
GRANVILLE RESIDENCE ELEVATOR UPGRADE

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ISSUE FOR TENDER

CHERNOFF THOMPSON
 ARCHITECTS



**GRANVILLE RESIDENCE ELEVATOR UPGRADE
VANCOUVER, BRITISH COLUMBIA**

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1.0 GENERAL

1.1 DOCUMENTS

- .1 This Section of the Specifications forms part of the Contract Documents and is to be read, interpreted and co-ordinated with all other parts.

1.2 SECTION INCLUDES

- .1 Demolition of existing Elevator & associated work. Remove all demolished debris from site.

1.3 REQUIREMENTS OF REGULATORY AGENCIES

- .1 Comply with all bylaws and acquire all necessary permits.
- .2 Comply with all Workers' Compensation Board of B.C. Accident Prevention Regulations.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

- .1 Store materials and equipment at Site only when immediately necessary, and as otherwise approved; and so as not to cause any obstruction.

1.5 SITE CONDITIONS

- .1 The Contractor shall accept the Site as it exists and will be responsible for all demolition work as shown on the Drawings or specified.
- .2 The Contractor shall visit the Site at his own expense prior to the submission of Bids and take whatever time is required to ascertain the Site conditions and surrounding features related to the proposed demolition and new construction work, and ensure himself that conditions are suitable for the execution of the work.
- .3 No additional sums of money will be allowed for any items resulting from lack of familiarity with the Site conditions; report any discrepancies to the Consultant.
- .4 Use sufficient measures to protect existing services and existing space adjacent to the project area. Make good all damaged areas, which will not be covered up by new work.
- .5 The Contractor will be held responsible for any such damage (movement or settlement) and must repair promptly such damage to the Owner's property at no additional cost to the Owner.
- .6 Provide and maintain all legal and necessary guards, railings, lights and warning signs during the execution of the work to fully protect all persons; provide adequate insurance in order that the Owner shall be saved harmless from any loss, damage, death or injury through neglect, carelessness, or incompetence of the Contractor, or the handling or condition of appliances.
- .7 Maintain unobstructed safe access for personnel and removal of materials at all times.
- .8 Take precautions to guard against movements, settlements, collapse and damages to adjacent structures, services, utilities and construction.
- .9 Prevent debris from accumulating and blocking drainage systems and blocking safe exit passage to adjoining streets and property.
- .10 Verify the existence of all known service utilities by Site examination and review of applicable Site servicing engineering drawings available from the municipality, the Owner and the utility companies prior to submission of a bid and prior to the commencement of the work to identify exact locations.
- .11 Keep fire extinguishing suppression equipment on hand at all times.

- .12 Provide illumination for safe demolition and working conditions, but in no case less than prescribed by WCB regulations in areas where work is being done.

1.7 SCHEDULING OF WORK

- .1 Schedule the removal, capping and sealing of existing services first; then plan the demolition and removal of any other components.
- .2 Sequence of Demolition is responsibility of the Contractor.

2.0 PRODUCTS

2.1 MATERIALS

- .1 All materials, or equipment not specifically described but required for the proper completion of the work of this Section, shall be selected by the Contractor subject to approval by the Owner.
- .2 Except for materials and equipment to be removed and relocated and materials designated to be salvaged, the Owner does not require recovery of any existing materials, fittings, fixtures and equipment to be salvaged during the demolition operation. All materials forming part of this Section of the work shall become the Contractors property and shall be removed entirely from the Site and disposed of in a legal manner to an approved disposal waste-dumping Site as applicable.
- .3 Selling or burning of salvaged materials, fittings, fixtures, and equipment on Site is not permitted.

3.0 EXECUTION

3.1 INSPECTION

- .1 Inspect the work and notify the Owner of any conditions affecting the performance of the work. Review the drawings and determine the total content of work to follow.
- .2 Ensure all services, whether built-in or exposed, are properly located and marked as to position, type of service, size, direction of flow.
- .3 Inspect materials, equipment, components to be reused or turned over to the Owner. Note their condition and advise the Owner in writing of any defects or conditions which would affect removal and reuse.
- .4 Site verify and locate all existing services, utilities and facilities affecting the work. Provide ultra sound scan of the existing underground services as needed. Any damage to existing active services will be the responsibility of the Contractor.
- .5 When working in the vicinity of services and utilities, clearly mark, locate and expose all existing utilities using hand labour or ultra-sonic scan as appropriate. Maintain and protect all active services and utilities encountered in the work.

3.2 PREPARATION

- .1 Cap off, disconnect and seal any required existing underground services, sanitary and storm sewers, waterlines, electrical and telephone services, gas service.
- .2 Verify at Site conditions of the existing Site and obtain information regarding all existing and sub-surface building structures, all existing underground services (sanitary and storm sewer, oil lines, water, electrical, telephone, etc.).
- .3 Take adequate measures during demolition to protect the public in conformance with CSA S350 and requirements of authorities having jurisdiction.

- .4 Provide protection to ensure materials, finishes and surfaces to remain will not be damaged, scratched, or marred by work of this Section.
- .5 Ensure that affected services and utilities designated for removal have been disconnected prior to the commencement of work.
- .6 Cut and cap existing services in accordance with applicable utility and municipal requirements. Prior to commencement of demolition work, ensure that all services and utilities affected by the work have been disconnected, capped and sealed off or properly protected.
- .7 Provide all bracing and shoring as needed to maintain building and its components structurally secure and free of deflection or stress until permanent support completed. Refer structural requirement on structural drawings for demolition of structural bearing walls.

3.3 WORKMANSHIP

- .1 Do work in accordance with CSA S350 and Part 8.0 of BCBC 2006.
- .2 Cutting, removing and demolition shall be performed so as not to cut or remove more than is necessary or to damage adjacent work. Cut existing construction back to meet straight lines allowing for replacement finishes of follow.
- .3 Breakup large pieces of demolished material for handling and to prevent overloading and damage to existing construction.
- .4 Schedule and execute all work in a careful manner with all necessary consideration to prevent injury or damages to persons and to surrounding property. Do not interfere with the passage to and from and operation of adjoining space.
- .5 Do not let piled material endanger structure or persons at any time.
- .6 Where any material, component, assembly or item is indicated for reuse, removal shall be by a trade, which normally provides or installs such an item.
- .7 Store such items being reused in a protected area until ready to be reinstalled into the new construction proposed.
- .8 Cut out and remove assemblies, materials, items indicated as being removed, abandoned or discarded on the drawings.
- .9 Repair and make good damage to existing construction caused by the work of this Section. Use mechanics skilled in the type of work involved to replace such damaged work.
- .10 Demolish in a manner as to minimize dusting. Keep dusty materials, areas or Site wetted down thoroughly as applicable to prevent dust and dirt rising. Provide temporary waterline where required for this purpose and remove upon completion of this work.
- .11 Clear and remove promptly by the end of each working day all demolished materials from the Site.
- .12 Refer to Electrical Drawings for electrical demolitions.
- .13 Ensure that partial or incomplete demolished structures are stable upon completion of each day's work by taking required safety measures such as temporary shoring if required to ensure the structures are and will remain in a stable condition for a normal or extended period of inactivity should a delay be caused to the progress of the work.

- .14 Inspect existing conditions to confirm the extent and location of demolition will not damage adjacent areas.
- .15 Should any conflicts arise, immediately contact the Consultant for direction prior to proceeding. At completion recover all materials. Leave Site neat and clean.

4.0 CLEAN-UP

- .1 Continuously during the work of this Section remove all dirt, debris discarded material and deposit in waste containers. Keep routes to and from waste containers clear.

END OF SECTION 02 41 00

1.0 GENERAL

1.1 DOCUMENTS

- .1 This Section of the Specifications forms part of the Contract Documents and is to be read, interpreted and co-ordinated with all other parts.

1.2 SECTION INCLUDES

- .1 Rough carpentry for the work.
- .2 Rough carpentry work not specified under another section but required for the work shall be provided under this section whether or not specifically referred to herein.

1.3 RELATED SECTIONS

- .1 Finish Carpentry Section 06 20 00
- .2 Gypsum Board Section 09 29 00

1.4 REFERENCE

- .1 CSA B111-1974 Wire Nails, Spikes and Staples.
- .2 CAN/CSA – G164-M92 Hop Dip galvanizing of irregularly shaped articles.
- .3 CSA 0121-M78 Douglas Fir Plywood.
- .4 CAN/CSA 0141-91 Softwood Lumber.
- .5 CSA 0437 0-93, OSB Waterboard
- .6 National Lumber Grades Authority (NLGA) Standard Grading Rules for Canadian Lumber.

1.5 SOURCE QUALITY CONTROL

- .1 Lumber shall be grade marked by an agency certified by the Canadian Lumber Standards Accreditation Board.
- .2 Plywood shall be grade marked in accordance with the requirements of applicable CSA standards.
- .3 Wood Treatment: CAN/CSA-080.

1.6 WASTE MANAGEMENT & DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 19 Waste Management and Disposal and the Waste Management Plan.
- .2 Separate wood waste in accordance with Waste Management Plan and place in designated areas.
- .3 Set aside damaged wood for acceptable alternative uses (e.g. bracing, blocking, cripples, bridging, finger-joining, or ties). Store this separated reusable wood waste convenient to cutting station and area of work.
- .4 Separate corrugated cardboard in accordance with Waste Management Plan and place in designated areas for recycling.
- .5 Do not burn scrap at the project site.
- .6 Fold up metal banding, flatten, and place in designated area for recycling.

2.0 PRODUCTS

2.1 MATERIALS

- .1 Lumber
 - .1 Standards: unless specified otherwise, softwood, S4S material shall be used in accordance with the following standards:
 - Size, grading, inspection: CSA 0141-1970
 - Species groups: CSA 086-1976
 - Minimum grades: National Lumber Grades Authority Standard Grading. Rules for Canadian Lumber NLGA 1987 edition.
 - Maximum moisture content: 12% interior.
 - .2 Furring, strapping, blocking: Douglas Fir, or Hemlock, Utility Grade.
- .2 Plywood
 - .1 Standards: Douglas Fir Plywood: CSA 0121-M1978.
- .3 Preservative Treatment
 - .1 Treat all exterior wood. Where factory treated wood is cut, apply two coats of same preservative solution to all cut surfaces and allow to dry prior to installation into the work.
 - .2 To CSA 089-1974 wood to be treated by pressure treatment with chromated copper arsenate at 4kg/m³ to refusal.
- .4 Miscellaneous Materials
 - .1 Rough Hardware: Including machine bolts, washers, lag bolts, drift pins, dowels and such like, to CSA B33-1-1961; nails, spikes and staples to CSA B111-1974, galvanized in exterior locations, high humidity areas and elsewhere where liable to corrosion, and in treated lumber. Refer to structural drawings.
- .5 Galvanizing: to CSA G164.

2.2 LUMBER

- .1 Pressure treated D. Fir or HemFir, No. 2 or better. 3/8" pressure treated plywood to CSA 0121-M1978.

3.0 EXECUTION

3.1 INSTALLATION

- .1 Install strapping, furring, blocking etc., where shown and elsewhere as required to space out and support other work.
- .2 Locate, align and plumb faces of furring and blocking to accurate location of items supported to a tolerance of 1:600.
- .3 Install wood cants, nailer curbs and other wood supports as required and secure using galvanized fasteners.
- .4 Countersink hardware where necessary to provide clearance for other work.
- .5 Co-ordinate with other trades and do all preparing, cutting, trimming as required for passage of their work. Attach plates, blocking, spacers, supports as required to receive and provide support for items supported.

3.2 CLEANING

- .1 Remove all debris and excess material as work proceeds and at end of installation leaving area ready for other trades; repair any defects to this work or any other defects caused by this work.

END OF SECTION 06 10 00

FINISH CARPENTRY

1.0 GENERAL

1.1 DOCUMENTS

- .1 This Section of the Specifications forms part of the Contract Documents and is to be read, interpreted and coordinated with all other parts.

1.2 RELATED SECTIONS

- | | | |
|----|-----------------|------------------|
| .1 | Rough Carpentry | Section 06 10 00 |
| .2 | Finish Hardware | Section 08 71 00 |
| .3 | Painting | Section 09 91 00 |

1.3 SECTION INCLUDES

- .1 Supply and installation of items of finish carpentry fabricated and installed on site as noted herein.
- .2 Installation of finish hardware.

1.4 REFERENCES

- .1 Quality Standards Illustrated (QSI) for Architectural Woodwork as published by Architectural Woodwork Manufacturer's Association of Canada (AWMAC), 2005 edition.

1.5 QUALITY ASSURANCE

- .1 Ensure that components supplied to this section for installation are in accordance with reviewed shop drawings and that the components have been fabricated to suit the existing site conditions without modification.
- .2 Items not given a specific quality grade shall be Custom grade as defined in the AWI/AWMAC QSI.
- .3 The quality of workmanship and installation shall conform to or exceed the minimum requirements of Section 1700 of the AWMAC standard and as specified herein.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

- .1 Protect items from damage and moisture changes during delivery. Protect from damage by weather while in transit.
- .2 Do not deliver and store items on site in advance of installation schedule. Deliver directly to room or area where items to be installed. Protect finished surfaces.
- .3 Conform to Section 1700 of AWI/AWMAC QSI Manual.

1.7 JOB CONDITIONS

- .1 Coordinate the work of this section with the work of others to ensure built-in items are incorporated. Provide all drawings and dimensions for the proper location of built-in anchorage and the provision of rough openings.
- .2 Maintain at an ambient temperature between 16 degrees Celsius to 20 degrees Celsius and relative humidity of between 43% to 55% in the completed building, for 48 hours before installation and continuing up until final acceptance in rooms and areas in which work of this section is to be installed.

1.8 SUBMITTALS

- .1 All submittals shall be in accordance with the requirements of Division 1.

2.0 PRODUCTS

2.1 MATERIALS

- .1 Supply miscellaneous hardware for installation including nails, screws, bolts, nuts and washers.
- .2 Supply and install blocking, backing and furring materials as required for installation.

3.0 EXECUTION

3.1 PREPARATION

- .1 Check hardware items delivered to ensure compliance with hardware schedule. Obtain installation instructions and templates.
- .2 Cut to proper length and fit items supplied oversized.

3.2 DOORS AND HARDWARE

- .1 Install hardware in accordance with the manufacturer's instructions and templates supplied under Section 08 71 00. Fit accurately using full complement of screws and draw up tight.
- .2 Install hardware as indicated in Finish Hardware Section 08 71 00.
- .3 Upon completion of installation, have a representative of the hardware supplier review installation and confirm in writing to the Consultant that finish hardware has been installed correctly.

END OF SECTION 06 20 00

SEALANTS & CAULKING

1.0 GENERAL

1.1 DOCUMENTS

- .1 This Section of the Specifications forms part of the Contract Documents and is to be read, interpreted and co-ordinated with all other parts.

1.2 SECTION INCLUDES

- .1 Exterior and interior sealants, joint back-up and joint preparation.

1.3 RELATED SECTIONS

- .1 Finish Carpentry Section 06 20 00
- .2 Gypsum Board Section 09 29 00
- .3 Painting Section 09 91 00

1.4 SUBMITTALS

- .1 Submit samples of each type of material and colour at job site during application.
- .2 Cure samples under conditions anticipated at job site during application.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- .1 Deliver materials to the job site in their original unopened containers with all labels intact.
- .2 Cure samples under conditions anticipated at job site during application.

1.6 ENVIRONMENTAL REQUIREMENTS

- .1 Apply sealants only to completely dry surfaces and at air temperatures above minimum established by manufacturer's specifications.

1.7 WARRANTY

- .1 Provide a written warranty stating that caulking work of this Section is guaranteed against leakage, cracking, crumbling, melting, shrinkage, running, loss of adhesion and/or staining adjacent surfaces for a period of three (3) years from the date of Certificate of Substantial Performance.

2.0 PRODUCTS

2.1 MATERIALS

- .1 Primers: Type recommended by sealant manufacturer.
- .2 Sealants acceptable for use on this project must be listed on the Qualified Products List issued by the CGSB Qualification Board for Joint Sealants.
- .3 Joint Fillers:
- .1 General: Compatible with primers and sealant, oversized 30 to 50%.
- .2 Either polyethylene, extruded closed cell foam or foam butyl rods: Sofrod by Tremco or Ethafoam SB by Dow Chemical. Backer Rod by Sternson Limited.
- .3 Polyolefin Foam: Sof - Rod by Tremco Ltd. or open cell polyurethane Ohio by Tremco Ltd. Approved alternative is PRC Open Cell Polyurethane Backer Rod.
- .4 Bond Breaker: Pressure sensitive plastic tape, which will not bond to sealants for specific sealant selected.
- .5 Colours: To match adjacent surface

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- .6 Joint Cleaner: Non-corrosive type recommended by sealant manufacturer and compatible with joint forming materials.
- .7 Sealant:
- .1 Standard: For interior and exterior work unless otherwise specified, ensure compatibility of sealants being used and other materials in contact with them, meet LEED® requirement VOC level of 250 g/L for architectural sealant, and conform to the latest editions of the specifications summarized below:
- .2 Sealant Types:
Type 1: Multi-component chemical cure sealants: (for exterior caulking), unless otherwise specified conform to CAN/CGSB-2-19.24-M90 (TT-00227E-Type 11, Class A) standard, sealing compounds and as otherwise specified to exceed that standard; deliver to site and bear in addition to the product identification name, the qualification number when tested under CAN/CGSB Standard, Type 1 (self-leveling - horizontal joints) Type 2 (non-sag - vertical joints), Class A for glazing standard, Class B for non-glazing standard; any of the following:
- DYMERIC 240 TREMCO LTD.
PERMAPOL RC-2 + RC-2SL PRC CANADA INC.
SIKAFLEX 2C SIKA CANADA INC.
Approved alternative: DOW Corning Equivalent

3.0 EXECUTION

3.1 CONDITIONS OF SURFACES

- .1 Verify at the site that joints and surfaces have been provided as specified under the work of other sections; and that joint conditions will not adversely affect execution, performance or quality of completed work; and that they can be put into acceptable condition by means of preparation specified in this section.
- .2 Ascertain that sealers and coatings applied to substrates are compatible with sealant used and the full bond between sealant and substrate is attained. Request samples of the sealed or coated substrate from their fabricators for testing of compatibility and bond if necessary.
- .3 Verify that specified environmental conditions are ensured before commencing work.
- .4 Ensure that releasing agents, coatings, or other treatments have either not been applied to joint surfaces or that they are entirely removed.
- .5 Defective work resulting from application to unsatisfactory joint conditions will be considered the responsibility of the sub-contractor performing the Work of this section.

3.2 PREPARATION

- .1 Remove dust, paint, rust, oil, grease, frost and other foreign matter. Dry joint surfaces. Use joint cleaner where appropriate.
- .2 Remove dust, silt, mill scale, and coatings from ferrous metals by wire brush, grinding or sandblasting.
- .3 Install joint filler or apply bond breaker tape to achieve correct joint depth.
- .4 Prepare concrete, masonry glazed and vitreous surfaces to sealant manufacturer's instructions.
- .5 Examine joint sizes and correct to achieve depth ratio $\frac{1}{2}$ of joint width with minimum width and depth of 6 mm. maximum width 25 mm. Where joint configuration does not allow for proper

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depth/width ratio, a pressure sensitive bond breaker tape shall be placed at the back of the joint which will not bond to the sealant.

- .6 Clean ferrous metal joint bonding surfaces to bare non oxidized metal and remove oil, grease and other contaminants with Xylol, methylethylketone or isopropylalcohol.
- .7 Where required, prime sides of joint in accordance with manufacturer's direction immediately prior to caulking.
- .8 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.
- .9 Apply bond breaker tape where required to manufacturer's instructions.

3.3 INSTALLATION

- .1 The Consultant, the Contractor, the caulking contractor and the sealant manufacturer representative shall, at the Contractor's written notice, meet at the project site to review the material selection, joint preparations, installation procedures and co-ordination with other trades. If required, the Contractor shall perform sample installation on site in the presence of the above mentioned persons indicative of the types of joints detailed. These panels will form the basis of acceptable workmanship and refinement of installation details.

3.4 APPLICATION

- .1 Apply sealants, primers, joint fillers to manufacturer's instructions. Apply sealant using a gun with proper size nozzle. Use sufficient pressure to fill voids and joints solid. Superficial pointing with skin bead is not acceptable.
- .2 Form surface sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, and embedded impurities. Neatly tool to a slight concave joint.

3.5 ADJUSTING AND CLEANING

- .1 Clean adjacent surfaces immediately and leave work clean and neat. Remove excess sealant and droppings using recommended cleaners as work progresses. Remove masking after tooling of joints.

END OF SECTION 07 92 00

1.0 GENERAL

1.1 DOCUMENTS

- .1 This Section of the Specifications forms part of the Contract Documents and is to be read, interpreted and coordinated with all other parts.

1.2 SECTION INCLUDES

- .1 Fire rated and non-fire rated pressed steel frames and hollow metal doors.

1.3 RELATED SECTIONS

- .1 Finish Carpentry Section 06 20 00
- .2 Finish Hardware Section 08 71 00
- .3 Painting Section 09 91 00

1.4 REFERENCES

- .1 Underwriter's laboratories of Canada (ULC)
 - .1 CAN4-S104M-M80, Fire Tests of Door Assemblies.
 - .2 CAN4-S105M-M85, Fire Door Frames.
- .2 Canadian Steel Door & Frame Manufacturer's Association (CSDFMA).
- .3 Regulatory Requirements: To meet the temperature rise and glass area limits for openings prescribed in the BC Building Code 2018.

1.5 SUBMITTALS

- .1 Shop Drawings:
 - .1 Submit shop drawings in accordance with Section 01 33 00, showing typical details of pressed steel frames, including frame schedules and hardware details, to the Consultant for review prior to fabrication.
 - .2 Indicate doors and frames bearing ULC OR WHI labels for ratings, temperature rise and opening classifications.

1.6 PRODUCT DELIVERY STORAGE AND HANDLING

- .1 Promptly clean any scratches or disfigurement caused in shipping or handling and touch up with a rust-inhibitive primer. Properly store materials on planks, or dunnage, out of water, and covered to protect them from damage due to any cause. Remove wrappings or coverings upon arrival at the building site and store in a vertical position, spaced by blocking to permit air circulation between them.

2.0 PRODUCTS

2.1 FRAMES

- .1 All Interior Door 16 gauge steel frames
- .2 Provide ULC or WHI labeled frames for those openings requiring fire protection ratings as determined and scheduled by the Consultant. Provide such frames in accordance with manufacturer's standards and construct as tested and approved by a nationally recognized testing agency having a factory inspection service.

2.2 HOLLOW METAL DOORS

- .1 Construct doors in accordance with ULC OR WHI. Provide doors complete with appropriate ULC OR WHI label for fire rating and temperature rise.
- .2 Provide labeled doors for those openings which require fire protection ratings as determined and scheduled. Ensure such doors are in accordance with manufacturer's standard and/or type of construction as tested and approved by a nationally recognized testing agency having a factory inspection service.
- .3 Top and bottom of interior door closed with recessed channel or flush end closure as per manufacturer's standards. Fill interior voids of doors with sound deadening and insulating core materials.
- .4 Finish Hardware: Prepare door assemblies for installation of hardware specified in Section 08 71 00.
- .5 Refer to Mechanical Drawings for doors with grilles or undercuts.
- .6 Provide interior metal doors with flush face construction.

2.3 FABRICATION

- .1 Frames:
 - .1 Provide frames of welded type, one-piece construction.
 - .2 Punch Mitre with slots and tabs. Weld continuously on inside of frame face.
 - .3 Insulated door frame for exterior doors.
 - .4 Provide anchors to each jamb to suit wall type and receive the frame.
- .2 Grind welded corners and joints to flat plane, fill with metallic paste filler and sand to uniform smooth finish.
- .3 Doors:
 - .1 Mortise, reinforce, drill and tap doors and reinforcements to receive hardware using templates provided by finish hardware supplier.
 - .2 Make provision for louvres as indicated and provide necessary stops.
 - .3 Construct matching panels in same manner as doors.
 - .4 Touch up doors with primer where galvanized finish damaged during fabrication.

3.0 EXECUTION

3.1 INSPECTION

- .1 Examine surfaces to which the work of this section is to be applied and ensure that conditions are able to provide a complete and satisfactory installation.
- .2 Commencement of work will indicate acceptance of surfaces and conditions.

3.2 INSTALLATION

- .1 Place frames prior to construction and enclosing of walls and ceilings. Wherever possible set frames in place prior to placing of concrete unit masonry or steel stud wall. Set frames accurately in position, plumbed, aligned and braced securely until permanent anchors are set. After construction is completed, remove temporary braces leaving surfaces smooth and undamaged.
Spreader Bars are for shipping only and are to be removed at the install stage.

- .2 Fit hollow metal doors accurately in their respective frames with plumb, free-swinging, smooth operating and with even margins with the following clearances:
Between doors and frames at head and jamb: 1.5 mm
At Threshold & Finished floor: 12 mm – 19mm max.
Between meeting edges of pairs of doors: 3 mm
Hinge side: 3 mm
- .3 Clearances to fire rated assemblies shall meet ULC or WHI Listing for the Fire Rating required.
- .4 Install fire rated doors and frames in accordance with NFPA 80, latest edition.
- .5 Doors and frames shall have clear identification markings for installation purpose.

3.3 ADJUSTING AND CLEANING

- .1 Check and re-adjust operating finish hardware items in hollow metal work just prior to final inspection. Leave work in complete and proper operating condition. Remove and replace defective work including doors or frames, which are warped, bowed or otherwise damaged.

END OF SECTION 08 11 13

1.0 GENERAL

1.1 DOCUMENTS

- .1 This Section of the Specifications forms part of the Contract Documents and is to be read, interpreted and coordinated with all other parts.

1.1 REQUIREMENTS INCLUDED

- .1 Furnish all labor, material, equipment and services necessary for the supply to the site, of the Finish Hardware as indicated on the drawings, schedules and specified herein.
- .2 Include also the furnishing of all templates and schedules required by manufacturers of hollow metal doors and pressed steel frames and other such work to enable the manufacturers to make proper provisions in their work to receive the Finish Hardware.
- .3 All Finish Hardware to made to conform to A.N.S.I. standard dimensions.

1.2 RELATED REQUIREMENTS

- .1 Section 06 20 00 Finish Carpentry (installation of finish hardware)

1.3 QUALITY ASSURANCE

- .1 Standards:
- .1 In all cases where C.G.S.B. (Canadian Government Specifications Board), C.S.A (Canadian Standards association), ASTM (American Society for Testing and Materials), or other standards are quoted, this shall be taken to mean the latest edition of that particular standard including all revisions.
- .2 Materials shall conform to those as specified, in brand and quality, unless otherwise approved in writing by the Consultant. No claim as to their unsuitability or unavailability or this Subcontractor's unwillingness to use the same, will be considered, unless such claims are made in writing prior to the closing of bids.
- .3 Qualifications:
Hardware supplier shall be an established contract builders hardware firm who shall have in his employ one or more A.H.C. (Architectural Hardware Consultant) who are members in good standing of the DHI (Door and Hardware Institute)and who will be responsible for the complete hardware contract.

1.4 SUBMITTALS

- .1 Samples:
- .1 If required by the consultant, a returnable sample of each item of proposed hardware shall be submitted for approval not later than ten (10) days after requested. Samples to be properly tagged, indicating name of supplier, name of manufacturer, item number, intended function and location. Installed item to equal in all respects to approved samples.
- .2 Submit the following to Consultant:
- .1 Five (5) copies of a detailed hardware schedule for the Consultant's approval within two (2) weeks of being awarded this contract.
- .2 Indicate manufacturer's name and article number in complete detail including active hands of pairs of doors, degree of opening and other information pertinent to the intended function of the door and frame details.
- .3 In addition to hardware, the schedule shall include, for each heading or group of doors, Consultant's door reference number as per Door Schedule, the room designations, door size and material and label requirements.
- .4 The schedule shall also incorporate detailed keying for final approval by the owner.

- .5 Provide "as-installed" hardware list, including name of supplier, to the Consultant upon substantial performance of the contract.
- .6 List to be complete with key to explain manufacturer's names, abbreviations and codes.
- .7 Templates shall not be issued or material supplied until the hardware list has been approved. Provide additional copies of the hardware lists to the Consultant on request.

1.5 COMPLIANCE WITH REGULATIONS

- .1 The hardware supplier shall check the listed hardware for compliance with local fire codes and regulations regarding required hardware for fire doors and report to the Consultant, any discrepancies or omission in the listed hardware in this respect. Failure to report any such discrepancies or omission render supplier responsible for cost of rectification.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

- .1 All hardware shall be delivered to the site in accordance with the construction schedule prepared by the Contractor. All hardware shall be inspected on site for compliance to specifications before installation, stored in the original sealed packages in a locked, secure place until required for installation. The Contractor will be responsible for receiving and storing of hardware at the site. Hardware suppliers shall tag and deliver any sealed packages to the contractor.
- .2 Hardware shall be supplied complete with required screws, bolts and fastenings necessary for proper installation, wrapped in paper and packed in the same package as hardware. Each package shall be legibly labeled indicating that portion of work for which it is intended. Door hardware to delivered unopened original boxes.
- .3 Mail one copy of hardware delivery sheets to the Consultant at time of each shipment.

1.7 TEMPLATES

- .1 Templates shall be supplied by the hardware supplier to all trades requiring them.

1.8 GUARANTEE

- .1 All Finish Hardware, except door closers shall be guaranteed by the hardware manufacturer, by written certification, for a period of one (1) year from certified date of substantial performance against any defects in the design, materials, finish, function and workmanship and that any defects will be made good by the manufacturer at no additional cost to the owner. A similar guarantee for a ten (10) year period shall be provided for door closers by the manufacturer.

2.0 PRODUCTS

2.1 MATERIALS

- .1 Hardware shall be best grade, entirely free from imperfections in manufacture and finish and shall be supplied in accordance with the hardware list specified herein.
- .2 The following list of manufactures and products are considered approved for this project and no variations from the listed and pre-approved items will be permitted.
- .3 Installed item to be equal in all respects to approved samples.
- .4 Supply all templates as required. Frame manufacturer will allow for maximum swing of doors when templating for closers. On pairs of doors RHR Leaf is to be active unless otherwise noted.
- .5 Any doors not listed shall have hardware as listed for similar locations.
- .6 Package hardware with all necessary screws and fittings, clearly labeled with door number as per Door Schedule, as to intended location. Included all necessary installation instructions.

2.2 APPROVED MANUFACTURERS

- .1 Use one manufacturer's product only for all similar items.
- .2 The following is a list of approved manufacturers:
 - .1 Butts: McKinney, Hager & Stanley, Montreal
 - .2 Locks/Latches: Sargent
Note: All locks/latches to have WBX strike cases;
 - .3 Push/Pulls Kick Plates: Gallery, Rockwood, Hager
Note:
 - All flatware to be 1.5mm, beveled 4 sides, countersunk with stainless steel screws unless otherwise specified.
 - All pulls to be through bolt mounted unless otherwise specified.
 - All kick plates, armor plates, mop plates to undersized in width to suit all hardware, door and frame clearances, heights as listed in the Hardware Schedule.
 - .4 Thresholds, Seals, Astragals:

2.3 KEYS AND KEYING

- .1 Hardware Schedule to be submitted to the Authority for keying and hardware approval before ordering materials.
- .2 A separate Keying Schedule to be submitted which indicates each lock/core, hardware heading, and door number – Allow sufficient type line spacing to allow the Authority to insert keying information after each Lock or Cylinder.
- .3 Final keyway selection and detailed keying will be determined by the Authority.
- .4 All locks and cylinders shall be supplied with returnable temporary construction cylinders KA (Keyed alike)
- .5 Permanent lock cylinders shall be keyed according to the Authority's requirements. Keying groups will be assigned by the Authority.
- .6 New key fittings will be given to and controlled by the Authority.
- .7 Temporary construction cylinders will be returned to the distributor.
- .8 Turn over keys from factory to the Authority.
- .9 Supply four (4) keys to each lock cylinder.

3.0 EXECUTION

3.1 INSTALLATION

- .1 Installation will be done under other sections.

3.2 HARDWARE MOUNTING

- .1 Shall be in accordance with the recommended locations as per standard locations for builders hardware locations (metric) as listed in Canadian Metric conversion Guide for Steel Doors and Frames prepared by the Canadian Steel Door and Frame Manufacturers association and B.C. Code for the Physically and Visually Handicapped.

3.3 ATTACHMENT

- .1 Include all necessary screws, special screws, bolts, special bolts, expansion shields, and other devices required for proper hardware application.

3.4 COORDINATION

- .1 Confer with the various sections of work to be sure that they will conform to and fit actual conditions on the job.

4.0 SCHEDULE

4.1 FINISH HARDWARE SCHEDULE

- .1 The following hardware set schedule is provided as a comprehensive guide to define the quality, functions, design, type and finish of required finish hardware and defines requirements for one (1) opening only. See door schedule for quantities of required sets.
- .2 Examine hardware set schedule, door schedule and all contract documents for the true quantities of hardware required, their exact location, function and operation, and check delivered items to ensure that all requirements are met.

END OF SECTION 08 71 00

1.7 SUBMITTALS

- .1 Within 30 days of the award of the Contract, submit a complete list of all finish hardware proposed to be furnished for this work. Giving door number, manufacturers name and catalogue number of each item.
- .2 Furnish other Sections with templates required for hardware preparation and installation. Issue templates when requested so as not to cause any delays but not before hardware list has received final review by Consultant.
- .3 Prior to installation, deliver to the installing personnel complete recommendations from the manufacturer regarding installation methods and all required templates.
- .4 Provide the metal door and frame supplier with all required templates for mortised and surface mounted hardware.
- .5 Provide maintenance data, parts list, and manufacturers instructions for each type of door closers, locksets, door holders and fire exit hardware for incorporation into maintenance manual. Provide complete data on the care and cleaning of all hardware items. Include this information with maintenance manuals.

1.8 DELIVERY AND STORAGE

- .1 Deliver each hardware item in manufacturers original package. Each item shall be separated in individual containers with necessary screws, keys, instructions and installation templates.
- .2 Mark each container with item number corresponding to number shown on hardware schedule with respective door number.
- .3 Store hardware in dry, secure area.

1.9 SEQUENCING

- .1 Confer with various sections of work, also refer to the detail drawings prior to ordering hardware products, to ensure they will conform to and for actual conditions on site.
- .2 Should items of hardware, not definitely specified or scheduled be required for the completion of work clearly shown or specified in the Contract Documents, clarification must be obtained by the bidder, otherwise, this section of work assumes responsibility for supplying such items at no additional cost to the Owner.
- .3 Coordinate with other affected trades.
- .4 Provide instruction and/or technical assistance by an A.H.C. on site to the General Contractor in aiding the hardware installer in the proper installation and adjustment of all hardware items.
- .5 Deliver hardware in accordance with Construction Schedule. Reasons such as lack of coordination, late orders, factory schedules, or transportation problems are not recognized as valid causes to delay work. In the event of transportation problems, the most rapid alternate type of transportation shall be used at no extra cost to the Contract Price.
- .6 The hardware supplier is required to inspect the installation and proper functioning of all hardware (mechanical and electrical) supplied in this section. The hardware supplier shall submit a detailed inspection report immediately following this inspection.

1.10 WARRANTY

- .1 All finish hardware products shall be guaranteed against defects in design, workmanship, materials and finishes and that any defects will be made good at no additional cost to the Owner. The extent of the warranty is the replacement or repair of the faulty hardware, except where the faulty hardware has damaged other material. Warranty periods are effective from date of substantial performance.
- .2 Warranty Period:

.1	All Finish Hardware:	One (2) Year
.2	Door Closers (except electrical components):	Ten (10) Years
.3	Electric Closer products:	Two (2) Years

2.0 PRODUCTS

- .1 General Requirements:
 - .1 Height of Hardware
 - .2 As per BC Building Code
 - .3 As per manufacturers specifications
 - .4 As per BC Access Code

2.1 MATERIAL SOURCE

- .1 Mortise Locksets Schlage (no substitution)
- .2 Mortise Cylinders To suit existing keying system.
- .3 Hinges (Butts) Stanley (Monthard/Stanley) Ball bearing NRP, ball-bearing
- .4 Door Stops Hager
- .5 Kick-plates CBH
- .6 Deadlocks Schlage (no substitution)
- .7 Keypad Mortise Lockset Cobra (no substitution)
- .8 Door Strike Von Duprin 6000 series
- .9 Manual Flush Bolts Glenn & Johnston or Standard Metal or Hager
- .10 Surface Bolts Glenn & Johnston or Standard Metal or Hager
- .11 Stops Gallery Speciality
- .12 Padlocks Schlage KS23 D2300
- .13 Any product not listed in 2.0, must apply for an alternate ten (10) working days prior to closing date, complete with unmounted samples.

2.2 HARDWARE

- .1 Keying
 - .1 Doors, padlocks and cabinet locks shall be keyed as directed.
 - .2 All cylinders are to use "construction keying" for the length of the construction of the project.
 - .3 Provide 2 keys per change.
 - .4 Co-ordinate key system with overall security system.
 - .5 Allow for 5 spare combination codes (bitting) for each master key grouping.
 - .6 Minimize master key systems.
 - .7 Minimize complexity of door hardware (only use security locks where necessary).
 - .8 Ensure door hardware is installed at correct height for persons in wheelchairs.
 - .9 All keys to be stamped with the key cut number and "DO NOT DUPLICATE".
- .2 Kick-Plates/Push-Plates
 - .1 Stainless steel.
 - .2 050 gauge.
 - .3 Self-tapping screw attached.

- .3 Door Stops
 - .1 Supply wall stops in lieu of floor stops wherever possible.
 - .2 Spec a floor stop where a wall stop is not practical.

- .4 Fasteners
 - .1 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware. Make provision in all door hardware for countersunk screws.
 - .2 Exposed fastening devices to match finish of hardware.
 - .3 Exterior fastening shall be nonferrous.
 - .4 Where pull in schedules 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 Provide hex bolts/thru where required on U.L.C. rated assemblies.
 - .6 Flatware shall be fastened with self-tapping sheet metal or wood screws.
 - .7 Provide expansion anchors where anchoring to concrete.
 - .8 Provide toggle bolts where anchoring to drywall.
 - .9 Provide glazing bead shims for exit devices where required.

3.0 EXECUTION

3.1 SCHEDULE

- .1 Examine drawings and specifications and supply necessary finish hardware required for completion of work indicated.
- .2 Required hardware not specifically itemized on schedule to be supplied as for similar items specified.
- .3 Upon Completion of project provide to Owner:
 - .1 One (1) copy of the approved hardware schedule.
 - .2 One (1) copy of the approved keying schedule.
 - .3 Three (3) sets manufacturers parts/maintenance data.
 - .4 One (1) set installation instructions.

3.2 HARDWARE LIST

- .1 Hardware items shall be complete in every detail as recommended by the manufacturer including degree and handing.
- .2 List to be complete with key to explain manufacturer's names, abbreviations and codes.
- .3 Provide "as-installed" hardware list including name of the supplier to the Consultant upon completion of the project.

3.3 INSPECTION

- .1 Verify that frames have been installed plumb and within tolerances as set out in DHI document "Installation of Commercial Steel Doors and Steel Frames."

3.4 INSTALLATION

- .1 The finish hardware shall be installed by qualified trades people, regularly engaged in the installation of finish hardware. Installers shall have a minimum of (5) five years documented experience in the installation of hardware of the type required for the Work. Installers shall have worked on at least (2) two projects of similar character and magnitude as required for the specific work. Provide a written statement within (30) thirty days of contract award outlining installers' experience, projects and contact references and, if requested, provide a demonstration of said qualifications to the satisfaction of the Consultant prior to commencement

of work. Any changes to the approved installation personnel shall require written approval of the Consultant.

- .2 Furnish manufacturers' instructions for proper installation of each hardware component.
- .4 Confirm locations and mounting heights of finish hardware with Consultant.
- .5 Install finish hardware in accord with hardware supplier's directions. Ensure that hardware is installed correctly. Issue instructions if required to Sections concerned.
- .6 Unless otherwise directed by the Consultant, install finish hardware at heights matching installation in existing building.
- .7 Door threshold must be property grouted to resist flex and movement.

3.5 ADJUSTING AND CLEANING

- .1 Prior to final inspection, certify that all hardware has been installed according to the approved hardware schedule and manufacturer's instructions and ensure correct operation. Replace any hardware that is scratched, marred or damaged. Clean and polish all hardware.

3.6 EXTRA STOCK

- .1 Provide three (3) sets of wrenches for door closers, locksets and exit devices.

3.7 INSPECTION AFTER INSTALLATION

- .1 When all the hardware items are completely installed, they shall be inspected by an AHC member in good standing of the Door & Hardware Institute. Any discrepancies in hardware listed and that supplied, or any defects or any adjustments in the installation shall be reported to the Consultant for such action as he deems necessary. Confirm in writing to the Consultant when the complete installation is satisfactory prior to the date of Substantial Performance.

4.0 HARDWARE SCHEDULE

4.1 ELEVATOR MACHINE ROOM DOOR (HS 1)

- .1 Door Opening Size – 765 x 2135
- .2 Hinges 3
- .3 Cylinder 20-001 1 ¼" 1
- .4 Lock Set L9480L 06A 10-072 X 7/8" 1
- .5 Mortise Cylinder 1E-74 PATD C265 1
- .6 Closer 4040 XP SCUSH 1
- .7 Flush Pull 960 1
- .8 Kickplate GSH80A 10" x 34" x MS 1
- .9 Sweeps 315CN36 1
- .10 Door contact 1
- .11 Strike Plate 1
- .12 Threshold 1

1.0 GENERAL

1.1 RELATED REQUIREMENTS

- | | | |
|----|-----------------|------------------|
| .1 | Rough Carpentry | Section 06 10 00 |
| .2 | Joint Sealants | Section 07 92 00 |
| .3 | Painting | Section 09 91 00 |

1.2 REFERENCES

- .1 Aluminum Association (AA)
 - .1 AA DAF 45-03 (R2009), Designation System for Aluminum Finishes.
- .2 ASTM International
 - .1 ASTM C 475-12 Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
 - .2 ASTM C 514-04 (2009e1), Standard Specification for Nails for the Application of Gypsum Board.
 - .3 ASTM C 557-03 (2009) e1, Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.
 - .4 ASTM C 840-11, Standard Specification for Application and Finishing of Gypsum Board.
 - .5 ASTM C 954-07, 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.
 - .6 ASTM C 1002-07, Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
 - .7 ASTM C 1047-10a, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
 - .8 ASTM C 1280-13, Standard Specification for Application of Gypsum Sheathing.
 - .9 ASTM C 1177/C 1177M-08, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
 - .10 ASTM C 1178/C 1178M-08, Standard Specification for Glass Mat Water-Resistant Gypsum Backing Board.
 - .11 ASTM C 1396/C 1396M-06a, Standard Specification for Gypsum Wallboard.
- .3 Association of the Wall and Ceiling Contractors (AWCC)
 - .1 Specifications Standards Manual 2012
- .4 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-51.34-M86 (R1988), Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
 - .2 CAN/CGSB-71.25-M88, Adhesive, for Bonding Drywall to Wood Framing and Metal Studs.
- .5 Green Seal Environmental Standards (GS)
 - .1 GS-11-2008, 2nd Edition, Paints and Coatings.
- .6 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source

Specific Standards

- .1 SCAQMD Rule 1113-A2007, Architectural Coatings.
- .2 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.

- .7 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102-07, Standard Method of Test of Surface Burning Characteristics of Building Materials and Assemblies.

1.3 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for gypsum board assemblies and include product characteristics, performance criteria, physical size, finish and limitations.

- .3 Sustainable Design Submittals:
 - .1 Low-Emitting Materials:
 - .1 Submit listing of adhesives and sealants and used in building, showing compliance with VOC and chemical component limits or restriction requirements.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labeled with manufacturer's name and address.

- .3 Storage and Handling Requirements:
 - .1 Store gypsum board assemblies' materials level off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect gypsum board assemblies from nicks, scratches, and blemishes.
 - .3 Protect from weather, elements and damage from construction operations.
 - .4 Handle gypsum boards to prevent damage to edges, ends or surfaces.
 - .5 Protect prefinished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather.
 - .6 Replace defective or damaged materials with new.

- .4 Packaging Waste Management: remove for reuse of pallets, crates, padding, and packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 19 - Waste Management and Disposal.

1.5 AMBIENT CONDITIONS

- .1 Maintain temperature 10 degrees C minimum (21 degrees C maximum) for 48 hours prior to and during application of gypsum boards and joint treatment, and for 48 hours minimum 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 DESIGN

- .1 Gypsum board will comply with all applicable standards, including the Association of Wall and Ceiling Contractors of B.C. (AWCC) Wall & Ceiling Specification Standards Manual. Provide Schedule S signed by a Professional Engineer registered in the Province of British Columbia.
- .2 Gypsum board will be no less than 5/8" (16 mm) in thickness, unless specifically noted otherwise.
- .3 Use plywood backed gypsum board where required for increased resistance to abrasion, indentation, and penetration of interior walls and to provide additional structural stability and loading for wall mounted equipment and artwork.
- .4 Use plywood backed gypsum board in designated areas for attaching of new TV mount. Refer to Wall Types on Drawings, and Drawings.
- .5 Glass mat surfaced gypsum sheathing board will be used wherever exterior gypsum sheathing is required at exterior walls.
- .6 Provide airborne sound insulation for gypsum board/steel stud assembly to close off air leaks and flanking paths by which noise can go around the assembly. Make assemblies airtight. Do not locate back to back recessed wall fixtures such as cabinets or electrical, telephone and television outlets, which perforate the gypsum board surface. In addition, carefully cut any opening for fixtures to the proper size and appropriately seal piping penetration. Seal conduit/duct/piping penetrations with tape and fill at the plenum barrier. Make the entire perimeter of a sound insulating assembly airtight to prevent sound flanking. Use an acoustic caulking compound or acoustical sealant to seal between the assembly and all dissimilar surfaces (including at window mullions) in accordance with the recommendations of an acoustic consultant.

2.0 PRODUCTS

2.1 MATERIALS

- .1 Standard board: to ASTM C 1396/C 1396M regular, 12.7mm and 15.9 mm thick Type X, 12.7 mm and 15.9 mm thick, 1200 mm wide x maximum practical length, ends square cut, edges tapered.
- .2 Glass mat water-resistant gypsum backing board: to ASTM C 1178/C 1178M, 12.7 and 15.9 mm thick, 1200 mm wide x maximum practical length.
- .3 Glass mat gypsum substrate sheathing: to ASTM C 1177/C 1177M, 12.7 mm and 15.9 mm thick, 1200 mm wide x maximum practical length.
- .4 Drywall furring channels: 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board.
- .5 Resilient clips and drywall furring: 0.5 mm base steel thickness galvanized steel for resilient

- attachment of gypsum board.
- .6 Nails: to ASTM C 514.
 - .7 Steel drill screws: to ASTM C 1002.
 - .8 Laminating compound: as recommended by manufacturer, asbestos-free.
 - .9 Casing beads, corner beads, control joints and edge trim: to ASTM C 1047, metal, zinc-coated by hot-dip process, 0.5 mm base thickness, perforated flanges, one piece length per location.
 - .10 Sealants: in accordance with Section 07 92 00 - Joint Sealants.
 - .1 VOC limit 250 g/L maximum to SCAQMD Rule 1168.
 - .2 Acoustic sealant: in accordance with Section 07 92 00 - Joint Sealants.
 - .11 Joint compound: to ASTM C 475, asbestos-free.
 - .12 Green Glue Noiseproofing Compound & Noiseproofing Sealant by Saint-Goban.

3.0 EXECUTION

3.1 EXAMINATION

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

3.2 ERECTION

- .1 Do application and finishing of gypsum board to ASTM C 840 except where specified otherwise.
- .2 Erect hangers and runner channels for suspended gypsum board ceilings to ASTM C 840 except where specified otherwise.
- .3 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
- .4 Install work level to tolerance of 1:1200.
- .5 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles.
- .6 Install 19 x 64 mm furring channels parallel to, and at exact locations of steel stud partition header track.
- .7 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.
- .8 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas

GYPSUM BOARD ASSEMBLIES

- as indicated.
- .9 Install wall furring for gypsum board wall finishes to ASTM C 840, except where specified otherwise.
 - .10 Furr openings and around built-in equipment, cabinets, access panels on four sides. Extend furring into reveals. Check clearances with equipment suppliers.
 - .11 Furr duct shafts, beams, columns, pipes and exposed services where indicated.

3.3 APPLICATION

- .1 Apply gypsum board after bucks, anchors, blocking as specified in Section 06 08 99, sound attenuation, electrical and mechanical work have been reviewed by the Consultant.
- .2 Apply single or double layer gypsum board to wood 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 to ASTM C 840.
 - .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 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, and ducts, in partitions where perimeter sealed with acoustic sealant.
- .4 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.
- .5 Install gypsum board with face side out.
- .6 Do not install damaged or damp boards.
- .7 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.
- .8 Apply Green Glue Noiseproofing Compound & Noiseproofing Sealant as per manufacturer's instructions

3.4 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.
- .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 Construct control joints of preformed units set in gypsum board facing and supported independently on both sides of joint.
 - .6 Provide continuous polyethylene dust barrier behind and across control joints.
 - .7 Locate control joints at changes in substrate construction at approximate 10 m spacing on long corridor runs at approximate 15 m spacing on ceilings. Confirm locations with Consultant.
 - .8 Install control joints straight and true.
 - .9 Construct expansion joints as detailed, at building expansion and construction joints. Provide continuous dust barrier.
 - .10 Install expansion joint straight and true.
 - .11 Install cornice cap where gypsum board partitions do not extend to ceiling.
 - .12 Fit cornice cap over partition, secure to partition track with two rows of sheet metal screws staggered at 300 mm on centre.
 - .13 Splice corners and intersections together and secure to each member with 3 screws.
 - .14 Install access doors to electrical and mechanical fixtures specified in respective sections.
 - .1 Rigidly secure frames to furring or framing systems.
 - .15 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.
 - .16 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with AWCI Levels of Gypsum Board Finish:
 - .1 Levels of finish:
 - .1 At typical wall and ceiling locations. Level 4: 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 edges.
 - .17 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.
 - .18 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.
 - .19 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of

board.

- .20 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Division 01.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Division 01.

3.6 PROTECTION

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

END OF SECTION 09 21 16

specification, plans and elevation drawings (including pertinent details) as well as a Finish Schedule.

- .8 All surfaces requiring painting or repainting shall be inspected by the inspection agency who shall advise on all aspects of painting work including preparation, notifying the Consultant, the Contractor and the Trade Contractor of any defects or problems prior to commencing painting work or after the prime coat shows defects in the substrate, and as the work progresses.
- .9 Standard of Acceptance:
 - .1 Wall: No defects visible from a distance of 1000mm at 90° to surface.
 - .2 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

1.5 REGULATORY REQUIREMENTS

- .1 Conform to workplace safety regulations for storage, mixing, application and disposal of all paint related materials to requirements of those authorities having jurisdiction.
- .2 Conform to safety precautions in accordance with the latest requirements to Industrial Health and Safety Regulations, latest edition, of authorities having jurisdiction.

1.6 SAMPLES AND MOCK-UPS

- .1 When requested by the Consultant or Paint Inspection Agency, provide duplicate minimum 300 mm (12") square samples of surfaces or acceptable facsimiles requested painted with specified paint or coating in colours, gloss/sheen and textures required to MPI Architectural Painting Specification Manual standards for review and approval. When approved, samples shall become acceptable standard of quality for appropriate on-site surface with one of each sample retained on-site.
- .2 When requested by the Consultant or Paint Inspection Agency, prepare and paint designated surface, area, room or item (in each colour scheme) to requirements specified herein, with specified paint or coating showing selected colors, gloss/sheen, textures and workmanship to MPI Architectural Painting Specification Manual standards for review and approval. When approved, surface, area, room and/or items shall become acceptable standard of finish quality and workmanship for similar on-site work.

1.7 SUBMITTALS

- .1 All submittals shall be in accordance with the requirements of Division 01.
- .2 Submit a list of all painting materials to the Consultant for review prior to ordering materials.
- .3 Submit two sets of Material Safety Data Sheets (MSDS) prior to commencement of work for review and for posting at job site as required.
- .4 Submit Source of VOC Data (letter, cutsheet, or MSDS) for all paint products indicating Product Name and VOC content.
- .5 When requested, submit invoice list of all paint materials ordered for project work to Consultant indicating manufacturer, types and quantities for verification and compliance with specification and design requirements.
- .6 When requested or required by painting of occupied areas, submit work schedule for various stages of work for the Consultant's review and Owner's approval.

- .7 At project completion provide an itemized list complete with manufacturer, paint type and colour coding for all colours used for Owner's later use in maintenance.
- .8 At project completion provide properly packaged maintenance materials as noted herein and obtain a signed receipt.

1.8 DELIVERY, STORAGE AND HANDLING

- .1 Deliver all painting materials in sealed, original labeled containers bearing manufacturer's name, brand name, type of paint or coating and colour designation, standard compliance, materials content as well as mixing and/or reducing and application requirements.
- .2 Store all paint materials in original labeled containers in a secure (lockable), dry, heated and well ventilated single designated area meeting the minimum requirements of both paint manufacturer and authorities having jurisdiction and at a minimum ambient temperature of 45 degrees F (7 degrees C). Only material used on this project to be stored on site.
- .3 Where toxic and/or volatile/explosive/flammable materials are being used, provide adequate fireproof storage lockers and take all necessary precautions and post adequate warnings (e.g., no smoking) as required. Take adequate measures to prevent the release of volatile organic compounds (VOC) into the atmosphere.
- .4 Take all necessary precautionary and safety measures to prevent fire hazards and spontaneous combustion and to protect the environment from hazard spills. Materials that constitute a fire hazard (paints, solvents, drop clothes, etc.) shall be stored in suitable closed and rated containers and removed from the site on a daily basis.
- .5 Comply with requirements of authorities having jurisdiction, in regard to the use, handling, storage and disposal of hazardous materials.

1.9 PROJECT / SITE REQUIREMENTS

- .1 Unless specifically pre-approved by the Consultant, perform no painting or decorating work when the ambient air and substrate temperatures are below 50 degrees F (10 degrees C) for both interior and exterior work.
- .2 Perform no painting or decorating work when the relative humidity is above 85% or when the dew point is less than 5 degrees F (3 degrees C) variance between the air/surface temperature.
- .3 Perform no painting or decorating work when the maximum moisture content of the substrate exceeds:
 - .1 12% for concrete and masonry (clay and concrete brick / block).
 - .2 15% for wood.
 - .3 12% for plaster and gypsum board.
- .4 Conduct all moisture tests using a properly calibrated electronic Moisture Meter, except test concrete floors for moisture using a simple "cover patch test."
- .5 Test concrete, masonry and plaster surfaces for alkalinity as required.
- .6 Perform no painting or decorating work unless a minimum lighting level of 323 Lux (30 foot candles) is provided on surfaces to be painted or decorated. Adequate lighting facilities shall be provided by the General Contractor.

- .7 Perform no painting or decorating work unless adequate continuous ventilation and sufficient heating facilities are in place to maintain ambient air and substrate temperatures above 50 degrees F (10 degrees C) for 24 hours before, during and after paint application. Provide supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.
- .8 Apply paint only to dry, clean, properly cured and adequately prepared surfaces in areas where dust is no longer generated by construction activities such that airborne particles will not affect the quality of finished surfaces.

1.10 SCHEDULING

- .1 Schedule painting operations to prevent disruption of and by other trades.
- .2 Schedule painting operations to prevent disruption of occupants in and about the building. Obtain written authorization from Consultant for changes in work schedule.

1.11 EXISTING CONDITIONS

- .1 Before starting work, ensure that surfaces are clean and dry and free of defects before commencing painting. Starting work shall imply acceptance of surfaces for painting.

1.12 PROTECTION

- .1 Protect adjacent work from droppings, overrun, damage or disfigurement.
- .2 Coordinate with Division 16 to remove electrical plates, surface hardware, fittings and fastenings, prior to painting operations. These items shall be carefully stored, cleaned and replaced on completion of work in each area. No solvent shall be used to clean hardware that will remove the permanent lacquer finish on some of these items
- .3 Protect items that are permanently attached such as Fire Labels on doors and frames.
- .4 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
- .5 As painting operations progress, place "WET PAINT" signs in occupied areas.
- .6 Make good all damage caused without extra expense to Owner and to Consultant's satisfaction.

1.13 GUARANTEE

- .1 Furnish a 100% two (2) year Maintenance Bond.
- .2 Painting and decorating Subcontractors providing a Maintenance Bond shall provide a maintenance bond consent from a reputable surety company licensed to do business in Canada. Cash or certified cheques are not acceptable in lieu of surety consent.

1.14 MAINTENANCE MATERIALS

- .1 At project completion provide 4 litres (1 gallon) of each type and colour of paint from the same production run (batch mix) used in unopened cans, properly labeled and identified for Owner's later use in maintenance. Store where directed.

2.0 PRODUCTS

2.1 MATERIALS

- .1 All materials shall be manufacturer's best quality products, and in accordance with the MPI Architectural Painting Specification Manual "Approved Product" listing and shall be from a single manufacturer for each system used.
- .2 Paints shall be ready-mixed unless otherwise specified, except that any coating in paste or powder form, or to field-catalyzed shall be field-mixed in accordance with the directions of its manufacturer. Pigments shall be fully ground and shall maintain a soft paste consistency in the vehicle during storage that can and shall be dispersed readily and uniformly by paddle to a complete homogeneous mixture.
- .3 The paint shall have good flowing and brushing properties and shall dry or cure free of streaks or sags, to yield the desired finish specified.
- .4 Shellac and turpentine to be best quality, and to be compatible with other best materials as required.
- .5 All materials and paints shall be lead LEED compliance with low / no VOC content.
- .6 Where required, paint products shall meet the requirements of the Environmental Choice Program, Department of the Environment. Water based paints to be certified to ECP-12-89.

2.2 EQUIPMENT

- .1 Painting and decorating equipment – to best trade standards for type of product and application.
- .2 Spray painting equipment – of ample capacity, suited to the type and consistency of paint or coating being applied and kept clean and in good working order at all times.

2.4 GLOSS

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

Gloss Level 1	A traditional matte finish - flat	Max 5 units, and	Max 10 units
Gloss Level 2	A high side sheen flat – a "velvet-like" finish	Max 10 units, and	10-35 units
Gloss Level 3	A traditional eggshell-like finish	10-25 units, and	10-35 units
Gloss Level 4	A 'satin-like finish	20-35 units, and	Min 35 units
Gloss Level 5	A traditional semi-gloss	35-70 units, and	
Gloss Level 6	A traditional gloss	70-85 units, and	
Gloss Level 7	A high gloss	More than 85 units	

2.5 FINISHES

- .1 Colours shall be as selected by the Consultant from a manufacturer's full range of colours. Refer to Finish Schedule and Finish Drawings for identification and location of colours.
- .2 Plywood service panels (e.g., electrical, telephone and cable vision panels) including edges shall be back-primed and painted to match painted wall mounted on.
- .3 The consultant shall decide the extent of all colour areas, where the colour shall terminate or commence, and where colour and texture shall match or contrast with adjacent areas.

- .4 Do not use materials containing lead or mercury.

3.0 EXECUTION

3.1 CONDITION OF SURFACES

- .1 Prior to commencement of work of this section, thoroughly examine surfaces scheduled to be painted.
- .2 Report in writing to the Consultant any condition adversely affecting this work.
- .3 Do not proceed with Work until all such defects have been corrected and surfaces are acceptable to the Painting Contractor.
- .4 Commencement of work shall be held to imply acceptance of surfaces except as qualified herein.

3.3 PREPARATION

- Before applying the paint, the various surfaces shall be prepared as described below:
- .1 Steel and Iron: work must be thoroughly cleaned - preferably by power tools - to remove all dirt, rust, scale, gypsum cement, concrete or any other foreign matter before paint is applied. Grease, oil, etc., shall be removed by washing with a suitable solvent. Iron and steel surfaces shall in general be primed with red oxide zinc chromate metal primer where not previously shop primed. Galvanized metal surfaces shall be washed with a galvanized etch, rinsed off thoroughly and primed with a first coat metal primer. Touch up shop paint primer on steel to CGSB 85-GP-16M.
- .2 Drywall: Cut out scratches, cracks and abrasions in surfaces and adjoining trim as required. Fill with patching compound. Finish flush with adjoining surface and sand smooth and even when dry. Prime surface to show defects, if any. Continue painting only after defects are corrected.
- .3 Wood: Surfaces to be painted shall be clean and free of loose dirt, dust or grit before painting is started. Remove loose or peeling paint and apply undercoat over bare wood. Knots, pitch streaks and sappy spots shall be first cleaned of residue and touched up with shellac where the finish coat is paint or enamel. Putty nail holes, cracks, etc., in woodwork after the first coat is applied. Paint tops, bottoms, and edges of doors as specified for faces of same after doors are fitted.
4. Prepare all surfaces in accordance with MPI Architectural Painting Manual.

3.4 APPLICATION

- .1 Use method of paint application generally as accepted by the trade method.
- .2 Painting coats specified are intended to cover surfaces satisfactorily when applied in strict accordance with recommendations. Apply each coat at the proper consistency.
- .3 Sand lightly and dust between coats to achieve required finish.
- .4 Do not apply finishes on surfaces that are not sufficiently dry. Each coat of finish should be dry and hard before a following coat is applied unless the manufacturer's directions state otherwise.

- .5 Back prime interior woodwork which is to receive a paint or enamel finish upon arrival at the job site with enamel undercoater paint. Finish tops of cabinet and projecting ledges, both above and below sightlines as specified for surrounding surfaces.
- .7 Paint mechanical and electrical equipment, pipes conduit, hangers, ducts and access panels in rooms scheduled to be painted.
- .9 Apply paint and decorating material in a workmanlike manner using skilled and trade qualified applicators as noted under Quality Assurance.
- .10 Minimum painting standards shall be in accordance with MPI Architectural Painting Specification Manual Premium Grade finish requirements.
- .11 Paint all surfaces requiring paint or stain finish to minimum MPI Architectural Painting Specification Manual finish requirements with application methods in accordance with best trade practices for type and application of materials used.
- .12 Apply paint and coatings within an appropriate time frame after cleaning when environmental conditions encourage flash-rusting, rusting, contamination or the manufacturer's paint specifications require earlier applications.
- .13 Painting coats specified are intended to cover surfaces satisfactorily when applied at proper consistency and in accordance with manufacturer's recommendations.
- .14 Tint each coat of paint progressively lighter to enable confirmation of number of coats.
- .15 Sand and dust between each coat to provide an anchor for next coat and to remove defects visible from a distance up to 1000mm (39").
- .16 Prime coat of stain or varnish finishes may be reduced in accordance with manufacturer's directions.

3.5 CLEANING

- .1 Upon completion, remove from the building materials and debris created by this work. During the progress and on completion of the work carefully clean and remove paint from adjoining surfaces, hardware, glass, etc. The whole shall be left in perfect condition. Touch up and make good any paint work damaged by other trades.

3.7 COLOUR SCHEDULE

- .1 Allow for doors and frame to be different from typical walls; typical walls to be different from typical ceilings.
Metal door and frame paint colour to be Sherwin Williams Functional Gray SW7024.
- .2 Products approved by the MPDA, meeting all specialized requirements are to be used.
- .3 Machine Room: New drywall & plywood on indicated walls to be painted light Grey Color or similar.

END OF SECTION 09 91 00