2 Care and Storage of the AWS.
- .3 Delivered materials which are damaged in any way or do not comply with these specifications will be rejected by the Consultant and shall be removed from the job site and replaced with acceptable materials.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling in accordance with Section 01 11 00 – General Requirements, Waste Management and Disposal.

1.8 PROJECT CONDITIONS

- .1 Environmental Conditions: Comply with the AWS Section 2 – Care & Storage for optimum temperature and humidity conditions for woodwork during its storage and installation. Do not install woodwork until these conditions have been attained and stabilized.

1.9 COORDINATION

- .1 Coordinate provision of concealed blocking or supports.
- .2 Ensure that back-priming of finish carpentry surfaces concealed after installation, has been performed as specified in Section 09 91 00 – Painting, prior to installation.

Part 2 Products

2.1 LUMBER MATERIAL

- .1 Softwood lumber: S4S, average moisture content of 6% and maximum of 9% for interior work, an average moisture content of 12% and maximum of 15% for exterior work, in accordance with following standards:

- .1 Species: as indicated on Drawings and Section 09 99 00 – Finish Schedule.
- .2 CAN/CSA-O141.
- .3 NLGA Standard Grading Rules for Canadian Lumber.
- .4 AWS premium grade, moisture content as specified.
- .5 Forest Stewardship Council (FSC) certified.
- .2 Hardwood lumber: S4S, average moisture content of 6% and maximum of 9% for interior work, an average moisture content of 12% and maximum of 15% for exterior work, in accordance with following standards:
 - .1 Species: as indicated on Drawings and Section 09 99 00 – Finish Schedule.
 - .2 National Hardwood Lumber Association (NHLA).
 - .3 AWS premium grade, moisture content as specified.
 - .4 Forest Stewardship Council (FSC) certified.

2.2 PANEL MATERIAL

- .1 Hardwood plywood: to CSA O115, of thickness indicated, and maximum size sheets application and as follows:
 - .1 AWS premium grade, for transparent finish.
 - .2 Face Veneer: A Veneer Grade:
 - .1 Minimum 150 mm flitch width.
 - .2 Continuous across face of panel, no end matching allowed.
 - .3 Species: as indicated on Drawings and Section 09 99 00 – Finish Schedule.
 - .4 Cut and Matching: as indicated on Drawings or as directed by Consultant.
 - .5 Minimum veneer thickness, 0.50 mm.
 - .6 Vertical grain direction.
 - .3 Core Construction: Plywood for birch veneer and Medium Density Fibreboard as indicated. Provide exterior waterproof grade plywood veneer core for "wet areas".
 - .4 Back Veneer: #1 Backing Grade.
 - .5 Panel Edge: Blind Edge, matching face veneers, 12 mm wide x thickness of panel, edge glued to side of panel where edge of panel is exposed.
 - .6 Grade stamp, non-exposed, marked on the edge of each panel, indicating cut, species and grade, and manufacturer's name.
- .2 Poplar plywood: to CSA O153, utility interior moisture resistant type.
 - .1 Urea-formaldehyde free.
- .3 Medium density fibreboard (MDF): Meeting ASTM D1037 and ANSI A208.2, Premium Grade for interior use, minimum 750 kg/m³ density; formaldehyde emissions shall be 0.30 ppm or less per 0.424m²/m³ of room value.
 - .1 Urea-formaldehyde free.
 - .2 Acceptable Materials for high moisture areas:

- .1 Medex MDF, Roseburg
- .2 Flakeboard Premier Plus Moisture Resistant MDF, Flakeboard
- .3 Acceptable Materials for standard applications:
 - .1 Medite II MDF, Roseburg
 - .2 Flakeboard Premier MDF, Flakeboard.
- .4 Acceptable Materials for fire resistant core:
 - .1 Medite MDF FR, Roseburg
 - .2 Flakeboard Premier MDF FR, Flakeboard.

2.3 ACCESSORIES

- .1 Fasteners: to suit size and nature of components being fastened.
- .2 Nails and staples: to ASTM F1667; galvanized to CAN/CSA G164 for interior humid areas and for treated lumber; plain finish elsewhere.
- .3 Wood screws: stainless steel, type and size to suit application.
- .4 Splines: wood.
- .5 Adhesive: recommended by manufacturer.
 - .1 Adhesives: maximum VOC limit 30 g/L in accordance with SCAQMD Rule 1168 - Adhesives and Sealants Applications.

2.4 SITE FABRICATION

- .1 Fabricate items rigid, plumb and square, as detailed, with tight, bevelled, hairline joints. Sand work smooth, set all nails and screws.
- .2 Countersink bolts and washers, fill holes with matching wood plugs.
- .3 Fabricate handrails to provide butt and dowel joints; confirm with Consultant prior to installation.

Part 3 Execution

3.1 EXAMINATION

- .1 Contractor, Owner, and Consultant to visit site at 80% completion and note state of Work and finishes in the various areas in which cabinet and millwork to be installed.
- .2 Ensure surfaces are ready to receive Work. All surfaces of other Work to be finished and painted before being built-over or covered in any way or millwork installed.

3.2 INSTALLATION

- .1 Do finish carpentry to Quality Standards of the AWS, except where specified otherwise.
- .2 Scribe and cut as required to fit abutting walls, and surfaces, to fit properly into recesses and to accommodate intersecting or penetrating objects; secure materials and components in place, rigid, plumb and square, with tight, hairline

joints to locations indicated on Drawings and in accordance with AWS, and as follows:

- .1 Form joints to conceal shrinkage
- .2 Set finishing nails to receive filler
- .3 Countersink screws in round cleanly cut hole and plug with wood plug matching material being secured
- .4 Match wood pieces end to end for consistent colour and grain appearance; space and centre joints evenly in runs.

3.3 CONSTRUCTION

- .1 Fastening:
 - .1 Position items of finished carpentry work accurately, level, plumb, true and fasten or anchor securely.
 - .2 Design and select fasteners to suit size and nature of components being joined. Use proprietary devices as recommended by manufacturer.
 - .3 Set finishing nails to receive filler. Where screws are used to secure members, countersink screw in round smooth cut hole and plug with wood plug to match material being secured.
 - .4 Replace items of finish carpentry with damage to wood surfaces including hammer and other bruises.
- .2 Standing and running trim:
 - .1 Butt and cope internal joints of baseboards to make snug, tight, joint. Cut right angle joints of casing and base with mitred joints.
 - .2 Fit backs of baseboards and casing snugly to wall surfaces to eliminate cracks at junction of base and casing with walls.
 - .3 Make joints in baseboard, where necessary using a 45 degrees scarf type joint.
 - .4 Install door and window trim in single lengths without splicing.
- .3 Frames:
 - .1 Set frames with plumb sides, level heads and sills, and secure.
- .4 Panelling:
 - .1 Secure panelling and perimeter trim using adhesive recommended for purpose by manufacturer. Fill nail holes caused by temporary fixing with filler matching wood in colour.
 - .2 Secure panelling and perimeter trim using concealed fasteners.
 - .3 Secure panelling and perimeter trim using counter sunk screws plugged with matching wood plugs.
- .5 Stairs:
 - .1 Install stairs to location and details as indicated.

- .6 Handrails:
 - .1 Install handrails as indicated, anchoring securely with proper hardware.
 - .2 Secure using counter sunk screws plugged with matching wood plugs.
 - .3 Make joints hair line, dowelled and glued.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 The work of this section includes the supply installation of shop manufactured architectural woodwork.
- .2 Cabinet hardware to be supplied by this section.

1.2 RELATED SECTIONS

- .1 Section 05 50 00 – Metal Fabrications
- .2 Section 06 10 00 – Rough Carpentry
- .3 Section 06 20 00 – Finish Carpentry
- .4 Section 08 14 16 – Wood Doors
- .5 Section 09 21 16 – Gypsum Board Assemblies
- .6 Section 09 91 00 – Painting
- .7 Division 22 Mechanical: Sinks in countertops
- .8 Division 26 Electrical

1.3 REFERENCES

- .1 American National Standards Institute (ANSI)
 - .1 ANSI/NPA A208.1-2009, Particleboard.
 - .2 ANSI A208.2-2009, Medium Density Fiberboard (MDF) for Interior Applications.
 - .3 ANSI/HPVA HP-1-2009, Standard for Hardwood and Decorative Plywood.
- .2 American Society for Testing and Materials International (ASTM)
 - .1 ASTM D2555–16, Standard Practice for Establishing Clear Wood Strength Values.
 - .2 ASTM D2559–12ae1, Standard Specification for Adhesives for Bonded Structural Wood Products for Use Under Exterior Exposure Conditions.
 - .3 ASTM D2832-92(2016), Standard Guide for Determining Volatile and Nonvolatile Content of Paint and Related Coatings.
 - .4 ASTM D3930–08(2015), Standard Specification for Adhesives for Wood-Based Materials for Construction of Manufactured Homes.
 - .5 ASTM D4300-01(2013), Standard Test Methods for Ability of Adhesive Films to Support or Resist the Growth of Fungi.
 - .6 ASTM D5116-10, Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products.
 - .7 ASTM E1333-14, Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates from Wood Products Using a Large Chamber.
- .3 Architectural Woodwork Manufacturers Association of Canada (AWMAC) and Architectural Woodwork Institute (AWI)
 - .1 AWMAC Architectural Woodwork Standards, Edition 2, 2014 and Errata.

- .4 Canadian Standards Association (CSA International)
 - .1 CSA B111-74(R2003), Wire Nails, Spikes and Staples.
 - .2 CSA O112.9-10(R2014), Evaluation of Adhesives for Structural Wood Products (Exterior Exposure), Includes Update No. 1 (2011).
 - .3 CSA O112.10-08 (R2013), Evaluation of Adhesives for Structural Wood Products (Limited Moisture Exposure), Includes Update No. 1 (2010), Update No. 2 (2010).
 - .4 CSA O121-08 (R2013), Douglas Fir Plywood, Includes Update No. 1 (2013).
 - .5 CSA O141-05 (R2014), Softwood Lumber.
 - .6 CSA O151-17, Canadian Softwood Plywood.
 - .7 CSA O153-13, Poplar Plywood.
- .5 International Organization for Standardization (ISO)
 - .1 ISO 14040:2006, Environmental Management-Life Cycle Assessment - Principles and Framework.
 - .2 ISO 14041:1998, Environmental Management-Life Cycle Assessment - Goal and Scope Definition and Inventory Analysis.
- .6 National Electrical Manufacturers Association (NEMA)
 - .1 ANSI/NEMA LD-3-2005, High-Pressure Decorative Laminates (HPDL),
- .7 National Hardwood Lumber Association (NHLA)
 - .1 Rules for the Measurement and Inspection of Hardwood and Cypress 2011.
- .8 National Lumber Grades Authority (NLGA)
 - .1 Standard Grading Rules for Canadian Lumber 2014.
- .9 South Coast Air Quality Management District (SCAQMD), California State (SCAQMD)
 - .1 SCAQMD Rule 1113-16, Architectural Coatings.
 - .2 SCAQMD Rule 1168-05, Adhesive and Sealant Applications.

1.4 SUBMITTALS

- .1 Submit shop drawings in accordance with Section 01 11 00 – General Requirements, Submittals.
 - .1 Show location of each item, dimensioned plans and elevations, large scale details, attachment devices, and other components.
 - .2 Show details of construction, profiles, jointing, fastening and other related details.
 - .3 Show materials, thicknesses, finishes and hardware.
 - .4 Show locations and sizes of cut-outs and holes for plumbing fixtures and other items installed in architectural woodwork.
- .2 Submit samples in accordance with Section 01 11 00 – General Requirements, Submittals.

- .1 Submit two (2) finished samples, 610 mm x 610 mm of each finish to be applied at the factory, to the Consultant for approval. Where materials are being matched, verify that specified materials match existing prior to submitting samples.
- .2 Alternative cabinet hardware from that specified shall be submitted to the Consultant for approval.
- .3 Reviewed samples shall become the standard for the work.
- .3 Closeout Submittals:
 - .1 Project Record Sheet: Submit to the Consultant two (2) copies of the project record sheet identifying the project title and address, Owner, Consultant, and Architectural Woodwork Subcontractor. Indicate also materials and finishes used for architectural woodwork and whether shop finished or site finished and by whom. Include type and source of all cabinet hardware and any special items used under architectural woodwork.
 - .2 Submit in accordance with Section 01 11 00 – General Requirements, Operations and Maintenance Manuals.

1.5 QUALITY ASSURANCE

- .1 Architectural Woodwork Standards (AWS) and Errata shall be used to establish the minimum level of quality for this project.
- .2 Execute the work of this Section by a member of AWMAC with five years' experience in work of comparable complexity and scope.
- .3 Any reference to Custom or Premium grade in this specification shall be as defined in the AWS.
- .4 Any item not given a specific quality grade shall be Premium grade as defined in the AWS.
- .5 A copy of the AWS shall be made readily available for reference purposes on the job site.
- .6 References in this specification to part and item numbers mean those parts and items contained within the AWS.
- .7 Perform the Work in accordance with the definition of 'Good Workmanship' as defined in the AWS.
- .8 Remove and replace finish carpentry Work which does not conform to the AWS.
- .9 Materials and installation shall be in metric measurements.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store, and handle materials in accordance with the AWS. Control the temperature and humidity in accordance with AWS recommendations, before, during, and after delivery, during storage, and during and after installation as required.
- .2 Provide protective coverings of suitable material for plastic laminate items, taking special precautions to protect corners.
- .3 Do not permit delivery of millwork to the site until the area is sufficiently dry so that woodwork shall not be damaged by excessive changes in ambient humidity

1.7 PROJECT CONDITIONS

- .1 Comply with the AWS requirements for care and storage for optimum temperature and humidity conditions. Maintain a minimum 430 lx (40 f.c.) illumination on surfaces and areas where work is being installed.
- .2 Where work is indicated to be fitted to other construction, check dimensions of other construction by field measurement before fabrication; show recorded field measurements on final Shop Drawings. Coordinate fabrication schedule with construction schedule and progress to avoid delay of Work.
- .3 Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with fabrication without field measurements. Coordinate other construction to ensure that actual dimensions correspond to guaranteed dimensions.

1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling in accordance with Section 01 11 00 – General Requirements, Waste Management and Disposal.

1.9 WARRANTY

- .1 Provide manufacturer's standard 10 year warranty for solid surfacing against defects in materials and workmanship; including material and labour to repair or replace defective materials.

Part 2 Products

2.1 MATERIALS

- .1 Use clean stock only and comply with AWS for quality grades specified.
- .2 Panel Materials: Provide panel materials meeting requirements for moisture content and grades in accordance with AWS requirements and as specified below. Panel products must be manufactured with no added urea-formaldehyde.
- .3 Softwood Plywood: Meeting CSA O121 or CSA O151, cross-banded, sanded G2S, thickness as indicated.
- .4 Poplar plywood: to CSA O153, utility interior moisture resistant type.
- .5 Hardwood plywood: to CSA O115, of thickness indicated, maximum size sheets application, and as follows:
 - .1 AWS premium grade, for transparent finish.
 - .2 Face Veneer: A Veneer Grade:
 - .1 Minimum 150 mm flitch width.
 - .2 Continuous across face of panel, no end matching allowed.
 - .3 Species: as indicated in Section 09 99 00 – Finish Schedule and on Drawings.
 - .4 Cut and Matching: confirm with Consultant.
 - .5 Minimum veneer thickness, 0.50 mm.
 - .6 Vertical grain direction.

- .3 Core Construction: Veneer or Medium Density Fibreboard as indicated. Provide exterior waterproof grade plywood veneer core in wet areas.
- .4 Back Veneer: #1 Backing Grade.
- .5 Panel Edge: Blind Edge, matching face veneers, hardwood 12 mm wide x thickness of panel, edge glued to side of panel where edge of panel is exposed.
- .6 Grade stamp, non-exposed, marked on the edge of each panel, indicating cut, species and grade, and manufacturer's name.
- .6 Medium Density Fibreboard (MDF): Meeting ASTM D1037 and ANSI A208.2, Premium Grade for interior use, minimum 750 kg/m³ density; formaldehyde emissions shall be 0.30 ppm or less per 0.424m²/m³ of room value.
 - .1 Urea-formaldehyde free.
 - .2 Acceptable Materials for high moisture areas (e.g., bathrooms):
 - .1 Medex MDF, Roseburg
 - .2 Flakeboard Premier Plus Moisture Resistant MDF, Flakeboard
 - .3 Acceptable Materials for standard applications:
 - .1 Medite II MDF, Roseburg
 - .2 Flakeboard Premier MDF, Flakeboard.
 - .4 Acceptable Materials for fire resistant core:
 - .1 Medite MDF FR, Roseburg
 - .2 Flakeboard Premier MDF FR, Flakeboard.
- .7 Particleboard: to ANSI A208.1, Grade M-2 or better, minimum 720 kg/m³ density and Grade M-3, minimum 750 kg/m³ particleboard for countertops and shelves; clearly mark panels with grade mark in visible location; extruded particleboard having loose cores with voids will not be permitted; having no added urea formaldehyde.
 - .1 Acceptable Materials:
 - .1 Vesta Particleboard, Flakeboard.
 - .2 Purekor Platinum Particleboard, Panel Source International.
 - .3 Encore SDF Sustainable Particleboard, SierraPine Ltd.
- .8 Lumber:
 - .1 Softwood: to CAN/CSA O141, kiln dried to maximum moisture content of 12%, dressed 4 sides.
 - .2 Hardwood: to Canadian Hardwood Lumber Association, selected to meet AWS premium grade, species and finish as indicated on Drawings or as directed by Consultant.
- .9 High Pressure Decorative Laminate (PL): to ANSI/NEMA LD3; Grades and application in accordance with applicable AWS requirements and as follows:
 - .1 Constructed of multiple layers of phenolic resin-saturated kraft paper in combination with a layer of decorative melamine-saturated paper, all fused together under heat and pressure.
 - .2 Horizontal General Purpose Grade (HGS): thickness of 1.2 mm ±0.12 mm, used on the following:
 - .1 Horizontal surfaces, unless specified otherwise.

- .3 Vertical General Purpose Grade (VGS): thickness of 0.7 mm \pm 0.10 mm, used on the following:
 - .1 Vertical surfaces, unless specified otherwise.
 - .2 Exposed portions of case bodies, including ends, divisions and bottoms.
 - .3 Exposed shelves.
 - .4 Casework Doors: exposed and semi-exposed surfaces.
 - .5 Drawer Faces: exposed and semi-exposed surfaces.
- .4 Liner Grade (CLS): thickness of 0.5 mm \pm 0.10 mm, used on the following:
 - .1 Semi-exposed shelves.
 - .2 Interior portions of case bodies.
 - .3 All surfaces of drawer boxes.
- .5 Laminate backer grade (BKL): thickness of 0.5 mm \pm 0.10 mm, used on the following:
 - .1 Concealed surface of casework backs.
 - .2 Concealed surfaces, unless specified otherwise.
- .6 Colour basis of design: as indicated in Section 09 99 00 – Finish Schedule
- .7 Acceptable Materials:
 - .1 Arborite
 - .2 Formica
 - .3 Lamin-Art
 - .4 Nevamar
 - .5 Pionite
 - .6 Wilsonart
- .10 Low Pressure Decorative Laminate: to ANSI/NEMA LD3, in accordance with applicable AWS requirements, and as follows:
 - .1 Melamine impregnated papers thermally fused under pressure.
 - .2 Thickness: 0.5 mm minimum.
 - .3 Wear Resistance: 400 cycles minimum.
 - .4 Colours: white
- .11 Solid-Surfacing Material: Homogeneous solid sheets of filled plastic resin complying with material and performance requirements in ANSI Z124.3, for Type 5 or Type 6, without a precoat finish:
 - .1 Colour basis of design: as indicated in Section 09 99 00 – Finish Schedule.
 - .2 Acceptable Materials:
 - .1 Avonite, Avonite, Inc.
 - .2 Corian, Dupont Polymers.
 - .3 Surell, Formica Corporation.
 - .4 Gibraltar, Wilsonart International.
 - .5 Cambria

- .12 Quartz Surface: Homogeneous mixture containing 93% pure 7% resin binders and pigments.
 - .1 Colour basis of design: as indicated in Section 09 99 00 – Finish Schedule.
 - .2 Acceptable Materials:
 - .1 Caesarstone.
 - .2 Zodiaq, by DuPont.
 - .3 Silestone, by Cosentino.
 - .4 Cambria.
- .13 Edging:
 - .1 All edges of door and drawer panels shall be finished the same as face and back (6 sides finished).
 - .2 Edge type shall conform to AWS requirements.
 - .3 High Pressure Decorative Laminate Edging:
 - .1 Horizontal General Purpose Grade (HGS): thickness of 1.2 mm ± 0.12 mm, colour and finish to match surface finish.
 - .2 Post-forming (VGP): maximum thickness of 1mm, colour and finish to match surface finish.
- .14 Adhesive:
 - .1 Decorative laminate: polyvinyl acetate or aliphatic resin in accordance with manufacturer's recommendation for curing under pressure for bonding to wood cores, water resistant type.
 - .2 Quartz Mounting Adhesive: Provide structural grade '50 year' silicone or epoxy adhesive.
 - .1 Acceptable silicone manufactures:
 - .1 Dow Corning.
 - .2 GE Sealants.
 - .2 Acceptable epoxy manufactures:
 - .1 Cambria Two Part Acrylic Adhesive.
 - .2 Akemi North America.
 - .3 Bonstone Material Corporation.
 - .4 Tenax USA.
 - .3 Quartz Surface Adhesive:
 - .1 Provide epoxy or polyester adhesive of a type recommended by manufacturer for application and conditions of use.
 - .2 Adhesive which will be visible in finished work shall be tinted to match quartz Surface.
- .15 Sealant: in accordance with Section 07 92 00 – Sealants.

2.2 CABINET WORK

- .1 Work shall conform to applicable AWS requirements.
- .2 HPDL edge banding shall be applied to all four edges.

- .3 Door and Drawer Bumpers: Self-adhesive type approximately 6 mm diameter clear silicone bumpers for all cabinet work doors and drawer faces, two per door and drawer, placed at door top and bottom and drawer top.

2.3 CABINET FABRICATION

.1 General

- .1 Flush overlay cabinet doors and drawer fronts as detailed.
- .2 Fabricate gables and edges meeting walls oversize to allow for scribing to fit on site.
- .3 Use non-telegraphing grain plywood when laminate is the specified finish.
- .4 Assemble Work with flush butt hairline corners and joints. Cut-outs for services to be done on site during installation. No hairline cracks will be allowed in the face area of cabinet work modules unless approved in writing by Consultant.
- .5 Carefully fit, cope or mitre and well glue-up Joints. There shall be no end wood visible on finished surfaces.
- .6 Set nail heads in finished surfaces. Countersink screws and bolts, except those detailed to be exposed, and fill holes with edge grain wood plugs to match colour and grain.
- .7 Ensure adjacent part of continuous work match in colour and pattern.

.2 Construction

- .1 Minimum core thicknesses as follows:
 - .1 Drawer bottoms, particleboard, 19 mm;
 - .2 Drawer sides and backs, particleboard, 19 mm;
 - .3 Drawer fronts, particleboard, 19 mm;
 - .4 Doors, particleboard, 19 mm;
 - .5 Lower case backs against walls, particleboard, 10 mm;
 - .6 Upper case backs against walls, particleboard, 10 mm;
 - .7 Shelves, fixed and adjustable, particleboard, 19 mm;
 - .8 Counter top cores, Plywood with non-telegraphing grain, 19 mm with 38 mm edge, for wet areas, use marine grade plywood full cabinet section width, and ensure that all cut-outs are sealed prior to installation of sinks, primer is not considered to be an appropriate sealer;
 - .9 Backsplashes at all locations: Poplar Veneer Plywood, 19 mm; use marine grade plywood at wet areas,
 - .10 All other work Poplar Veneer Plywood, 19 mm.
- .2 Glue, dowel, mortise, lock joint or dado all cabinet work and cabinet work. Do not use staples. Nailing and screws are acceptable. Do not surface nail or screw through countertops.
- .3 Blocking, framing, web frames to be solid lumber.
- .4 Provide solid wood edge strips in all doors and cases to receive hardware. Rebate and pressure glue to core.
- .5 Cut and adapt all Work to receive hardware.

- .1 Drill and prepare end gables for insert type shelf standards on gables.
- .2 Install all finishing hardware and fittings in shop.
- .3 Fittings which may be susceptible to damage during shipping and installation may be installed after millwork installed on site.

2.4 CABINET HARDWARE

- .1 Provide the following cabinet hardware, in quantity required, complete with all screws, bolts, washers for complete installation.
- .2 Non-Exposed Fasteners: fabricators choice consistent with quality level specified.
- .3 Exposed Fasteners: Architectural appearance, material, finish and fastener tool type as selected by Consultant; coordinate sample submittals before ordering materials.
- .4 Draw Bolt Fasteners: Mitre butt joint fastener, adjustable and requiring no special tools for installation, galvanized.
 - .1 Acceptable Materials:
 - .1 K&V 516 by Knape & Vogt Canada.
 - .2 BP5162G by Richelieu
- .5 Spacers: Rigid PVC to size and profile indicated.
- .6 Access Panel Connectors
 - .1 Acceptable Materials:
 - .1 Richelieu Type JCB-A0101C complete with Tee-Nut 261.12.
- .7 Grommets for electrical cords through counter tops, as indicated on drawings.
 - .1 Acceptable Materials:
 - .1 Richelieu 600910140, 70 mm Ø, chrome.
 - .2 Richelieu 76090, 64 mm Ø, black.
- .8 Pulls: Typical drawers and doors:
 - .1 Basis-of-Design: as directed by Consultant
- .9 Drawer Slides: Following list of drawer slides is provided to indicate general conformance requirements only; follow hardware schedule, and notify the Consultant where drawer width, height or intended use differs from that indicated in the general description and the requirements of the manufacturer:
 - .1 Light duty drawer slides: 34 kg capacity, $\frac{3}{4}$ extension:
 - .1 Acceptable materials:
 - .1 Accuride 2132
 - .2 Dynaslide 3611
 - .3 Hettich Canada LP KA3432
 - .4 Knape and Vogt 8350
 - .2 Medium duty drawer slides and high height drawers (≥ 150 mm, ≤ 305 mm): 45 kg capacity, full extension, soft-closing type, and as follows:
 - .1 Acceptable materials:

- .1 Accuride 3834
- .2 Hettich Canada LP KA5632
- .3 Knape & Vogt 8400
- .3 Heavy duty drawer slides: 68 kg capacity, full extension:
 - .1 Acceptable materials:
 - .1 Accuride 4032
 - .2 Hettich Canada LP KA555
 - .3 Knape and Vogt 8500
 - .4 Lateral file drawers, 91 kg capacity, over-travel extension:
 - .1 Acceptable materials:
 - .1 Accuride 3640
 - .2 Hettich Canada LP KA 4620
 - .3 Knape and Vogt 8805
- .10 Hinges:
 - .1 Typical Cabinet Doors: Concealed, euro-style hinge with cover caps; fully adjustable for overlay, depth, height and closing force; opening angle of 110°; self-closing feature; nickel plated steel construction; overlay and half overlay mounting, size and profile to suit cabinet construction:
 - .1 Acceptable materials:
 - .1 Julius Blum Canada Ltd., Modul and Expando Series
 - .2 Hettich Canada LP, Intermat Soft 9943 Series
 - .3 Häfele America Co., H-Series
- .11 Locks:
 - .1 Typical lockable doors and drawers: Nickel finished, master keyed, keyed alike in groups, cam lock with plate, adjust keying group to suit requirements:
 - .1 Acceptable Materials:
 - .1 Richelieu
 - .2 CompX National
 - .3 Trimline
- .12 Shelf Rests:
 - .1 Stainless steel pin rests: 7 mm Ø socket collar inserts for steel pin shelf supports, drill holes in cabinet work to accept collar, chrome or nickel finish:
 - .1 Acceptable Materials:
 - .1 Knape & Vogt Canada, Series 331/325 grommet
 - .2 Richelieu 5829-180/2292-180
- .13 Miscellaneous Items:
 - .1 Coat Rod: 28 mm outside diameter x 2.8 mm thick chrome tube complete with closed end chrome flanges.
 - .1 Acceptable Materials:
 - .1 Knape & Vogt, 734/770

.2 Richelieu, 122112140/8332140

.14 Additional hardware items as indicated on Drawings.

2.5 UPHOLSTERY WORK

.1 Cushion Material: Manufactured to the Standards of the Polyurethane Foam Association and meeting the requirements of ASTM D5672 for indentation resistance, combustion modified high resiliency flexible polyurethane foam with the following properties:

.1 Seat Cushion:

.1 Core: High Resiliency Foam, 50 mm thickness having nominal density of 40 kg/m³ +5%, having a nominal 45 IFD at 36 kg/m² and 25% CFD with a minimum 2.5 CM.

.2 Overlay: Filled Conventional Foam, 25 mm thickness having nominal density of 29 kg/m³ +5%, having a nominal 30 IFD at 36 kg/m² and 25% CFD with a minimum 2.0 CM.

.3 Compression Set: After Humid Aging in accordance with ASTM D3574, Procedure J.1; and Compression Set in accordance with ASTM D3574 except samples shall be deflected 75% of the original sample height; Compression Set calculations shall be done in accordance with ASTM D3574 Section 42.1.1, as follows:

.1 Filled Conventional Foam: 10% maximum compression set, after humid aging.

.2 High Resiliency Foam: 30% maximum compression set.

.3 Profile seat cushion to full wrap, bevels and profiles indicated on Drawing.

.2 Seat Backs:

.1 Core: Filled Conventional Foam, 32 mm thickness, having nominal density of 29 kg/m³ +5%, having a nominal 30 IFD at 36 kg/m² and 25% CFD loading with a minimum 2.0 CM.

.2 Profile seat back cushion to full wrap, bevels and profiles indicated on Drawing.

.2 Covering Materials:

.1 Ticking: Fire retardant treated separation sheet to prevent foam catching on material and to provide a moisture resistant separation between foam and fabric:

.2 Basis-of-Design Materials: Gore-Tex

.3 Fabric: anti-microbial treated, washable and scrubbable material:

.1 Basis-of-Design Materials: as indicated in Section 09 99 00 – Material List.

.3 Fastening Devices: Woven nylon hook and loop fastener tape, high use rated with stitched and fastened to fabricated seat cushions, backs and base, 50 mm width by maximum possible length, colour black.

.1 Basis-of-Design Materials: Velcro Canada.

.4 Fabricate upholstery items so that seams are stitched water tight, cushions and backs held in place by hook and loop tapes, padding can be removed from

cushions using a concealed zipper, and box work completed similar to casework specified below.

2.6 FACTORY FINISHING – CABINET WORK

- .1 Cabinet work for Transparent Finish:
 - .1 AWS Quality Grade Premium.
 - .2 Construction: Cabinet work shall conform to applicable AWS requirements.
 - .3 Semi-Exposed and Exposed Parts: Wood veneer and solids, as specified above and as indicated on Drawings.
 - .4 Drawer Boxes: Wood veneer as specified above and as indicated on Drawings.
 - .5 Factory finish cabinet work as follows:
 - .1 Finishes shall be applied in accordance with Section 5 of the AWS.
 - .2 Clear Finish:
 - .1 Exposed parts requiring clear finish shall have 4 coats of AWS pre-catalyzed lacquer, satin gloss, premium grade lacquer coating.
 - .2 Semi-Exposed parts requiring clear finish shall have AWS pre-catalyzed lacquer finish to match exposed components, including all surfaces of reveals and returns, underside of items and inside. Semi-exposed parts shall match exposed parts for finishing.
 - .3 Drawer box requiring clear finish shall have AWS pre-catalyzed lacquer, satin gloss, premium grade lacquer coating.
- .2 Cabinet work for High Pressure Decorative Laminate Finish:
 - .1 AWS Quality Grade Premium.
 - .2 Construction: Cabinet work shall conform to applicable sections of the AWS.
 - .3 Exposed Parts: High pressure decorative laminate, plywood with non-telegraphing grain as indicated.
 - .4 Semi-Exposed Parts: High pressure decorative laminate, plywood with non-telegraphing grain as specified above.
 - .5 Concealed parts: Low pressure decorative laminate backer to balance face materials.
- .3 Laminate Countertops and Backsplashes
 - .1 Countertops shall be self edge type to applicable AWS requirements.
 - .2 Backsplash shall conform to Section 6 of the AWS.
 - .3 Custom counter shall be seamless.

Part 3 Execution

3.1 JOB CONDITIONS

- .1 Job Conditions for installation of architectural woodwork shall be in accordance with applicable AWS requirements.

3.2 INSPECTION

- .1 Verify condition and dimensions of previously installed work upon which this Section depends. Report defects to Consultant. Commencement of Work means acceptance of existing conditions.

3.3 PREPARATION

- .1 Obtain measurements from site.
- .2 Check access to ensure large pieces of work can be safely handled to their place of final installation.
- .3 Protect finished surfaces and materials of other trades from damage.
- .4 Ensure services and roughing-in which affect or are connected to or through this work are complete and acceptable.
- .5 Back prime cabinet work immediately after delivery to site.

3.4 INSTALLATION

- .1 Install work to applicable AWS and Quality Assurance requirements.
- .2 Install cabinet work in its indicated locations, plumb, level, and true.
- .3 Anchor to floor, walls or ceiling using fastening devices and hardware consistent with the building materials encountered. Do not use wood plugs. Do not use plastic plugs for ceilings or walls. Provide wall strapping as required.
- .4 Anchor cabinet work and millwork to building structure. Shim level and set square in relation to adjoining surfaces. Scribe to adjacent Work. Provide allowance for finish flooring installation to base.
- .5 Cabinet work:
 - .1 Fasten to framing using zinc-coated bolts, countersunk and plugged with matching wood plugs.
 - .2 Set cabinetwork in place, on base, anchoring securely to building structure and to adjoining cabinetwork. Use approved connector type fasteners between items of cabinetwork to hold adjoining pieces tightly together.
 - .3 Scribe to smooth snug fit with adjoining surfaces and materials to align work. Mitre corners.
 - .4 Perform cutting, fitting, repairing in woodwork as required by other trades where their work is connected to or part of this work.
 - .5 Cut out openings for mechanical, electrical, and communications fittings and fixtures. Coordinate and cooperate in the connection and installation of mechanical, electrical, and communications work.
 - .6 Apply sealant between countertops and adjoining walls and cabinetwork. Seal edges of cut-out core material before fixtures installed.

- .7 Install finishing hardware shipped loose.
- .6 Supply and install hardware required for the completion of architectural woodwork, including, without limitations, adjustable shelf supports and cabinet hinges, catches, pulls, drawer accessories, bumpers, drawer slides and closet hanger bars, and similar items. Install millwork hardware in the shop wherever possible. Install millwork hardware secure, plumb, level, true to line, and in accordance with the hardware manufacturers' printed instructions. Cut and fit to millwork for proper installation and operation. Provide smoothly operating units free from binding. Clean and adjust hardware for proper operation.

3.5 ADJUSTING AND CLEANING

- .1 During and after installation adjust all hardware and operating parts as necessary to ensure smooth and proper operation.
- .2 Clean all cabinet, countertops, shelves and fixtures.
- .3 Repair any marks, scratches or marring.
- .4 Remove and replace damaged, marked, or stained finish carpentry.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 06 20 00 – Finish Carpentry
- .2 Section 06 40 00 – Architectural Woodwork
- .3 Section 08 80 50 – Glazing
- .4 Section 09 21 16 – Gypsum Board Assemblies
- .5 Section 09 30 13 – Tiling
- .6 Section 09 65 00 – Resilient Flooring
- .7 Division 23 – Mechanical
- .8 Additional Technical Specification section as indicated.

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM C919-12, Standard Practice for Use of Sealants in Acoustical Applications.
 - .2 ASTM C920-14a, Standard Specification for Elastomeric Joint Sealants.
 - .3 ASTM D2240-15, Standard Test Methods for Rubber Property, Durometer Hardness.
- .2 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Protection Act, 1999 (CEPA).
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .4 South Coast Air Quality Management District (SCAQMD), California State
 - .1 SCAQMD Rule 1168-05, Adhesives and Sealants Applications.
- .5 Transport Canada (TC)
 - .1 Transportation of Dangerous Goods Act, 1992 (TDGA).

1.3 SUBMITTALS

- .1 Submit product data in accordance with Section 01 11 00 – General Requirements, Submittals.
 - .1 Submit manufacturer's printed product literature, specifications and data sheet. Indicate the following:
 - .1 Caulking compound
 - .2 Primers
 - .3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.
 - .4 Manufacturers Sample Warranty
 - .2 Submit WHMIS MSDS - Material Safety Data Sheets. WHMIS MSDS acceptable to Labour Canada and Health and Welfare Canada for sealants. Indicate VOC content.

- .3 Submit manufacturer's installation instructions for each product used.
- .4 When required by Consultant, submit test certificates from an approved Canadian materials testing laboratory indicating that sealants meet the requirements of the standards specified, and that the tests have been conducted in accordance with ASTM D2240.
- .2 Submit samples in accordance with Section 01 11 00 – General Requirements, Submittals Procedures.
 - .1 Provide colour samples of the actual sealants for approval; painted or printed colour charts are not acceptable.

1.4 QUALITY ASSURANCE

- .1 Caulking shall be performed by a caulking contractor with 3 or more years successful experience in Work of similar size and complexity.
- .2 Before performing Work of this Section, submit the names of proposed materials. If specified using Standards, indicate Qualification Number.
- .3 Compatibility: Ensure sealants are compatible with adjacent materials and are approved by manufacture for use with adjacent materials.

1.5 MOCK-UPS

- .1 Construct mock-up in accordance with Section 01 11 00 – General Requirements, Quality Control.
- .2 Before performing caulking work do sample applications of each type of sealant for approval. Site locations for sample applications shall be designated by Consultant. Approved samples shall form standard for this project and no work of inferior quality will be allowed. Start no final work until approval of samples is given by the Consultant.

1.6 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, handle, store and protect materials in accordance with Section 01 11 00 – General Requirements, Common Product Requirements.
- .2 Deliver containers labelled and sealed, complete with written application and maintenance instructions.
- .3 Store materials in a dry heated enclosure in accordance with manufacturer's instructions.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling in accordance with Section 01 11 00 – General Requirements, Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Place materials defined as hazardous or toxic in designated containers.
- .4 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.

- .5 Unused sealant material must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.
- .6 Divert unused joint sealing material from landfill to official hazardous material collections site approved by Consultant.
- .7 Empty plastic joint sealer containers are not recyclable. Do not dispose of empty containers with plastic materials destined for recycling.
- .8 Fold up metal banding, flatten, and place in designated area for recycling.

1.8 PROJECT CONDITIONS

- .1 Environmental Limitations:
 - .1 Do not proceed with installation of joint sealants under following conditions:
 - .1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4 degrees C.
 - .2 When joint substrates are wet.
 - .2 Joint-Width Conditions:
 - .1 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
 - .3 Joint-Substrate Conditions:
 - .1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.
 - .2 Substrate must be clean, dry, and frost free.

1.9 WARRANTY

- .1 Contractor hereby warrants that caulking work will not leak, crack, crumble, melt, shrink, run, lose adhesion or stain adjacent surfaces in accordance with General Conditions, but for three (3) years.
- .2 Provide Warranty for sealants to include in maintenance manuals as specified in Section 01 11 00 – General Requirements, Operations and Maintenance Data Manuals.

Part 2 Products

2.1 MANUFACTURERS

- .1 Acceptable Manufacturers: Subject to compliance with requirements in this Section and as recommended by the manufacturer, manufacturers offering products that may be incorporated into the Work include the following:
 - .1 BASF, Sonneborn.
 - .2 Chemtron Manufacturing Ltd.
 - .3 Dow Corning Canada Inc.
 - .4 GE Silicones Limited.

- .5 Sika Chemical of Canada Ltd.
- .6 Tremco Ltd.

2.2 SEALANT MATERIALS

- .1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.
- .2 When low toxicity caulks are not possible, confine usage to areas which offgas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize offgas time.
- .3 Unless otherwise specified, VOC content limits of sealants shall be in accordance with SCAQMD Rule 1168 and as follows:
 - .1 Architectural Materials:
 - .1 Sealants: VOC content limit 250 g/L.
 - .2 Sealant Primers for Non-Porous Surfaces: VOC content limit 250 g/L.
 - .3 Sealant Primers for Porous Surfaces: VOC content limit 775 g/L.
 - .2 All Other Applications:
 - .1 Sealants: VOC content limit 420 g/L.
 - .2 Sealant Primers: VOC content limit 750 g/L.

2.3 SEALANT MATERIAL DESIGNATIONS

- .1 Type S-1: Acrylic Latex One Part, Shore A Hardness 20, to ASTM C834.
 - .1 Acceptable materials:
 - .1 Latacalk, Chemtron.
 - .2 Sonolac, BASF Sonneborn.
 - .3 Latex 100, Tremco.
 - .2 Type S-2: Silicone Sealant; mould and mildew resistant.
 - .1 To ASTM C920; type S; grade NS; class 50; use NT, G, and A.
 - .1 Acceptable materials:
 - .1 Chemtron Multiseal
 - .2 GE SCS2000
 - .3 795 Silicone, Dow Corning.
 - .4 Spectrum 2 Silicone, Tremco Inc.
 - .2 To ASTM C920; type S; grade NS; class 50; use NT, G, and A.
 - .1 Acceptable materials:
 - .1 790 Silicone, Dow Corning.
 - .2 Spectrum 1 Silicone, Tremco Inc.
 - .3 To ASTM C920; type S; grade NS; class 25; use NT, G, and A.
 - .1 Acceptable materials:
 - .1 786 Silicone, Dow Corning.
 - .2 OmniPlus, BASF Sonneborn.
 - .3 SCS1700, General Electric.
 - .4 Tremsil 200, Tremco Inc.

- .3 Type S-3: Silicone Sealant; general construction and air-seal sealant.
 - .1 To ASTM C920: type S; grade NS; class 25; use NT, M, G, A, O.
- .4 Type S-5: Acoustical Sealant; interior, non-skimming, non-hardening, simple component synthetic rubber sealant.
 - .1 Acceptable materials:
 - .1 Acoustical Sealant, Tremco
 - .2 Metaseal, Chemtron.
- .5 Type S-6: Multi-component polyurethane sealant; chemical curing, exterior wall sealant.
 - .1 To ASTM C920: type M; grade NS; class 50; use T, NT, M, A, O.
 - .2 Acceptable materials:
 - .1 Dymeric, Tremco.
 - .2 Sikaflex 2c NS, Sika.
 - .3 Sonolastic NP 2, BASF Sonneborn.
 - .4 Thioplast 400, Chemtron
- .6 Type S-7: One-component polyurethane sealant; non-sag, for general constructions.
 - .1 To ASTM C920: type S; grade NS; class 25; use NT, M, A, O.
 - .2 Acceptable materials:
 - .1 Dymonic FC, Tremco Inc
 - .2 Multiflex, Chemtron.
 - .3 Sonolastic NP 1, BASF Sonneborn.
 - .4 Sikaflex 1a, Sika.
 - .5 Mapeflex P1, MAPEI Inc
- .7 Type S-10: Control joint sealant: two-component, epoxy-urethane, self-levelling, load bearing saw cut or preformed control joints.
 - .1 Acceptable materials:
 - .1 Loadflex, Sika.
 - .2 Planiseal Rapid Joint 15, MAPEI Inc.
 - .3 Rezi-Weld Flex with Pourthane NS, WR Meadows

2.4 ACCESSORIES

- .1 Preformed Compressible and Non-Compressible back-up materials that are non-staining, compatible with joint substrate, sealants, primers, and other joint fillers, and are approved for applications indicated by sealant manufacturer based on site experience and laboratory testing.
 - .1 Rod Type Sealant Backings:
 - .1 ASTM C1330, Type C (closed cell material with a surface skin), Type O (open cell material) or Type B (bi-cellular material with a surface skin).
 - .2 Use any of the preceding types, as approved in writing by joint sealant manufacturer for joint application indicated.

- .3 Size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- .4 Non-adhering to sealant, to maintain two sided adhesion across joint.
- .2 High Density Foam.
 - .1 Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m³ density, or neoprene foam backer, size as recommended by manufacturer.
 - .3 Bond Breaker Tape.
 - .1 Polyethylene bond breaker tape or other tape recommended by sealant manufacturer which will not bond to sealant.
- .2 Preformed Sealants
 - .1 Preformed Silicone Sealant System: Manufacturer's standard system consisting of pre-cured low modulus silicone extrusion, in sizes to fit joint widths indicated, combined with a neutral curing silicone sealant for bonding extrusions to substrates:
 - .1 Acceptable materials:
 - .1 Dow Corning Corporation; 123 Silicone Seal.
 - .2 GE Silicones; UltraSpan US1100.
 - .3 Tremco; Spectrem Ez Seal.
 - .3 Primer: Non-staining type as recommended by sealant manufacturer.
 - .4 Joint Cleaner: Non-corrosive solvent type recommended by sealant manufacturer for applicable substrate materials.

2.5 COLOURS

- .1 Colours: To match adjacent materials, as selected by Consultant, from manufacturer's standard colour range.

2.6 SEALANT SELECTION

- .1 Where no specified type of sealant is shown or specified, choose one of the sealants specified in this Section appropriate for its location.
- .2 Make sealant selections consistent with manufacturer's recommendations.
- .3 Use acrylic sealant Type S-1 only on the interior and only in situations where little or no movement can occur.
- .4 Use mould & mildew resistant silicone sealant Type S-2 for non-moving joints in washrooms and kitchens. Do not use on floors.
- .5 Use silicone general construction sealant Type S-3 or Type S-6 and S-7 for all joints, interior and exterior, where no other specific sealant type specified.
- .6 Use acoustical sealant Type S-5 and air seal sealant Type S-3 only where they will be fully concealed and only where no constant or consistent air pressure difference will exist across the joint.
- .7 Use multi-component sealant type S-6, primed penetration element surfaces other than concrete, for mechanical and electrical service penetrations in concrete foundation walls.

- .8 Use control joint sealant S-10 as filler for interior, horizontal saw cut or preformed control joints where joints are subject to load bearing conditions.

Part 3 Execution

3.1 PROTECTION

- .1 Protect installed Work of other trades from staining or contamination.

3.2 INSPECTION

- .1 Carefully inspect surfaces, materials to receive sealants and verify they are physically capable of retaining sealant bond.
- .2 Verify that fillers and backing provided under other Sections properly installed.

3.3 SURFACE PREPARATION

- .1 Prepare surfaces in accordance with manufacturer's instructions.
- .2 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
- .3 Maintain workmanship of highest quality in accordance with best trade practice.
- .4 Ensure that joint forming materials are compatible with sealant.
- .5 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work. Wire brush loose materials and other foreign matter which might impair adhesion of sealant.
- .6 Use air stream to blow out dirt and water from crevices.
- .7 Ensure joint surfaces are dry and frost free
- .8 Prime all porous material (e.g. wood, masonry, concrete, ceramic or paver tile, etc).
- .9 Prime other joints when recommended by manufacturer. Use a brush that will reach all parts of the joints. Mask adjoining surfaces with tape prior to priming to prevent staining.

3.4 PRIMING

- .1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.
- .2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.5 BACKUP MATERIAL

- .1 Use backer rod as specified, to limit depth of sealant and to act as bond breaker at back of joint.
- .2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.
- .3 Where depth of joint does not permit the use of backer rod apply paper masking tape to back of joint to act as bond breaker.

- .4 Ensure that no joints are formed which are bonded on adjacent sides where there is any possibility of movement.

3.6 MIXING

- .1 Mix materials in strict accordance with sealant manufacturer's instructions.

3.7 APPLICATION

- .1 Apply sealant in strict accordance with manufacturer's recommendations.
- .2 For joints where movement is possible, apply backer rod to achieve a joint depth of one half the joint width but not less than 9 mm; for joints larger than 25 mm use a depth of 13 mm
- .3 Use pressure gun fitted with suitable nozzle. Use sufficient pressure to fill voids and joints solid.
- .4 Form surface of sealant smooth, free from ridges, wrinkles, sags, or air pockets and imbedded impurities. Neatly tool surface to a slight concave appearance.
- .5 Tool sealants to achieve air tight joints. Use wet tools as required.
- .6 Ensure bead is solid, filling entire space between sides and bedding material, exerting sufficient pressure to obtain maximum bond, by allowing sealant to bulge out in advance of nozzle.
- .7 Apply sealant within recommended temperature ranges. Consult manufacturer when sealant cannot be applied within recommended temperature range.
- .8 Seal perimeters of hollow metal door frames on both sides.
- .9 Seal control joints in gypsum board and stucco, and junctures between interior partitions with exterior walls.
- .10 Seal window and door frames around the inside perimeter, so that an airtight seal is obtained, as indicated on drawings.
- .11 Seal joints in floors and walls and around service and mechanical and electrical fixture penetrations.
- .12 Seal at all locations where dissimilar material meet.
- .13 Curing
 - .1 Cure sealants in accordance with sealant manufacturer's instructions.
 - .2 Do not cover up sealants until proper curing has taken place.

3.8 CLEAN UP

- .1 Clean adjacent surfaces immediately and leave Work neat and clean.
- .2 Remove excess and droppings, using recommended cleaners as work progresses.
- .3 Remove masking tape after initial set of sealant.
- .4 On porous surfaces allow sealant to cure overnight, and remove excess by light wire brushing.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 06 10 00 - Rough Carpentry
- .2 Section 06 20 00 - Finish Carpentry
- .3 Section 08 11 13 - Steel Doors and Frames
- .4 Section 08 71 00 - Door Hardware
- .5 Section 08 80 50 - Glazing
- .6 Section 09 91 00 - Painting

1.2 REFERENCES

- .1 American National Standards Institute (ANSI)
 - .1 ANSI A208.1-2009, Particleboard.
- .2 Architectural Woodwork Manufacturers Association of Canada (AWMAC)
 - .1 AWMAC/AWI Architectural Woodwork Standards, 2nd Edition, 2014.
- .3 Canadian Hardwood Plywood and Veneer Association (CHPVA)
 - .1 CHPA Official Grading Rules for Rotary Cut Face Veneers.
- .4 Canadian Standards Association (CSA International)
 - .1 CSA O115-M1982(R2001), Hardwood and Decorative Plywood.
- .5 Environmental Choice Program (ECP)
 - .1 UL 2761 (formerly CCD-045), Sealants and Caulking Compounds.
 - .2 UL 2762 (formerly CCD-046), Adhesives.
- .6 National Fire Protection Association (NFPA)
 - .1 NFPA Fire 80-15, Standard for Fire Doors and Other Opening Protectives, 2016 Edition.
 - .2 NFPA Fire 252-16, Standard Methods of Fire Tests of Door Assemblies, 2012 Edition.
- .7 National Lumber Grades Authority (NLGA)
 - .1 Standard Grading Rules for Canadian Lumber 2010.
- .8 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC S104-15, Standard Method for Fire Tests of Door Assemblies.
 - .2 CAN/ULC S105-16, Standard Specification for Fire Door Frames Meeting the Performance Required by CAN/ULC-S104.

1.3 SUBMITTALS

- .1 Submit product data in accordance with Section 01 11 00 – General Requirements, Submittals.
 - .1 Submit manufacturer's printed product literature, specifications and data sheet.

- .2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets. Indicate VOC's:
 - .1 For caulking materials during application and curing.
 - .2 For door materials and adhesives.
- .2 Submit shop drawings in accordance with Section 01 11 00 – General Requirements, Submittals.
 - .1 Show construction and materials used in cores, size and species of edge strip, thickness and species of cross-banding, and thickness and species of face veneer.
 - .2 Show details of openings and mouldings for glazing.
 - .3 Indicate locations, sizes and types of all doors to be supplied reference to the Door and Hardware Schedule.
 - .4 Indicate elevation of each kind of door, details of construction, location and extent of hardware blocking, fire ratings, requirements for factory finishing and other pertinent data.
 - .5 Include finishing specifications for doors to receive factory-applied finish.
 - .6 Include certifications as might be required to show compliance with specifications.
- .3 Submit samples in accordance with Section 01 11 00 – General Requirements, Submittals.
 - .1 Submit one 300 x 300 mm corner sample of each type wood door.
 - .2 Show door construction, core, and faces.

1.4 QUALITY ASSURANCE

- .1 Fabricate doors in accordance with the AWMAC/AWI Architectural Woodwork Standards, Section 9 - Doors, Premium grade.
- .2 Manufacturer Qualification: Manufacturer specializing in products in this section who have a minimum of five years of documented experience and are a member in good standing of the Architectural Woodwork Manufacturers Association of Canada (AWMAC).
- .3 Regulatory Requirements:
 - .1 Wood fire rated doors: labelled and listed by an organization accredited by Standards Council of Canada.
- .4 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .5 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Delivery and Acceptance Requirements:
 - .1 Deliver doors and panels to minimize storage on site and when site conditions conform to requirements for storage.
- .2 Storage and Protection:

- .1 Store and handle doors and panels in accordance with AWMAC requirements, and as follows:
 - .1 Protect doors from dampness. Arrange for delivery after work causing abnormal humidity has been completed.
 - .2 Store doors in well ventilated room, off floor, in accordance with manufacturer's recommendations.
 - .3 Protect doors from scratches, handling marks and other damage.
 - .4 Store doors away from direct sunlight.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling in accordance with Section 01 11 00 – General Requirements, Waste Management and Disposal.

1.7 WARRANTY

- .1 Provide warranty issued in the name of the Owner stating that doors are warranted against defects in materials and workmanship for the life of the original installation.
- .2 Warranty to include coverage for reasonable amount to remove, replace, refinish, and re-hang doors that do not meet accepted AWMAC tolerances.

Part 2 Products

2.1 FIRE RATED WOOD DOORS

- .1 Wood doors: tested in accordance with CAN/ULC-S104 or NFPA 252 to achieve rating as scheduled.
 - .1 Face panels: species to match non-rated doors.
 - .2 Edges: to match face panels.
 - .3 Metal label secured to hinge edge of door.
 - .4 Finish: as indicate on Drawings.

2.2 SOLID CORE DOORS

- .1 Flush wood doors: solid core to AWMAC Standard.
- .2 Dry lumber to an average moisture content of between 6 and 12% maximum at time of manufacture.
 - .1 Construction
 - .1 Solid particleboard core having minimum density of 449 kg/m³ in accordance with ANSI A208.1 and as follows:
 - .1 Stiles and Rails: Structural Composite Lumber (SCL) bonded to core to AWMAC Manual standards and as follows:
 - .1 Side Stiles: SCL with 16 mm hardwood edge, to match face veneers; no finger jointed materials permitted.
 - .2 Top and Bottom Rails: SCL with 16 mm soft wood cap.

- .2 Reinforcement: with wood lock blocks.
- .3 Construction: 5-ply
- .4 Use: interior.
- .2 Provide acoustic core to meet STC rating as required.
- .3 Door cores to be fully bonded and abrasive planed or sanded prior to laminating faces to core materials.
- .4 Door Thickness: 45 mm overall or as otherwise indicated on Drawings.
- .3 Face Panels:
 - .1 Decorative Wood Veneer: AWMAC quality grade and hardwood species, supplied from same source, clear and bright in colour with minimum of pin knots, mineral or sugar streaks, no open defects, heartwood, or wild grain, and minimal colour variation between flitches, meeting the requirements for Hardwood Plywood Veneer Association (HPVA) quality grade and hardwood species as indicated.
 - .1 Grade: Premium, with Grade A faces.
 - .2 Species: as indicated on Drawings.
 - .3 Cut and Match Between Veneer Leaves: as directed by Consultant.
 - .4 Finish: Factory finished as indicated below for transparent finishes.
 - .5 Minimum Thickness: 0.50 mm.
 - .6 Paired doors to have matching veneer pattern for uniform appearance.
 - .2 Hardboard: Meeting CAN/CGSB-11.3, Type 2, minimum density 500 kg/m³, 6 mm nominal thickness one face smooth finish suitable for painted finish.
 - .3 Laminated plastic: High pressure decorative laminates to ANSI/NEMA LD3, HGS general purpose grade, minimum 1.2 mm thick with hardwood plywood subface to CSA O115.
- .4 Adhesive: Type I (waterproof)
- .5 Wood Door Frames and Stops: Refer to Section 06 20 00 – Finish Carpentry.

2.3 ACCESSORIES

- .1 Transom and Side Panels: to match materials and construction of adjacent doors and as follows:
 - .1 Meeting edges of doors and transom panels to be square.
 - .2 Veneer of doors and transom panels to be end and colour matched.
- .2 Glass: tempered safety glass as specified under Section 08 80 50.
- .3 Glazing Stops: Solid wood with mitred corners, to match face panels

2.4 FABRICATION

- .1 Fabricate doors in accordance with AWS section 9.

- .2 Fabricate fire rated doors to sizes required to allow clearances specified in NFPA 80 and as follows. Coordinate with door frames and door hardware to be utilized.
 - .1 Between door and jamb or head: 3.2 mm maximum.
 - .2 Between meeting edges of paired doors: 3.2 mm maximum.
 - .3 Between door and noncombustible finished floor: 19.05 mm maximum.
 - .4 Between door and floor coverings: 12.7 mm maximum.
 - .5 Between door and raised noncombustible sill or threshold: 9.5 mm maximum.
- .3 Vertical edge strips to match face veneer.
- .4 Prepare doors for glazing where required. Provide wood species to match face panel, glazing stops with mitred corners.
- .5 Doors shall be pre-fitted, bevelled and machined at the factory for all mortise hardware items as per templates and approved hardware schedules provided.
- .6 Bevel vertical edges of single acting doors 3 mm in 50 mm on lock side and 1.5 mm in 50 mm on hinge side.
- .7 Radius vertical edges of double acting doors to 60 mm radius.

2.5 FINISHES

- .1 Factory finish doors in accordance with AWS Section 5 – Finishing, System 9 UV-Curable, Acrylated Epoxy, Polyester or Urethane as a minimum.
- .2 Paint in accordance with Section 09 91 00 – Painting.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

- .1 Unwrap and protect doors in accordance with AWMAC.
- .2 Install labelled fire rated doors in accordance with NFPA 80 and to provide specified clearances. Do not site modify labeled fire rated doors.
- .3 Install doors and hardware in accordance with manufacturer's printed instructions and AWMAC.
- .4 Adjust hardware for correct function.
- .5 Install glazing in accordance with Section 08 80 50 - Glazing.
- .6 Install stops.
- .7 Secure transom and side panels by means of stops, concealed fasteners or countersunk screws concealed by means of wood plugs matching panel in grain and colour.

3.3 ADJUSTMENT

- .1 Re-adjust doors and hardware just prior to completion of building to function freely and properly.

3.4 CLEANING

- .1 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.
- .2 Remove traces of primer, caulking; clean doors and frames.
- .3 Clean glass and glazing materials with approved non-abrasive cleaner.
- .4 On completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 08 11 13 – Steel Doors and Frames.
- .2 Section 08 14 16 – Flush Wood Doors.
- .3 Division 26: Electrical wiring for magnetic strikes, electric releases and electric locks.

1.2 REFERENCES

- .1 American National Standards Institute (ANSI)/Builders Hardware Manufacturers Association (BHMA)
 - .1 ANSI A117.1-2009, Standard for Accessible and Usable Buildings and Facilities.
 - .2 ANSI/BHMA A156, Series of Standards.
 - .3 ANSI/BHMA A156.10-2011, Power Operated Pedestrian Doors.
 - .4 ANSI/BHMA A156.1-2016, Butts and Hinges.
 - .5 ANSI/BHMA A156.12-2013, Interconnected Locks and Latches.
 - .6 ANSI/BHMA A156.13-2012, Mortise Locks and Latches, Series 1000.
 - .7 ANSI/BHMA A156.14-2013, Sliding and Folding Door Hardware.
 - .8 ANSI/BHMA A156.15-2015, Release Devices – Closer Holder, Electromagnetic and Electromechanical.
 - .9 ANSI/BHMA A156.16-2013, Auxiliary Hardware.
 - .10 ANSI/BHMA A156.17-2014, Self Closing Hinges and Pivots.
 - .11 ANSI/BHMA A156.18-2016, Materials and Finishes.
 - .12 ANSI/BHMA A156.19-2013, Power Assist and Low Energy Power Operated Doors.
 - .13 ANSI/BHMA A156.20-2012, Strap and Tee Hinges and Hasps.
 - .14 ANSI/BHMA A156.2-2011, Bored and Preassembled Locks and Latches.
 - .15 ANSI/BHMA A156.21-2014, American National Standard for Thresholds.
 - .16 ANSI/BHMA A156.26-2012, Continuous Hinges.
 - .17 ANSI/BHMA A156.3-2014, Exit Devices.
 - .18 ANSI/BHMA A156.4-2013, Door Controls – Closers.
 - .19 ANSI/BHMA A156.6-2010, Architectural Door Trim.
 - .20 ANSI/BHMA A156.8-2015, Door Controls – Overhead Stops and Holders.
- .2 Canadian Steel Door and Frame Manufacturers' Association (CSDFMA)
 - .1 CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction): standard hardware location dimensions.
- .3 Builders Hardware Manufacturers Association (BHMA)
 - .1 Directory of Certified Products.
- .4 Door and Hardware Institute (DHI)
 - .1 Sequence and Format for the Hardware Schedule.
 - .2 ANSI/DHI A115.IG, Installation Guide for Doors and Hardware.

1.3 PRE-INSTALLATION MEETINGS

- .1 Pre-Installation Meetings: convene pre-installation meeting in accordance with Section 01 11 00 – General Requirements, Project Meetings to:
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Co-ordination with other building subtrades.
 - .4 Review manufacturer's warranty requirements.

1.4 SUBMITTALS

- .1 Submit product data in accordance with Section 01 11 00 – General Requirements, Submittal Procedures:
 - .1 Submit manufacturer's printed product literature, specifications and data sheets.
- .2 Submit samples in accordance with Section 01 11 00 – General Requirements, Submittals:
 - .1 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 contract hardware list in accordance with Section 08 71 10.
 - .2 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.
 - .3 Coordinate Division 28 Security Contractor, Division 26 Electrical Contractor and Division 8 Door and Hardware Contractors to jointly prepare, submit, and obtain certified approval from the Consultant shop drawings for work related to door access control systems prior to undertaking the on-site work. The joint submission will clarify and assign responsibility between these Divisions for labour and materials associated with the supply and installation of electronic and physical components for doors and access control. An individual drawing shall be submitted in AutoCadd format for each door within the project scope depicting both public and secure side of door and arrangement of access control and security components, conduit, and cabling.
- .4 Keying Schedule:
 - .1 Submit keying schedule prepared by or under the supervision of qualified Architectural Hardware Consultant (AHC), detailing Owner's final keying instructions for locks, including schematic keying diagram and index each key set to unique door designations.
- .5 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation instructions.
- .6 Closeout Submittals

- .1 Provide operation and maintenance data for door closers, locksets, door holders, electrified hardware, and fire exit hardware for incorporation into manual specified in Section 01 11 00 – General Requirements, Closeout Submittals.

1.5 MAINTENANCE MATERIAL

- .1 Extra Materials:
 - .1 Provide maintenance materials in accordance with Section 01 11 00 – General Requirements, Closeout Submittals.
 - .2 Supply two sets of wrenches for door closers, locksets, and fire exit hardware.

1.6 QUALITY ASSURANCE

- .1 Regulatory Requirements:
 - .1 Hardware for doors in fire separations and exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada.
 - .2 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
 - .3 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.7 DELIVERY, STORAGE, AND HANDLING

- .1 Packing, Shipping, Handling and Unloading:
 - .1 Deliver, store, handle and protect materials in accordance with Section 01 11 00 – General Requirements, Common Product Requirements.
 - .2 Package each item of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.
- .2 Storage and Protection:
 - .1 Store finishing hardware in locked, clean and dry area.

1.8 WASTE DISPOSAL AND MANAGEMENT

- .1 Separate and recycle waste materials in accordance with Section 01 11 00 – General Requirements, Waste Management and Disposal.

1.9 WARRANTY

- .1 Provide written warranty, executed by manufacturer agreeing to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
- .2 Failures include, but are not limited to, the following:
 - .1 Structural failures including excessive deflection, cracking, or breakage.
 - .2 Faulty operation of operators and door hardware.

.3 Deterioration of metals, metal finishes, and other materials beyond normal weathering.

.3 Warranty Period: From date of Substantial Performance, and as follows:

Hardware Type	Warranty Term
Locks, latches and cylinders	2 year
Closers	10 years
Hinges	1 year
Panics	1 year
Miscellaneous	1 year
Electrical Hardware:	5 years

Part 2 Products

2.1 HARDWARE ITEMS

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

2.2 DOOR HARDWARE

.1 As scheduled in Section 08 71 10.

2.3 AUTOMATIC SWING DOOR OPERATORS

- .1 Coordinate the work of all trades, including glass and glazing, masonry, and electrical requirements covered in manufacturer's details and appropriate sections of the specifications.
- .2 The electrical contractor shall provide 117 volt, 60 cycle, single phase 15 ampere service for 1-2 operators, 30 ampere service for 3-4 operators, and as follows:
- .3 Coordinate with electrical contractor for provision of service to each operator from junction box for multiple operators.
- .4 Coordinate with electrical contractor shall provide electrical conduit and wiring from specified controls to operators as outlined on manufacturer's drawings.
- .5 Finish hardware supplier shall provide and install surface mounted electro-mechanical swing door operator, consisting of electro-mechanical swinging door operator and electronic control, aluminum header, connecting hardware, and power on/off switch and actuator switches, and as follows:
- .6 Automatic entrance equipment: comply with ANSI A156.10 or A156.19.
- .7 Aluminium header extrusions: minimum nominal 4 mm wall thickness with finish anodized AA-M12-C22-A31 clear.
- .8 Equipment must operate between -35°C and +55°C in all climate conditions.
- .9 Operator: Electro-mechanical system installed in a header to resist dust, dirt and corrosion; entire operator shall be removable from the header as a unit.
- .10 Bearings: Fully lubricated and sealed to minimize wear and friction.
- .11 Operator shall open the door with a 1/8 HP motor through reduction gears, door arm, and linkage assembly, and as follows:

- .12 Low energy operator, door opening time: not be less than 4 seconds.
- .13 The drive train shall have a positive, constant engagement. The operator shall stop the door in the open position by electrically reducing the motor voltage and stalling against a 90° stop.
- .14 Close the door by spring energy; controlled by employing the motor as a dynamic brake.
- .15 Door closing time shall not be less than 4.5 seconds.
- .16 Pre-load closing spring for positive closing action at a low material stress level for long spring life.
- .17 The operator shall function as a manual door closer in the direction of swing with or without electrical power.
- .18 The door forces and speeds generated during power opening, and manual opening in both directions of swing, and spring closing in both directions of swing shall conform to the requirements of ANSI A156.10 or A156.19.
- .19 Verify that no defects or errors are present in completed phases of the work that would result in poor application or installation, or cause latent defects of the automatic door equipment.
- .20 Installation and warranty adjustments shall be performed by authorized distributors factory trained technician.

2.4 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.

2.5 KEYING

- .1 Keying as directed by Consultant and as follows:
 - .1 All cylinders to be keyed to master key system.
 - .2 Provide the following keys:
 - .1 2 keys per cylinder.
 - .2 3 master keys.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
- .2 Furnish metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.
- .3 Furnish manufacturers' instructions for proper installation of each hardware component.

3.2 INSTALLATION

- .1 Install hardware to standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame Manufacturers' Association.
- .2 Where door stop contacts door pulls, mount stop to strike bottom of pull.
- .3 Use only manufacturer's supplied fasteners. Failure to comply may void manufacturer's warranties and applicable licensed labels. Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.

3.3 INSTALLATION: AUTOMATIC SWING DOOR OPERATOR

- .1 Install components as indicated on drawings and as scheduled to manufacturer's recommendations.
- .2 Install door holders to limit doors to opening swing specified.
- .3 Install operators on interior side of exterior entrances.
- .4 Install rubber dampening devices to sound isolate operators from door frames.
- .5 Isolate aluminum surfaces from contact with cementitious materials, using thick coating of bituminous paint. Let paint dry before installation of aluminum component.
- .6 Conceal wiring between activating devices, electric locking system, and operators.

3.4 ADJUSTING

- .1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.
- .2 Lubricate hardware, operating equipment and other moving parts.
- .3 Adjust door hardware to provide tight fit at contact points with frames.

3.5 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.

3.6 DEMONSTRATION

- .1 Maintenance Staff Briefing:
 - .1 Brief maintenance staff regarding:
 - .1 Proper care, cleaning, and general maintenance of projects complete hardware.
 - .2 Description, use, handling, and storage of keys.
 - .3 Use, application and storage of wrenches for door closers, locksets, and fire exit hardware.
 - .2 Demonstrate operation, operating components, adjustment features, and lubrication requirements.

3.7 SCHEDULE

- .1 As per attached Section – 08 71 10.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 06 20 00 – Finish Carpentry
- .2 Section 08 14 16 – Flush Wood Doors
- .3 Section 08 87 53 – Glazing Films
- .4 Section 10 22 23 – Moveable Partition System
- .5 Refer to Architectural Drawings and Specifications

1.2 REFERENCES

- .1 American National Standards Institute (ANSI).
 - .1 ANSI Z97.1-2015, Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test
- .2 American Society for Testing and Materials International, (ASTM).
 - .1 ASTM C542-05 (2011), Specification for Lock-Strip Gaskets.
 - .2 ASTM D790-15e2, Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
 - .3 ASTM D2240-15, Standard Test Method for Rubber Property - Durometer Hardness.
 - .4 ASTM E84-16, Test Method for Surface Burning Characteristics of Building Materials.
 - .5 ASTM F1233-08(2013), Test Method for Security Glazing Materials and Systems.
- .3 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB-12.1-2017, Tempered or Laminated Safety Glass.
 - .2 CAN/CGSB-12.6-M91, Transparent (One-Way) Mirrors.
 - .3 CAN/CGSB-12.13-M91, Patterned Glass.
- .4 Canadian Standards Association (CSA International).
 - .1 CAN/CSA A440.2-14/A440.3-14, Fenestration energy performance/User guide to CSA A440.2-09.
 - .2 CSA Certification Program for Windows and Doors 2000.
- .5 Environmental Choice Program (ECP)
 - .1 CCD-045-95, Sealants and Caulking.
- .6 Glazing Association of North America (GANA)
 - .1 GANA Glazing Manual.
 - .2 GANA Glazing Reference.
- .7 Insulating Glass Manufacturers Alliance.

1.3 ADMINSTRATIVE REQUIREMENTS

- .1 Convene pre-installation meetings: one week prior to beginning work of this Section.

- .1 Verify project requirements.
- .2 Review installation conditions.
- .3 Co-ordinate with other building subtrades.
- .4 Review manufacturer's instructions requirements.

1.4 SUBMITTALS

- .1 Submit product data in accordance with Section 01 11 00 – General Requirements, Submittals.
 - .1 Submit manufacturer's printed product literature, specifications and data sheet.
 - .2 Submit two copies of WHMIS MSDS - Material Safety Data. Indicate VOC's:
 - .1 For glazing sealant materials during application and curing.
- .2 Submit samples in accordance with Section 01 11 00 – General Requirements, Submittals.
 - .1 Submit 300 mm x 300 mm size of each glazing type. Consultant reserves the right to change colour of glass after review of submitted samples.
- .3 Information Submittals:
 - .1 Manufacturer's Instructions: Submit manufacturer's installation instructions.
- .4 Closeout Submittals:
 - .1 Provide maintenance data including cleaning instructions for incorporation into manual specified in Section 01 11 00 – General Requirements, Closeout Submittals.

1.5 QUALITY ASSURANCE

- .1 Manufacturer's technical recommendations:
 - .1 Perform glazing work in accordance with written recommendations from the glass manufacturer or glass fabricator.
 - .2 Certify glass compatibility with glazing materials (i.e. insulating glass sealants, structural sealants and silicones, gaskets, setting blocks, etc.)
 - .3 Provide shop inspection for glass.
- .2 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
 - .1 Provide testing and analysis of glass under provisions of Section 01 11 00 – General Requirements, Quality Control.
 - .2 Provide shop inspection and testing for glass.
- .3 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .4 Glazing for Fire-Rated Door and Window Assemblies: Glass tested per NFPA 252 and NFPA 257, as applicable, for assemblies complying with NFPA 80 and listed and labelled per requirements of authorities having jurisdiction.

- .5 Tempered glass shall be heat soaked in accordance with EN 14179-1 and EN 14179-2 for the following applications: railings, balustrades, exposed overhead locations, exterior exposures one or more storeys above pedestrian areas, heavy tempered glass, fabricated glass with cut outs, notches, holes or countersinks. Provide manufacturer's factory label on each unit confirming tempered glass has been heat soaked.

1.6 SITE CONDITIONS

- .1 Environmental Requirements:
 - .1 Install glazing when ambient temperature is 4 degrees C minimum. Maintain ventilated environment for 24 hours after application.
 - .2 Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 11 00 – General Requirements, Waste Management and Disposal.

1.8 WARRANTY

- .1 Provide manufacturers guarantee for the following types of glass listed, against defects in materials and workmanship for the period indicated, commencing from the date of Substantial Performance of Work.
 - .1 Coated- Glass: Replace units that display peeling, cracking, and other deterioration in metallic coating under normal use: 10 Years.
 - .2 Laminated Glass: Replace units that display edge separation, delamination, and blemishes exceeding those allowed by ASTM C1172: 5 Years.
 - .3 Provide warranty for glazing to include in maintenance manuals as specified in Section 01 78 00 – Operations and Maintenance Data Manuals.

Part 2 Products

2.1 MANUFACTURERS

- .1 Basis of Design products are named in this Section; additional manufacturers offering similar setting systems may be incorporated into the work provided they meet the performance requirements established by the named products.
- .2 Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - .1 Vision Glass:
 - .1 AGC Flat Glass North America (formerly AFG or AFGD)
 - .2 AHC Glass (formerly Visteon)
 - .3 Pilkington Glass of Canada
 - .4 Prelco Inc.
 - .5 PPG Industries
 - .6 Schott Glass AG

.7 Viracon Inc.

2.2 PERFORMANCE/DESIGN CRITERIA

- .1 Limit center-of-glass deflection to the smallest of:
 - .1 Displacement associated with the structural capacity of the glazing unit.
 - .2 $L-100$, where L is the shortest side dimension of the unit measured in inches.
 - .3 Or 19 mm

2.3 MATERIALS

- .1 Safety glass: to CAN/CGSB-12.1, 6 mm minimum thickness and as indicated on Drawings
 - .1 Type: 1 - laminated and 2-tempered.
 - .2 Class: B-float.
 - .3 Category: II – 540 J impact resistance.
- .2 Ultra Clear Back-Painted Glass: high visible light transmission, low iron composition and as follows:
 - .1 Type: 1-Tempered
 - .2 Thickness: as indicated on Drawings
 - .3 Acceptable Materials:
 - .1 Krystal Klear by AGC
 - .2 Opti-White by Pilkington
 - .3 Starphire by PPG Industries Inc.
 - .4 Ultra-White by Guardian Industries
- .3 Transparent one-way mirrored glass: to CAN/CGSB-12.6, 6 mm minimum thickness and as indicated on Drawings.
 - .1 Type: 1-Metallic coating applied to clear glass; confirm clear glass with Consultant prior to ordering.
 - .2 Class: C-Tempered.
 - .3 Form: 1-Float.
- .4 Patterned glass: to CAN/CGSB-12.13, 6 mm minimum thickness and as indicated on Drawings.
 - .1 Type: 2-Tempered.
 - .2 Styles: A-Figured one surface.

2.4 GLASS RAILING

- .1 Not used

2.5 ACCESSORIES

- .1 Plastic Film: in accordance with Section 08 87 53 – Glazing Films.
- .2 Sealant: in accordance with Section 07 92 00 – Joint Sealants.
- .3 Setting blocks: Neoprene, 80-90 Shore A durometer hardness to ASTM D2240, length to suit glazing method, glass light weight and area.

- .4 Spacer shims: Neoprene, 50-60 Shore A durometer hardness to ASTM D2240, 75 mm long x one half height of glazing stop x thickness to suit application. Self adhesive on one face.
- .5 Glazing tape:
 - .1 Preformed butyl compound with integral resilient tube spacing device, 10-15 Shore A durometer hardness to ASTM D2240; coiled on release paper; black colour.
 - .2 Closed cell polyvinyl chloride foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume 2%, designed for compression of 25%, to effect an air and vapour seal.
- .6 Glazing splines: resilient polyvinyl chloride, extruded shape to suit glazing channel retaining slot, black colour.
- .7 Glazing clips: manufacturer's standard type.
- .8 Lock-strip gaskets: to ASTM C542.
- .9 U-Channel: metal u-channel to accommodate glass thickness indicated on Drawings and as follows:
 - .1 Material: aluminum in accordance with ASTM B221, Type 6063-T5 or T52.
 - .2 Finish: as indicated on Drawings.
 - .3 Acceptable Manufacturers:
 - .1 CR Laurence Co.
 - .2 Julius Blum
 - .3 Richelieu

2.6 SMOKE BAFFLES

- .1 Refer to the Architectural Drawings and Specifications

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 EXAMINATION

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

3.3 PREPARATION

- .1 Ensure all wood backing rebates and stops properly primed and finished, coordinate with Section 06 20 00 – Finish Carpentry and Section 06 40 00 – Architectural Woodwork.

- .2 Ensure all glazing rebates smooth and true, free of projections nails, screws, fastenings properly set to prevent contact with glass.
- .3 Ensure all stops, splines, glazing accessories provided by others accurately cut to length and proper size and type for specific glazing.
- .4 Clean contact surfaces with solvent and wipe dry.
- .5 Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- .6 Prime surfaces scheduled to receive sealant.

3.4 INSTALLATION: GENERAL

- .1 Install in accordance with the manufacturer's written instructions and the contract documents, plumb, true, level and rigid.
- .2 Perform work in accordance with GANA Glazing Manual, IGMA, and GANA Laminated Glazing Reference Manual for glazing installation methods.
- .3 Do not glaze when ambient or surface temperatures are less than 4°C. Glazing rebates, stops and glass shall be dry, free from ice, frost slick, grease, oil, dust, rust, or other matter detrimental to adhesion of tape, glazing compounds and sealant.
- .4 Install glazing accessories in accordance with manufacturer's instructions.
- .5 Ensure all stops, gaskets, splines, seals etc., are aligned and ready to receive glazing and insulated panels as specified herein.
- .6 Glazing stops, snap covers shall be of a continuous length from corner to corner, and be fitted at corners.
- .7 All preformed tapes or gaskets shall be of a continuous length corner to corner and shall be cut over length to prevent stretching. Joints, splices and corners shall be mitred and sealed.
- .8 Clean all contact surfaces of glazing with solvent and wipe dry. Ensure all glazing channels are clean, true to line, and free of dirt or debris and that weep and drainage vents are open.
- .9 Rest glazing on setting blocks at 1/4 points.
- .10 Install shims at sides to align glass units.

3.5 CLEANING

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Remove traces of primer, caulking.
- .3 Remove glazing materials from finish surfaces.
- .4 Remove labels after work is complete.
- .5 Clean glass using approved non-abrasive cleaner in accordance with manufacture's instructions.
- .6 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.6 PROTECTION OF FINISHED WORK

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

3.7 SCHEDULE

- .1 As indicated on Drawings

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 05 50 00 – Metal Fabrications
- .2 Section 06 10 00 – Rough Carpentry
- .3 Section 06 20 00 – Finish Carpentry
- .4 Section 07 84 00 – Firestopping and Smoke seals
- .5 Section 07 92 00 – Sealants
- .6 Section 09 22 00 – Non-Structural Metal Framing
- .7 Section 09 91 00 – Painting

1.2 REFERENCES

- .1 Aluminum Association (AA)
 - .1 AA DAF-45-2003(R2009), Designation System for Aluminum Finishes.
- .2 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM C475/C475M-15, Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
 - .2 ASTM C514-04(2014), Specification for Nails for the Application of Gypsum Board.
 - .3 ASTM C840-17, Specification for Application and Finishing of Gypsum Board.
 - .4 ASTM C954-15, Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
 - .5 ASTM C1002-16, Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
 - .6 ASTM C1047-14a, Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
 - .7 ASTM C1396/C1396M-14a, Standard Specification for Gypsum Board.
- .3 Association of the Wall and Ceilings Industries International (AWCI)
- .4 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-51.34-M86., Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
- .5 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102-10, Surface Burning Characteristics of Building Materials and Assemblies.

1.3 SUBMITTALS

- .1 Submit product data in accordance with Section 01 11 00 – General Requirements, Submittals:

- .1 Submit manufacturer's printed product literature, specifications and data sheet for each product specified.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver materials in original packages, containers or bundles bearing manufacturers brand name and identification.
- .2 Store materials inside, level, under cover. Keep dry. Protect from weather, other elements and damage from construction operations and other causes.
- .3 Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trim from being bent or damaged.

1.5 SITE ENVIRONMENTAL REQUIREMENTS

- .1 Maintain temperature minimum 10 degrees C, maximum 21 degrees C for 48 hours prior to and during application of gypsum boards and joint treatment, and for at least 48 hours after completion of joint treatment.
- .2 Apply board and joint treatment to dry, frost free surfaces.
- .3 Ventilation: Ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 11 00 – General Requirements, Waste Management and Disposal.

Part 2 Products

2.1 MANUFACTURERS

- .1 Acceptable Manufacturers:
 - .1 CertainTeed Gypsum Canada Inc.
 - .2 CGC Inc.
 - .3 Georgia-Pacific Canada, Inc.

2.2 GYPSUM MATERIALS

- .1 Standard board: to ASTM C1396/C1396M and as follows:
 - .1 Type: regular and fire resistant.
 - .2 Size: 1200 mm x maximum practical length.
 - .3 Thickness: as indicated on Drawings.
 - .4 Ends: square cut.
 - .5 Edges: tapered.
 - .6 Acceptable materials:
 - .1 Wallboard (Type X), CertainTeed.
 - .2 Sheetrock (Firecode), CGC Inc.
 - .3 Toughrock Gypsum Wallboard (Fireguard), Georgia-Pacific Canada, Inc.

- .2 Sag Resistant Gypsum Board: to ASTM C1396/C1396M and as follows:
 - .1 Type: regular and fire resistant.
 - .2 Thickness: as indicated on Drawings.
 - .3 Acceptable materials:
 - .1 CD Ceiling Board, Georgia-Pacific Canada, Inc.
 - .2 Interior Ceiling Board, CertainTeed.
 - .3 Sheetrock Interior Ceiling Board, CGC Inc.
- .3 Mould resistant board: to ASTM C1396/C1396M and as follows:
 - .1 Type: regular and fire resistant.
 - .2 Size: 1200 mm x maximum practical length.
 - .3 Thickness: as indicated on Drawings.
 - .4 Acceptable materials:
 - .1 M2Tech Moisture & Mould Resistant Gypsum Board, CertainTeed.
 - .2 Sheetrock Mold Tough, CGC Inc.
 - .3 ToughRock Mold-Guard, Georgia-Pacific Canada, Inc.
- .4 Acoustically rated board: to ASTM C1396/C1396M and as follows:
 - .1 Type: regular and fire resistant.
 - .2 Thickness: as indicated on Drawings.
 - .3 Edges: tapered
 - .4 Basis-of-Design Materials:
 - .1 QuietRock as distributed by CertainTeed.
 - .2 Gold Bond SoundBreak XP by National Gypsum Company

2.3 FRAMING MATERIALS

- .1 Studs and Tracks: as indicated in Section 09 22 00.
- .2 Metal Furring Members: channels, hangers, tie wire, inserts, anchors, fasteners: ASTM C841.
- .3 Drywall furring channels: 0.75 mm core thickness galvanized steel channels for screw attachment of gypsum board.
- .4 Resilient clips and drywall furring: 0.5 mm base steel thickness galvanized steel for resilient attachment of gypsum board.

2.4 INSULATION MATERIALS

- .1 Glass Fiber Acoustical Insulation For Non-rated Assemblies: Un-faced, preformed GreenGuard™ or formaldehyde free binder fibrous insulation meeting the requirements of ASTM C423, ASTM E90, ASTM E413 and ULC S702 and as follows:
 - .1 Type: 1.
 - .2 Width: to friction fit in stud spaces.
 - .3 Thickness: to fill a minimum of 90% of the cavity thickness.
 - .4 Acceptable materials:

- .1 CertainTeed, NoiseReducer, Sound Control Fibre Glass Batts.
- .2 Johns Manville, Sound Shield Glass Fibre Batts.
- .3 Owen-Corning Canada LP., EcoTouch Quietzone PINK FiberGlas Acoustic Insulation.

2.5 CEILING/WALL ACCESS DOORS

- .1 Architectural, flush mounting access panels for gypsum board installation, thickness and fire rating to match wall assembly, manufacturer's standard sizes selected to suit access requirements, complete with extruded aluminum frame, concealed hinge and a removable door panel, air tight gasket and screwdriver slot latch mechanism. Confirm proposed location and number of access doors with Consultant prior to installation.
 - .1 Basis-of-Design: Bauco Products Incorporated, Bauco Plus.
 - .2 Acceptable Manufacturers:
 - .1 Access Panel Solutions
 - .2 Acudor Products, Inc.
 - .3 Chicago Metallic/Rockfon Corporation
 - .4 Nystrom Building Products Co.

2.6 ACCESSORIES

- .1 Nails: to ASTM C514.
- .2 Steel drill screws: to ASTM C1002.
- .3 Stud adhesive: to CAN/CGSB-71.25.
- .4 Laminating compound: as recommended by manufacturer, asbestos-free.
- .5 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, PVC or zinc-coated metal at contractor option, 0.5 mm base thickness, perforated flanges, one piece length per location.
- .6 Shadow mould: 35 mm high, snap-on trim, of 0.6 mm base steel thickness galvanized sheet pre-finished in satin enamel, white colour.
- .7 Strippable Edge Trim: Extruded PVC with pre-masked L-shaped tape on trim with tear away protective serrated strip for removal after compound and paint is applied, for use at areas where gypsum butts aluminum frames and where gypsum butts concrete or concrete block.
- .8 Sealants: in accordance with Section 07 92 00 - Sealants.
- .9 Acoustic sealant: non-hardening, non-skinning, permanently flexible and having VOC content less than the VOC limits of State of California's South Coast Air Quality Management District Rule #1168 and in accordance with Section 07 92 00 – Sealants.
- .10 Insulating strip: rubberized, moisture resistant, 3 mm thick cork or closed cell neoprene strip, 12 mm wide, with self sticking permanent adhesive on one face, lengths as required.
- .11 Joint Treatment Materials: Provide joint compound and accessory materials in accordance with ASTM C475 and as follows:

- .1 Joint Tape:
 - .1 Interior Gypsum Board: Paper.
 - .2 Interior Mould Resistant Gypsum Board: Fibreglass mesh tape.
- .2 Joint Compound for Interior Gypsum Board: Vinyl based, non-asbestos, low dusting type compatible with other compounds applied on previous or for successive coats, and as follows:
 - .1 Pre-filling: Setting type taping compound.
 - .2 Embedding and First Coat: Drying type compound.
 - .3 Fill Coat: Drying type compound.
 - .4 Finish Coat: Drying type, sandable topping compound.
 - .5 Skim Coat: Drying type, sandable topping compound.
 - .6 Acceptable Materials:
 - .1 CertainTeed Dust Away
 - .2 CGC Dust Control
- .3 Joint Compound for Interior Mould Resistant Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
 - .1 Pre-filling: Setting type joint compound.
 - .2 Embedding and First Coat: Setting type joint compound.
 - .3 Fill Coat: Setting type, sandable topping compound.
 - .4 Skim Coat: Setting type joint compound, sandable topping compound.

2.7 FINISHES

- .1 Paint: in accordance with Section 09 91 00 – Painting.

Part 3 Execution

3.1 ERECTION

- .1 Do application and finishing of gypsum board in accordance with ASTM C840 except where specified otherwise.
- .2 Do application of gypsum sheathing in accordance with ASTM C1280.
- .3 Erect hangers and runner channels for suspended gypsum board ceilings in accordance with ASTM C840 except where specified otherwise.
- .4 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
- .5 Install work level to tolerance of 1:1200.
- .6 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles.
- .7 Install 19 x 64 mm furring channels parallel to, and at exact locations of steel stud partition header track.
- .8 Furr gypsum board faced vertical bulkheads within and at termination of ceilings.

- .9 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
- .10 Install wall furring for gypsum board wall finishes in accordance with ASTM C840, except where specified otherwise.
- .11 Furr openings and around built-in equipment, cabinets, access panels, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.
- .12 Furr duct shafts, beams, columns, pipes and exposed services where indicated.
- .13 Erect drywall resilient furring transversely across studs and joists spaced maximum 600 mm on centre and not more than 150 mm from ceiling/wall juncture. Secure to each support with 25 mm drywall screw.
- .14 Install 150 mm continuous strip of 12.7 mm gypsum board along base of partitions where resilient furring installed.

3.2 APPLICATION

- .1 Do not apply gypsum board until bucks, anchors, blocking, sound attenuation, electrical and mechanical work are approved.
- .2 Apply single or double layer gypsum board to metal furring or framing using screw fasteners for first layer, screw fasteners for second layer. Maximum spacing of screws 300 mm on centre.
 - .1 Single-Layer Application:
 - .1 Apply gypsum board on ceilings prior to application of walls in accordance with ASTM C840.
 - .2 Apply gypsum board vertically or horizontally, providing sheet lengths that will minimize end joints.
 - .2 Double-Layer Application:
 - .1 Install gypsum board for base layer and exposed gypsum board for face layer.
 - .2 Apply base layer to ceilings prior to base layer application on walls; apply face layers in same sequence. Offset joints between layers at least 250 mm.
 - .3 Apply base layers at right angles to supports unless otherwise indicated.
 - .4 Apply base layer on walls and face layers vertically with joints of base layer over supports and face layer joints offset at least 250 mm with base layer joints.
- .3 Apply gypsum board to concrete surfaces, where indicated, using laminating adhesive.
 - .1 Comply with gypsum board manufacturer's recommendations.
 - .2 Brace or fasten gypsum board until fastening adhesive has set.
 - .3 Mechanically fasten gypsum board at top and bottom of each sheet.
- .4 Apply mould-resistant gypsum board where indicated and adjacent to slop sinks and janitors closets. Apply mould-resistant sealant to edges, ends, cut-outs which expose gypsum core and to fastener heads. Do not apply joint treatment on areas to receive tile finish.

- .5 Apply 12 mm diameter bead of acoustic sealant continuously around periphery of each face of partitioning to seal gypsum board/structure junction where partitions abut fixed building components. Seal full perimeter of cut-outs around electrical boxes, ducts, in partitions where perimeter sealed with acoustic sealant.
- .6 Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.
- .7 Install gypsum board on walls vertically to avoid end-butt joints. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs, except where local codes or fire-rated assemblies require vertical application.
- .8 Install gypsum board with face side out.
- .9 Do not install damaged or damp boards.
- .10 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

3.3 INSTALLATION

- .1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 150 mm on centre or using contact adhesive for full length.
- .2 Install casing beads around perimeter of suspended ceilings.
- .3 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.
- .4 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.
- .5 Install shadow mould at gypsum board/ceiling juncture as indicated. Minimize joints; use corner pieces and splicers.
- .6 Construct control joints of preformed units or two back-to-back casing beads set in gypsum board facing and supported independently on both sides of joint.
- .7 Provide continuous polyethylene dust barrier behind and across control joints.
- .8 Locate control joints where indicated and at changes in substrate construction at approximate 10 m spacing on long corridor runs at approximate 15 m spacing on ceilings.
- .9 Install control joints straight and true.
- .10 Construct expansion joints at building expansion and construction joints. Provide continuous dust barrier.
- .11 Install expansion joint straight and true.
- .12 Splice corners and intersections together and secure to each member with 3 screws.
- .13 Install access doors to electrical and mechanical fixtures specified in respective sections.
 - .1 Rigidly secure frames to furring or framing systems.

- .14 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.
- .15 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with Association of the Wall and Ceiling Industries (AWCI) International Recommended Specification on Levels of Gypsum Board Finish:
 - .1 Levels of finish:
 - .1 Level 1 for areas not exposed to view: Embed tape for joints and interior angles in joint compound. Surfaces to be free of excess joint compound; tool marks and ridges are acceptable and for plenum areas above ceilings, in attics or in concealed spaces.
 - .2 Level 4 for exposed areas: Embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges and where light textures or wall coverings are to be applied.
 - .3 Level 5 for repairing and preparing existing gypsum for paint finish: Embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; apply a thin skim coat of joint compound to entire surface; surfaces smooth and free of tool marks and ridges. Use this level of finish to minimize joint photographing, in long corridors, and where severe lighting occurs.
- .16 Finish corner beads, control joints and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.
- .17 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after surface finish is completed.
- .18 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.
- .19 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.
- .20 Mix joint compound slightly thinner than for joint taping.
- .21 Apply thin coat to entire surface using trowel or drywall broadknife to fill surface texture differences, variations or tool marks.
- .22 Allow skim coat to dry completely.
- .23 Remove ridges by light sanding or wiping with damp cloth.
- .24 Provide protection that ensures gypsum drywall work will remain without damage or deterioration at time of substantial completion.

END OF SECTION

Part 1 vGeneral

1.1 RELATED SECTIONS

- .1 Section 05 50 00 - Metal Fabrications
- .2 Section 06 10 00 - Rough Carpentry
- .3 Section 09 21 16 - Gypsum Board Assemblies

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM).
 - .1 ASTM C645-14e1, Standard Specification for Nonstructural Steel Framing Members.
 - .2 ASTM C754-17, Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
- .2 Environmental Choice Program (ECP).
 - .1 CCD-047-05, Architectural Surface Coatings.
 - .2 CCD-048-06, Surface Coatings - Recycled Water-borne.

1.3 ADMINSTRATIVE REQUIREMENTS

- .1 Convene pre-installation meetings one week prior to beginning work of this Section in accordance with Section 01 11 00 – General Requirements, Project Meetings to:
 - .1 Verify project requirements.
 - .2 Review installation conditions.
 - .3 Co-ordinate with other building subtrades.
 - .4 Review manufacturer's instructions.

1.4 QUALITY ASSURANCE

- .1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 11 00 – General Requirements, Waste Management and Disposal.

Part 2 Products

2.1 MATERIALS

- .1 Non-load bearing channel stud framing: to ASTM C645, stud sizes as indicated on Drawings, roll formed from 0.53 mm thickness hot dipped galvanized steel sheet, for screw attachment of gypsum board. Use 0.75 mm heavy weight framing to support fire rated door frames. Knock-out service holes at 460 mm centres.
- .2 Runners: Width, gauge and galvanizing to match steel studs, and as follows:
 - .1 Double Runner Deflection Track: Outside runner using 50 mm flanges; inner runner 33 mm; maintaining 25 mm minimum deflection space.
 - .2 Slotted Deflection Track for Fire Separations: Premanufactured slotted top runner with 63 mm down standing legs and having 6 mm wide x 38 mm high slots spaced at 25 mm o/c along length of runner; tested and certified for use in fire rated wall construction:
 - .1 Acceptable materials:
 - .1 Brady Construction Innovations, SliptrackSystems
 - .2 Dietrich Metal Framing, SLP-TRK
 - .2 Base Runner: Bottom track with 33 mm upstanding legs.
- .3 Curving tracks: Commercial steel sheet with ASTM A653, Z180, hot dip galvanized zinc coating, complete with flexible sliding straps to allow for curvature indicated on drawings; width to suit framing, and as follows:
 - .1 Width: 92 mm
 - .2 Minimum base metal thickness: 0.75 mm.
 - .3 Acceptable materials:
 - .1 Flex-C Trac
- .4 Metal channel stiffener: sizes as required, 1.4 mm thick cold rolled steel, coated with rust inhibitive coating.
- .5 Acoustical sealant: to Section 07 92 00.
- .6 Insulating strip: rubberized, moisture resistant 3 mm thick cork or foam strip, 12 mm wide, with self sticking adhesive on one face, lengths as required.
- .7 Fasteners for Metal Framing: Type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

Part 3 Execution

3.1 ERECTION

- .1 Align partition tracks at floor and ceiling and secure at 600 mm on centre maximum.
- .2 Install damp proof course under stud shoe tracks of partitions on slabs on grade.
- .3 Place studs vertically at 400 mm on centre and not more than 50 mm from abutting walls, and at each side of openings and corners. Position studs in tracks at floor and ceiling. Cross brace steel studs as required to provide rigid installation to manufacturer's instructions.

- .4 Erect metal studding to tolerance of 1:1000.
- .5 Attach studs to bottom and ceiling track using screws, crimp method, or pop rivets.
- .6 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.
- .7 Co-ordinate erection of studs with installation of door/window frames and special supports or anchorage for work specified in other Sections.
- .8 Provide two studs extending from floor to ceiling at each side of openings wider than stud centres specified. Secure studs together, 50 mm apart using column clips or other approved means of fastening placed alongside frame anchor clips.
- .9 Install heavy gauge (1.52 mm thick) single jamb studs at openings.
- .10 Erect track at head of door/window openings and sills of sidelight/window openings to accommodate intermediate studs. Secure track to studs at each end, in accordance with manufacturer's instructions. Install intermediate studs above and below openings in same manner and spacing as wall studs.
- .11 Frame openings and around built-in equipment, cabinets, access panels, on four sides. Extend framing into reveals. Check clearances with equipment suppliers.
- .12 Provide 40 mm stud or furring channel secured between studs for attachment of fixtures behind lavatory basins, toilet and bathroom accessories, and other fixtures including grab bars and towel rails, attached to steel stud partitions.
- .13 Install steel studs or furring channel between studs for attaching electrical and other boxes.
- .14 Extend partitions to ceiling height except where noted otherwise on drawings.
- .15 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs. Use 50 mm leg ceiling tracks. Use double track slip joint as indicated.
- .16 Install continuous insulating strips to isolate studs from uninsulated surfaces.
- .17 Install two continuous beads of acoustical sealant or continuous insulating strip under studs and tracks around perimeter of sound control partitions.

3.2 STEEL STUD HEIGHT SCHEDULE

Maximum Stud Height (mm) based on lateral pressure of 240 Pa with deflection limit of L/240

Stud Spacing O.C.	300	400	600	300	400	600
Stud Depth (mm)	0.48 mm Steel Design Thickness			0.88 mm Steel Design Thickness		
64	3630	3430	3230	4240	3910	3530
92	4670	4370	4090	5440	5000	4500
102	5000	4670	4320	6070	5590	5000
152	6730	6020	5110	8150	7470	6580

Based upon tests with 13mm gypsum board both sides with screw fasteners spaced at 300 mm o.c. Heights also apply to greater gypsum board thickness and multiple gypsum board layers.

3.3 CLEANING

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

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Technical sections as indicated.

1.2 REFERENCES

- .1 American Society of Testing and Materials (ASTM)
 - .1 ASTM D16-16, Standard Terminology for Paint, Related Coatings, Materials, and Applications.
 - .2 ASTM E84-16, Standard Test Method for Surface Burning Characteristics of Building Materials.
- .2 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Protection Act (CEPA), 1999, c. 33.
- .3 Environmental Protection Agency (EPA)
 - .1 EPA Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 - 1995, (for Surface Coatings).
- .4 Green Seal
 - .1 Green Seal Standards GS-11, Paint.
 - .2 Green Seal Standard GC-03, Anti-Corrosive Paints.
- .5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .6 Master Painters Institute (MPI)
 - .1 MPI Architectural Painting Specifications Manual.
- .7 National Fire Code of Canada – 2015.
- .8 South Coast Air Quality Management District (SCAQMD), California State
 - .1 SCAQMD Rule 1113-04, Architectural Coatings.
- .9 Society for Protective Coatings (SSPC)
 - .1 SSPC Painting Manual, Volume 2

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-Installation Meeting:
 - .1 Convene pre-installation meeting one week prior to beginning work of this Section and on-site installations in accordance with Construction Progress Schedule.
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Coordination with other building subtrades.
 - .4 Review manufacturer's installation instructions and warranty requirements.

- .2 Scheduling
 - .1 Submit work schedule for various stages of painting to Consultant for review. Submit schedule minimum of 48 hours in advance of proposed operations.
 - .2 Obtain written authorization from Consultant for changes in work schedule.
 - .3 Schedule painting operations to prevent disruption of and by other trades.
 - .4 Schedule painting operations to prevent disruption of occupants.
- .3 Health and Safety:
 - .1 Do construction occupational health and safety in accordance with Health and Safety Requirements.

1.4 SUBMITTALS

- .1 Submit product data in accordance with Section 01 11 00 – General Requirements, Submittals
 - .1 Submit product data and instructions for each paint and coating product to be used.
 - .2 Submit product data for the use and application of paint thinner.
 - .3 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS). Indicate VOCs during application and curing.
- .2 Submit samples in accordance with Section 01 11 00 – General Requirements, Submittals.
 - .1 Submit full range colour sample chips to indicate where colour availability is restricted.
 - .2 Submit duplicate 200 x 300 mm sample panels of each paint, stain and clear coating with specified paint or coating in colours, gloss/sheen and textures required to MPI Architectural Painting Specification Manual standards submitted on following substrate materials:
 - .1 3 mm plate steel for finishes over metal surfaces.
 - .2 50 mm concrete block for finishes over concrete or concrete masonry surfaces.
 - .3 13 mm gypsum board for finishes over gypsum board and other smooth surfaces.
 - .4 10 mm plywood for finishes over wood surfaces.
 - .3 Retain reviewed samples on-site to demonstrate acceptable standard of quality for appropriate on-site surface.
- .3 Closeout Submittals: submit maintenance data for incorporation into manual specified in Section 01 11 00 – General Requirements, Closeout Submittals include following:
 - .1 Product name, type and use.
 - .2 Manufacturer's product number.
 - .3 Colour numbers.
 - .4 MPI Environmentally Friendly classification system rating.

- .4 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation and application instructions.
- .5 Submit quality assurance submittals in accordance with Section 01 11 00 – General Requirements, Quality Control.
 - .1 Test reports: submit certified test reports for paint from approved independent testing laboratories, indicating compliance with specifications for specified performance characteristics and physical properties.
 - .1 Lead, cadmium and chromium: presence of and amounts.
 - .2 Mercury: presence of and amounts.
 - .3 Organochlorines and PCBs: presence of and amounts.
 - .2 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

1.5 QUALITY ASSURANCE

- .1 Contractor: minimum of five years proven satisfactory experience. Provide list of last three comparable jobs including, job name and location, specifying authority, and project manager.
- .2 Journeymen: qualified journeymen who have "Tradesman Qualification Certificate of Proficiency" engaged in painting work.
- .3 Apprentices: working under direct supervision of qualified trades person in accordance with trade regulations.

1.6 MOCK-UPS

- .1 Construct mock-ups in accordance with Section 01 11 00 – General Requirements, Quality Control.
 - .1 Provide 3 m x 3 m mock-up. Prepare and paint designated surface, area, room or item (in each colour scheme) to specified requirements, with specified paint or coating showing selected colours, gloss/sheen, textures.
 - .2 Mock-up will be used to judge workmanship, substrate preparation, operation of equipment and material application and workmanship to MPI Architectural Painting Specification Manual standards.
 - .3 Locate where directed.
 - .4 Allow for review of mock-up before proceeding with work.
 - .5 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work.

1.7 DELIVERY, STORAGE, AND HANDLING

- .1 Packing, Shipping, Handling and Unloading:
 - .1 Pack, ship, handle and unload materials in accordance with Section 01 11 00 – General Requirements, Common Product Requirements and manufacturer's written instructions.

- .2 Acceptance at Site:
 - .1 Identify products and materials with labels indicating:
 - .1 Manufacturer's name and address.
 - .2 Type of paint or coating.
 - .3 Compliance with applicable standard.
 - .4 Colour number in accordance with established colour schedule.
- .3 Remove damaged, opened and rejected materials from site.
- .4 Storage and Protection:
 - .1 Provide and maintain dry, temperature controlled, secure storage.
 - .2 Store materials and supplies away from heat generating devices.
 - .3 Store materials and equipment in well ventilated area with temperature range 7 degrees C to 30 degrees C.
- .5 Store temperature sensitive products above minimum temperature as recommended by manufacturer.
- .6 Keep areas used for storage, cleaning and preparation clean and orderly. After completion of operations, return areas to clean condition.
- .7 Remove paint materials from storage only in quantities required for same day use.
- .8 Fire Safety Requirements:
 - .1 Provide one 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.
 - .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
 - .3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada requirements.

1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling in accordance with Section 01 11 00 – General Requirements, Waste Management and Disposal.
- .2 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal, regulations.
- .3 Ensure emptied containers are sealed and stored safely.
- .4 Unused paint materials must be disposed of at official hazardous material collections site as approved by Consultant.
- .5 Paint, stain and wood preservative finishes and related materials (thinners, and solvents) are regarded as hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.
- .6 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.

- .7 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
- .8 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into ground follow these procedures:
 - .1 Retain cleaning water for water-based materials to allow sediments to be filtered out.
 - .2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
 - .3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
 - .4 Dispose of contaminants in approved legal manner in accordance with hazardous waste regulations.
 - .5 Empty paint cans are to be dry prior to disposal or recycling (where available).
- .9 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.
- .10 Set aside and protect surplus and uncontaminated finish materials. Deliver to or arrange collection by individuals or organizations for verifiable re-use or re-manufacturing.

1.9 SITE CONDITIONS

- .1 Heating, Ventilation and Lighting:
 - .1 Ventilate enclosed spaces.
 - .2 Provide heating facilities to maintain ambient air and substrate temperatures above 10 degrees C for 24 hours before, during and after paint application until paint has cured sufficiently.
 - .3 Provide continuous ventilation for seven days after completion of application of paint.
 - .4 Coordinate use of existing ventilation system with Consultant and ensure its operation during and after application of paint as required.
 - .5 Provide temporary ventilating and heating equipment where permanent facilities are not available or supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.
 - .6 Provide minimum lighting level of 323 Lux on surfaces to be painted.
- .2 Temperature, Humidity and Substrate Moisture Content Levels:
 - .1 Unless pre-approved written approval by Consultant and product manufacturer, perform no painting when:
 - .1 Ambient air and substrate temperatures are below 10 degrees C.
 - .2 Substrate temperature is above 32 degrees C unless paint is specifically formulated for application at high temperatures.
 - .3 Substrate and ambient air temperatures are not expected to fall within MPI or paint manufacturer's prescribed limits.

- .4 The relative humidity is over 85% or when the dew point is more than 3 degrees C variance between the air/surface temperature. Paint should not be applied if the dew point is less than 3 degrees C below the ambient or surface temperature. Use sling psychrometer to establish the relative humidity before beginning paint work.
- .5 Rain or snow are forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.
- .6 Ensure that conditions are within specified limits during drying or curing process, until newly applied coating can itself withstand 'normal' adverse environmental factors.
- .2 Perform painting work when maximum moisture content of the substrate is below:
 - .1 12% for concrete and masonry (clay and concrete brick/block).
 - .2 15% for wood.
 - .3 12% for plaster and gypsum board.
 - .4 Allow new concrete and masonry to cure minimum of 28 days.
- .3 Test for moisture using calibrated electronic Moisture Meter. Test concrete floors for moisture using "cover patch test".
- .4 Test concrete, masonry and plaster surfaces for alkalinity as required.
- .3 Surface and Environmental Conditions:
 - .1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.
 - .2 Apply paint to adequately prepared surfaces and to surfaces within moisture limits.
 - .3 Apply paint when previous coat of paint is dry or adequately cured.
- .4 Additional interior application requirements:
 - .1 Apply paint finishes when temperature at location of installation can be satisfactorily maintained within manufacturer's recommendations.
 - .2 Apply paint in occupied facilities during silent hours only. Schedule operations to approval of Consultant such that painted surfaces will have dried and cured sufficiently before occupants are affected.

Part 2 Products

2.1 MATERIALS

- .1 Paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.
- .2 Provide paint materials for paint systems from single manufacturer.
- .3 Only qualified products with E2 "Environmentally Friendly" ratings are acceptable for use on this project, Use E3 rated products where available.
- .4 Conform to latest MPI requirements for all painting work including preparation and priming.

- .5 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) in accordance with MPI - Architectural Painting Specification Manual "Approved Product" listing.
- .6 Linseed oil, shellac, and turpentine: highest quality product from approved manufacturer listed in MPI Architectural Painting Specification Manual, compatible with other coating materials as required.
- .7 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids:
 - .1 Use water-based coatings where available.
 - .2 Non-flammable.
 - .3 Manufactured without compounds which contribute to ozone depletion in the upper atmosphere.
 - .4 Manufactured without compounds which contribute to smog in the lower atmosphere.
 - .5 Do not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.
- .8 Formulate and manufacture water-borne surface coatings with no aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium or their compounds.
- .9 Flash point: 61.0 degrees C or greater for water-borne surface coatings and recycled water-borne surface coatings.
- .10 Ensure manufacture and process of both water-borne surface coatings and recycled water-borne surface coatings does not release:
 - .1 Matter in undiluted production plant effluent generating 'Biochemical Oxygen Demand' (BOD) in excess of 15 mg/L to natural watercourse or sewage treatment facility lacking secondary treatment.
 - .2 Total Suspended Solids (TSS) in undiluted production plant effluent in excess of 15 mg/L to natural watercourse or a sewage treatment facility lacking secondary treatment.
- .11 Water-borne paints and stains, recycled water-borne surface coatings and water borne varnishes to meet minimum "Environmentally Friendly" E2 rating.
- .12 Recycled water-borne surface coatings must not contain:
 - .1 Lead in excess of 600.0 ppm weight/weight total solids.
 - .2 Mercury in excess of 50.0 ppm weight/weight total product.
 - .3 Cadmium in excess of 1.0 ppm weight/weight total product.
 - .4 Hexavalent chromium in excess of 3.0 ppm weight/weight total product.
 - .5 Organochlorines or polychlorinated biphenyls (PCBS) in excess of 1.0 ppm weight/weight total product.
- .13 VOC limits for architectural paints and coatings applied to interior surfaces in accordance with Green Seal Standard GS-11 and as follows:
 - .1 Interior Flat Coating or Primer: maximum VOC limit 50 g/L.
 - .2 Interior Non-Flat Coating or Primer: maximum VOC limit 150 g/L.
- .14 VOC limits for anti-corrosive and anti-rust paints applied to interior ferrous metal substrates in accordance with Green Seal Standard GS-03 and as follows:

- .1 Anti-Corrosive/Anti-Rust Paint: maximum VOC limit 250 g/L.
- .15 VOC limits for wood finishes, floor coatings, stains, primers and shellacs applied to interior elements in accordance with SCAQMD Rule 1113 and as follows:
 - .1 Clear Wood Finishes – Lacquer: maximum VOC limit 550 g/L.
 - .2 Clear Wood Finishes – Sanding Sealers: maximum VOC limit 350 g/L.
 - .3 Clear Wood Finishes – Varnish: maximum VOC limit 350 g/L.
 - .4 Clear Brushing Lacquer: maximum VOC limit 680 g/L.
 - .5 Floor Coatings: maximum VOC limit 100 g/L.
 - .6 Sealers and Undercoaters: maximum VOC limit 200 g/L.
 - .7 Shellac – Clear: maximum VOC limit 730 g/L.
 - .8 Shellac – Pigmented: maximum VOC limit 550 g/L.
 - .9 Stain: maximum VOC limit 250 g/L.
 - .10 Pigmented Lacquer: maximum VOC limit 550 g/L.
 - .11 Low-Solids Coatings: maximum VOC limit 120 g/L.

2.2 COLOURS

- .1 Paint Colours (PT): as indicated in Section 09 99 00 – Finish Schedule.
- .2 Second coat in three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

2.3 MIXING AND TINTING

- .1 Unless otherwise specified or pre-approved, all paint shall be ready-mixed and pre-tinted. Re-mix all paint in contained prior to and during application to ensure break-up of lumps, completed dispersion of settled pigment, and colour and gloss uniformity.
- .2 Mix paste, powder or catalyzed paint mixes in accordance with manufacturer's written instructions.
- .3 Use and add thinner in accordance with paint manufacturer's recommendations. Do not use kerosene or similar organic solvents to thin water-based paints.
- .4 Thin paint for spraying in accordance with paint manufacturer's instructions.

2.4 GLOSS/SHEEN RATINGS

- .1 Paint gloss is defined as sheen rating of applied paint, in accordance with following values:

	Gloss @ 60 degrees	Sheen @ 85 degrees
Gloss Level 1 - Matte Finish (flat)	Max. 5	Max. 10
Gloss Level 2 - Velvet-Like Finish	Max.10	10 to 35
Gloss Level 3 - Eggshell Finish	10 to 25	10 to 35
Gloss Level 4 - Satin-Like Finish	20 to 35	min. 35
Gloss Level 5 - Traditional Semi-Gloss Finish	35 to 70	

Gloss Level 6 - Traditional Gloss	Gloss @ 60 degrees 70 to 85	Sheen @ 85 degrees
Gloss Level 7 - High Gloss Finish	More than 85	

- .2 Gloss level ratings of painted surfaces as indicated on Drawings or as directed by Consultant.

2.5 INTERIOR PAINTING

- .1 Unless otherwise specified, all interior painting work to be in accordance with MPI Premium Grade finish requirements.
- .2 Structural steel and metal fabrications: columns, beams, joists:
- .1 INT 5.1R - High performance architectural latex gloss level as indicated Drawings.
- .3 Steel - high heat: (boilers, furnaces, heat exchangers, breeching, pipes, flues, stacks, etc., with temperature range as noted):
- .1 INT 5.2A - Heat resistant enamel finish, maximum 205 degrees C.
- .2 INT 5.2B - Heat resistant aluminum paint finish, maximum 427 degrees C.
- .3 INT 5.2C - Inorganic zinc rich coating, maximum 400 degrees C.
- .4 INT 5.2D - High heat resistant coating, maximum 593 degrees C.
- .4 Galvanized metal: doors, frames, railings, misc. steel, pipes, overhead decking, and ducts.
- .1 INT 5.3M - High performance architectural latex gloss level as indicated Drawings.
- .5 Dressed Lumber (including doors, door and window frames, casings, mouldings, etcetera):
- .1 INT 6.3A – High performance architectural latex gloss level as indicated in Finish Schedule.
- .2 INT 6.3E – Polyurethane varnish (over stain).
- .3 INT 6.3N – Polyurethane, Clear, 2 Component
- .6 Wood Paneling and Caseworks (partitions, panels, plywood, veneer, millwork, etc.)
- .1 INT 6.4E – Polyurethane varnish (over stain).
- .7 Plaster and gypsum board: gypsum wallboard, drywall, "sheet rock type material", and textured finishes:
- .1 INT 9.2B - High performance architectural latex gloss level as indicated on Drawings or as directed by Consultant.
- .8 Acoustic panels and tiles (touch up paint):
- .1 INT 9.3A - Latex flat finish.
- .9 Bituminous coated surfaces: cast iron pipe, concrete, etc.:
- .1 INT 10.2A - Latex semi-gloss level finish.

2.6 MAINTENANCE REPAINTING

- .1 Paint existing interior previously finishes surfaces in accordance with the MPI Manual painting systems listed in this section.

2.7 SOURCE QUALITY CONTROL

- .1 Perform following tests on each batch of consolidated post-consumer material before surface coating is reformulated and canned. Testing by laboratory or facility which has been accredited by Standards Council of Canada.
 - .1 Lead, cadmium and chromium are to be determined using ICP-AES (Inductively Coupled Plasma - Atomic Emission Spectroscopy) technique no. 6010 as defined in EPA SW-846.
 - .2 Mercury is to be determined by Cold Vapour Atomic Absorption Spectroscopy using Technique no. 7471 as defined in EPA SW-846.
 - .3 Organochlorines and PCBs are to be determined by Gas Chromatography using Technique no. 8081 as defined in EPA SW-846.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheet.

3.2 GENERAL

- .1 Perform preparation and operations for interior painting in accordance with MPI - Architectural Painting Specifications Manual except where specified otherwise.
- .2 Apply paint materials in accordance with paint manufacturer's written application instructions.

3.3 EXAMINATION

- .1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Consultant damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.
- .2 Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test". Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.
- .3 Maximum moisture content as follows:
 - .1 Stucco, plaster and gypsum board: 12%.
 - .2 Concrete: 12%.
 - .3 Wood: 15%.
 - .4 Clay and Concrete Block/Brick: 12%

3.4 PREPARATION

- .1 Protection:
 - .1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore surfaces as directed by Consultant.
 - .2 Protect items that are permanently attached such as Fire Labels on doors and frames.
 - .3 Protect factory finished products and equipment.
 - .4 Protect passing pedestrians and general public in and about the building.
- .2 Surface Preparation:
 - .1 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.
 - .2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
 - .3 Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Consultant.
- .3 Clean and prepare surfaces in accordance with MPI - Architectural Painting Specification Manual requirements and coating manufacturer's recommendations. Refer to MPI Manual in regard to specific requirements and as follows:
 - .1 Remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths or compressed air.
 - .2 Wash surfaces with a biodegradable detergent and bleach where applicable and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.
 - .3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
 - .4 Allow surfaces to drain completely and allow to dry thoroughly.
 - .5 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.
 - .6 Use trigger operated spray nozzles for water hoses.
 - .7 Many water-based paints cannot be removed with water once dried. Minimize use of mineral spirits or organic solvents to clean up water-based paints.
- .4 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.
- .5 Where possible, prime non-exposed surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.
 - .1 Apply vinyl sealer to MPI #36 over knots, pitch, sap and resinous areas.

- .2 Apply wood filler to nail holes and cracks.
- .3 Tint filler to match stains for stained woodwork.
- .6 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.
- .7 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes, blowing with clean dry compressed air, or vacuum cleaning.
- .8 Touch up of shop primers with primer as specified.
- .9 Do not apply paint until prepared surfaces have been accepted by Consultant.

3.5 APPLICATION

- .1 Method of application to be as approved by Consultant. Apply paint by brush, roller, air sprayer or airless sprayer. Conform to manufacturer's application instructions unless specified otherwise.
- .2 Brush and Roller Application:
 - .1 Apply paint in uniform layer using brush and/or roller type suitable for application.
 - .2 Work paint into cracks, crevices and corners.
 - .3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.
 - .4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces free of roller tracking and heavy stipple.
 - .5 Remove runs, sags and brush marks from finished work and repaint.
- .3 Spray application:
 - .1 Provide and maintain equipment that is suitable for intended purpose, capable of atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.
 - .2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.
 - .3 Apply paint in uniform layer, with overlapping at edges of spray pattern. Back roll first coat application.
 - .4 Brush out immediately all runs and sags.
 - .5 Use brushes and rollers to work paint into cracks, crevices and places which are not adequately painted by spray.
- .4 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access.
- .5 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .6 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.

- .7 Sand and dust between coats to remove visible defects.
- .8 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.
- .9 Finish inside of cupboards and cabinets as specified for outside surfaces.
- .10 Finish closets and alcoves as specified for adjoining rooms.
- .11 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

3.6 REPAINTING OF EXISTING FINISHES

- .1 Refer to MPI Maintenance Repainting Manual for repainting of existing finishes.
- .2 Use finish coat of respective new surface paint system for minor repair of existing finishes. Use system primer where existing finishes are damaged down to bare surface.

3.7 MECHANICAL/ELECTRICAL EQUIPMENT

- .1 Paint finished area exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as indicated.
- .2 Boiler room, mechanical and electrical rooms: paint exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment.
- .3 Other unfinished areas: leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and marks.
- .4 Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.
- .5 Do not paint over nameplates.
- .6 Keep sprinkler heads free of paint.
- .7 Paint inside of ductwork where visible behind grilles, registers and diffusers with primer and one coat of matt black paint.
- .8 Paint fire protection piping red.
- .9 Paint disconnect switches for fire alarm system and exit light systems in red enamel.
- .10 Paint natural gas piping yellow.
- .11 Paint both sides and edges of backboards for telephone and electrical equipment before installation. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.
- .12 Do not paint interior transformers and substation equipment.

3.8 SITE TOLERANCES

- .1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.

- .2 Ceilings: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.
- .3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

3.9 FIELD QUALITY CONTROL

- .1 Where "special" painting, coating or decorating system applications (i.e. elastomeric coatings) or non-MPI listed products or systems are to be used, paint or coating manufacturer shall provide as part of this work, certification of surfaces and conditions for specific paint or coating system application as well as on site supervision, inspection and approval of their paint or coating system application as required at no additional cost to Consultant.
- .2 Advise Consultant when surfaces and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.
- .3 Cooperate with inspection firm and provide access to areas of work.
- .4 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Consultant.

3.10 CLEANING

- .1 Proceed in accordance with Section 01 11 00 – General Requirements, Cleaning.
- .2 Remove paint where spilled, splashed, splattered or sprayed as work progresses using means and materials that are not detrimental to affected surfaces

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

- .1 Section 06 10 00 – Rough Carpentry
- .2 Section 08 80 50 – Glazing: Mirrors
- .3 Section 09 21 16 – Gypsum Board Assemblies
- .4 Section 10 21 13 – Toilet Compartments
- .5 Division 26: Electrical

1.2 SUBMITTALS

- .1 Submit product data in accordance with Section 01 11 00 – General Requirements, Submittals:
 - .1 Submit manufacturer's printed product literature, specifications and datasheet.
 - .2 Submit shop drawings in accordance with Section 01 11 00 – General Requirements, Submittals:
 - .1 Indicate size and description of components, base material, surface finish inside and out, hardware and locks, attachment devices, description of rough-in-frame, building-in details of anchors for grab bars.
 - .3 Submit samples in accordance with Section 01 11 00 – General Requirements, Submittals:
 - .1 Samples to be returned for inclusion into work.
 - .4 Submit closeout data in accordance with Section 01 11 00 – General Requirements, Closeout Submittals:
 - .1 Provide maintenance data for toilet and bath accessories for incorporation into manual specified in Section 01 11 00 – General Requirements, Closeout Submittals.
 - .2 Include list of sources for disposable supplies, replacement parts and service recommendations.

1.3 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 11 00 – General Requirements, Waste Management and Disposal.

1.4 EXTRA MATERIALS

- .1 Provide special tools required for accessing, assembly/disassembly or removal for toilet and bath accessories in accordance with requirements specified in Section 01 11 00 – General Requirements, Closeout Submittals.
- .2 Deliver special tools to Consultant.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- .1 Acceptable Manufacturers: subject to compliance with requirements specified in this Section and as established by the basis-of-design materials, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following: See attached equipment sheets for final selections.
 - .1 ASI Specialties Inc.
 - .2 Bobrick Washroom Equipment of Canada Ltd.
 - .3 Bradley Corporation.
 - .4 Frost

2.2 MATERIALS

- .1 Sheet steel: to ASTM A653/A653M cold rolled, commercial quality, 0.912 mm minimum nominal thickness, with ZF001 designation zinc coating.
- .2 Stainless steel sheet metal: to ASTM A666, Type 304, finish as indicated in component list in 1.519 mm minimum nominal thickness.
- .3 Stainless steel tubing: Type 304, commercial grade, seamless welded, 1.2 mm wall thickness.
- .4 Fasteners: concealed screws and bolts hot dip galvanized after fabrication, tamper and theft resistant exposed fasteners to match material of unit. Expansion shields fibre, lead or rubber as recommended by accessory manufacturer for component and its intended use.

2.3 COMPONENTS

- .1 Toilet tissue dispenser: single roll type, surface mounted, stainless steel construction, concealed mounting, accommodates toilet paper roll of 140 mm diameter, roll under spring tension for controlled delivery with bright polished finish.
- .2 Combination towel dispenser/waste receptacle: surface mounted wall unit, approximately 330 mm wide, 1400 mm high, 152 mm deep of stainless steel construction with satin finish. Suitable for dispensing multi-fold, C-fold or single fold paper towels. Removable galvanized steel waste receptacle, lockable access door with continuous full height stainless steel hinge.
- .3 Feminine napkin disposal bin: stainless steel, surface mounting unit, continuous hinged door, self closing with leak proof plastic receptacle and 10 disposable liners for initial stocking purpose for each unit.
- .4 Soap dispenser: liquid push-in valve, self contained 1.14 L tank, stainless steel piston and valve assembly, refillable from top, tamper proof keyed lock, horizontal surface mounted, stainless steel with satin finish.
- .5 Grab Bars: straight 38 mm dia x 1.2 mm thick of stainless steel with satin finish, concealed mounting flanges, screw attachment, flanges welded to tubular bar, provided with steel back plates and all accessories. Knurl bar at area of hand grips. Grab bar material and anchorage to withstand downward pull of 2.2 kN.
- .6 Flat Mirrors: as specified in Section 08 80 50.

2.4 FABRICATION

- .1 Weld and grind joints of fabricated components flush and smooth. Use mechanical fasteners only where approved.
- .2 Wherever possible form exposed surfaces from one sheet of stock, free of joints.
- .3 Brake form sheet metal work with 1.5 mm radius bends.
- .4 Form surfaces flat without distortion. Maintain flat surfaces without scratches or dents.
- .5 Back paint components where contact is made with building finishes to prevent electrolysis.
- .6 Hot dip galvanize concealed ferrous metal anchors and fastening devices to CSA G164.
- .7 Shop assemble components and package complete with anchors and fittings.
- .8 Deliver inserts and rough-in frames to job site at appropriate time for building-in. Provide templates, details and instructions for building in anchors and inserts.
- .9 Provide steel anchor plates and components for installation on studding and building framing.

2.5 FINISHES

- .1 Chrome and nickel plating: to ASTM B456, satin finish.
- .2 Labels: Non-exposed faces, provide maximum 38 mm diameter stamped manufacturer logo.

PART 3 EXECUTION

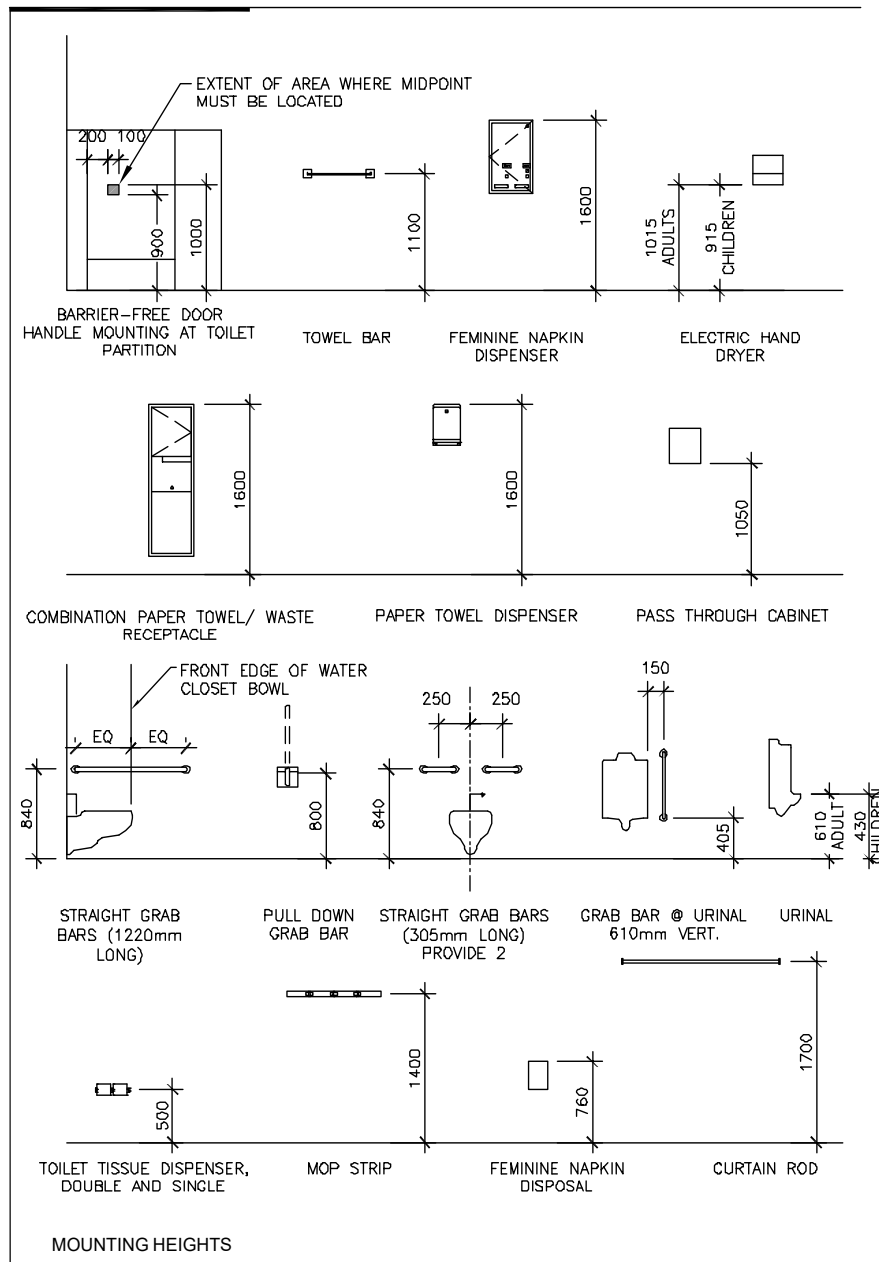
3.1 PREPARATION

- .1 Verify wall thickness and construction that will accept recessed accessories.
- .2 Verify that solid blocking for support and anchoring of washroom accessories is installed where required. Confirm exact height and location with Consultant and Manufacturers Instructions.
- .3 Verify that frames and anchors provided, whether by this Section or others, are correctly and securely installed ready to accept the accessory scheduled for the specific location.
- .4 Verify that painting is complete and dry in area of installation before accessories are installed.

3.2 INSTALLATION

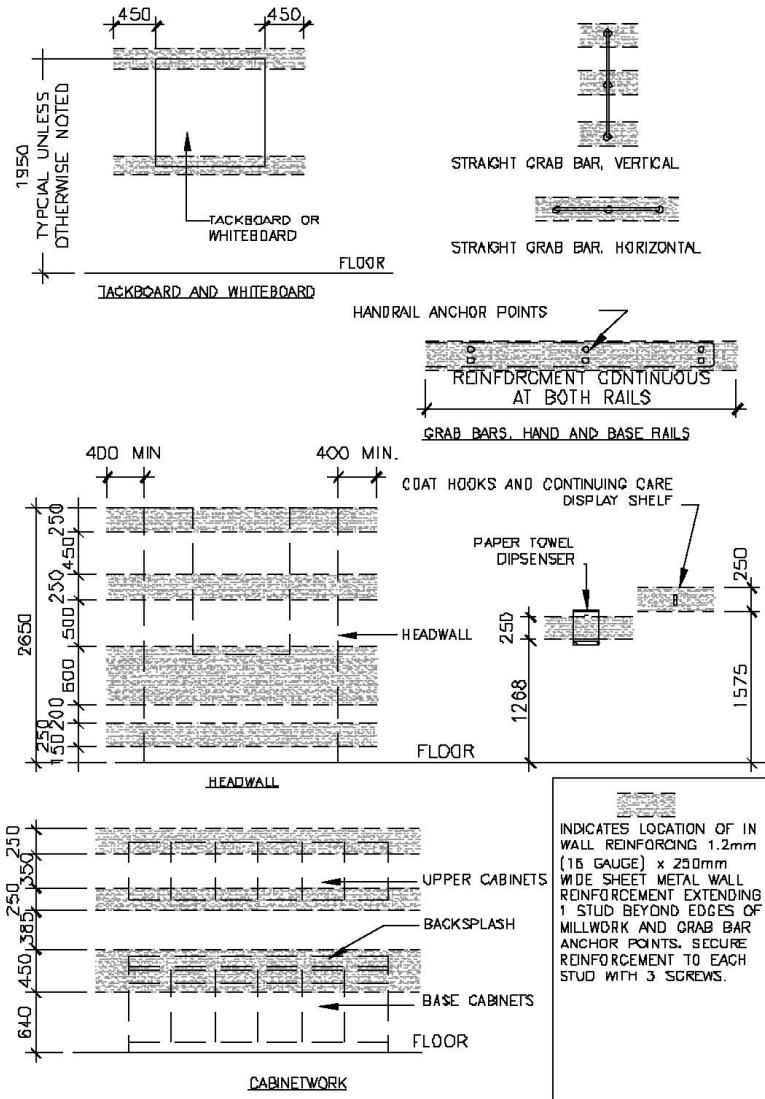
- .1 Install and secure accessories rigidly in place as follows:
 - .1 Stud walls: install steel back-plate to stud prior to plaster or drywall finish. Provide plate with threaded studs or plugs.
 - .2 Hollow masonry units or existing plaster/drywall: use toggle bolts drilled into cell/wall cavity.
 - .3 Solid masonry, marble, stone or concrete: use bolt with lead expansion sleeve set into drilled hole.

- .4 Toilet/shower compartments: use male/female through bolts.
- .2 Install grab bars on built-in anchors provided by bar manufacturer.
- .3 Use tamper proof screws/bolts for fasteners.
- .4 Fill units with necessary supplies shortly before final acceptance of building.
- .5 Install mirrors in accordance with Section 08 80 50 - Glazing.



Fixture Mounting Heights

(confirm heights with manufacturer prior to installation)



Wall Reinforcement Details

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 09 21 16 – Gypsum Board Assemblies

1.2 REFERENCES

- .1 American National Standards Institute (ANSI)
 - .1 ICC A117.1-2009, Standard for Accessible and Usable Buildings and Facilities

1.3 SUBMITTALS

- .1 Submit product data in accordance with Section 01 33 00 – Submittals:
 - .1 Submit construction details, material descriptions, dimensions of individual component and profiles, and finishes for each sign type
- .2 Submit samples in accordance with Section 01 33 00 – Submittals:
 - .1 Provide a single unit sample of each sign type to verify colours, dimensions, profiles, and finishes.
 - .2 Submitted samples may be incorporated into the Work.
- .3 Submit shop drawings in accordance with Section 01 33 00 – Submittals:
 - .1 Include sign types, graphics, colors, sign dimensions and profiles. Show mounting methods, locations, accessories and installation guidelines.

Part 2 Products

2.1 MATERIALS

- .1 Plastic Panel Signs: provide injection molded panel signs in colour, designs, shapes and sizes as indicated on Drawings.
 - .1 Produce smooth, panel sign and sign frame surfaces constructed to remain flat under installed conditions and within tolerance of plus or minus 0.3 mm when measured diagonally.
 - .2 Injection Molded Panel Signs: Manufacturer's standard and as follows:
 - .1 Sign panel material composed of 3 mm injection molded, high impact, polystyrene plastic, UV resistant and surface textured with an eggshell matte finish.
 - .2 Background Colours: manufacturer's standard dark blue background.
 - .3 Dimensions: as indicated on Drawings with 16 mm radius corners.
 - .4 Sign shall comply with local Accessibility Design Guidelines and ANSI/ICC A117.1 and include 8 mm raised tactile graphics and Grade II Braille.
 - .5 Centre graphics, text and Braille on sign material. Graphics to be separated from text and Braille with visible graphic line. Sign messages to read "MEN" "WOMEN" as indicated on Drawings.

- .6 Raised graphics, graphics line and text to be standard white.
- .2 Stainless Steel Cut-Out Signs:
 - .1 Stainless steel, Type 304, #4 satin finish, edges smoothed and dearised.
 - .2 All type styles shall be as directed, upper and lower case, sizes as indicated on schedule, for each sign type.

2.2 NON-SMOKING SIGNAGE

- .1 Section not used.

2.3 ACCESSORIES

- .1 Accessories: provide manufacturers recommended fasteners for anchoring signage to walls.
- .2 Mechanical Fasteners: screws, plugs, or expanding wall anchors.

Part 3 Execution

3.1 EXAMINATION

- .1 Examine wall surfaces, substrate areas and conditions with the Installer present, for compliance with the requirements for installation guidelines, tolerances and other conditions affecting the performance of work.
- .2 Examine supporting members to ensure that surfaces are at elevations indicated or required to comply with the authorities having jurisdiction and are free from dirt and other deleterious matter.
- .3 Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- .1 General: Locate signs and accessories where indicated, using mounting methods of types described and in compliance with the manufacturer's written instructions.
 - .1 Install signs level, plumb, and at heights indicated, with sign surfaces free from distortion and other defects in appearance.
- .2 Wall Mounted Panel Signs: Attach panel signs to wall surfaces using the methods indicated.
 - .1 Mechanical Fasteners: Use non-removable mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended by the sign manufacturer.
 - .2 Silicone Adhesive Mounting: Use liquid silicone adhesive recommended by manufacturer to attach signs to irregular, porous or vinyl covered surfaces. Use double-sided foam tape to hold sign in place while adhesive cures.

3.3 CLEANING AND PROTECTION

- .1 Clean soiled sign surfaces according to manufacturer's written instructions.
Protect signs from damage until acceptance by owner.

3.4 SIGN SCHEDULE

Sign Type	Copy	Copy Colour	Base Colour	Location
Pictogram	International Handicap Symbol	Stainless steel cut-out	N/A	Each handicap accessible washroom, 150 mm high
Pictogram and text MALE	International Male Figure	Stainless steel cut-out	N/A	Each men's washroom, 150 mm high
Pictogram and FEMALE	International Female Figure	Stainless steel cut-out	N/A	Each women's washroom, 150 mm high
Others as directed by Cons.				

END OF SECTION