

NATIONAL GALLERY OF  
CANADA

380 SUSSEX DRIVE, OTTAWA, ONTARIO

**RETAIL STORE  
RENOVATION-  
CONSTRUCTION**

SPECIFICATIONS – VOLUME 1

Issued for Tender

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National Gallery of Canada Musée des beaux-arts du Canada

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Retail Store Renovation - Construction

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**END OF TABLE**





**Part 1 General**

**1.1 WORK COVERED BY CONTRACT DOCUMENTS**

- .1 Work of this Contract comprises of the renovation of the retail store located in the National Gallery of Canada (NGC) located at 380 Sussex Drive, Ottawa.

**1.2 WORK SEQUENCE**

- .1 Construct Work as not to affect other occupied areas of the building and accommodate Owner's continued use of building during construction.
- .2 Coordinate Progress Schedule and co-ordinate with Owner Occupancy of surrounding spaces during construction.
- .3 Maintain fire access/control at all times

**1.3 CONTRACTOR USE OF PREMISES**

- .1 Coordinate use of premises under direction of Consultant.
- .2 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .3 Remove or alter existing work to prevent injury or damage to portions of existing work which is to remain.
- .4 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Consultant.
- .5 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

**1.4 OWNER OCCUPANCY**

- .1 Owner will occupy building during entire construction period for execution of normal operations.
- .2 Building entrances and exits to remain safe and operational at all times. Provide Consultant minimum 5 working days notice should any entrances or exits require interruption.
- .3 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

**1.5 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING**

- .1 Execute work with least possible interference or disturbance to occupants and normal use of premises. Arrange with Consultant to facilitate execution of work.

**1.6 EXISTING SERVICES**

- .1 Establish location and extent of service lines in area of work before starting Work. Notify Consultant of findings.



- .2 Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.
- .3 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

**1.7 EXISTING CONDITIONS**

- .1 All existing surfaces and finishes, impacted or damaged by work must be repaired to match existing conditions.

**1.8 DOCUMENTS REQUIRED**

- .1 Maintain at job site, one copy each document as follows:
  - .1 Contract Drawings.
  - .2 Specifications.
  - .3 Addenda.
  - .4 Reviewed Shop Drawings.
  - .5 List of Outstanding Shop Drawings.
  - .6 Change Orders.
  - .7 Other Modifications to Contract.
  - .8 Field Test Reports.
  - .9 Copy of Approved Work Schedule.
  - .10 Health and Safety Plan and Other Safety Related Documents.
  - .11 Other documents as specified.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not used.

**END OF SECTION**





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**Part 1 General**

**1.1 ADMINISTRATIVE**

- .1 Contractor to schedule and administer project meetings throughout the progress of the work.
- .2 Contractor to prepare agenda for meetings.
- .3 Contractor to distribute written notice of each meeting four days in advance of meeting date.
- .4 Contractor to preside at meetings.
- .5 Contractor to record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.
- .6 Contractor to reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants affected parties not in attendance.
- .7 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.
- .8 National Gallery of Canada to provide progress meeting room space.
- .9 Contractor's office to be located within the hoarded and construction area.

**1.2 PRECONSTRUCTION MEETING**

- .1 Within 15 days after award of Contract, Consultant to request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Consultant, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.
- .3 Consultant to establish time and location of meeting and notify parties concerned minimum 5 days before meeting.
- .4 Consultant to incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
- .5 Agenda to include:
  - .1 Appointment of official representative of participants in the Work.
  - .2 Schedule of Work: in accordance with Section 01 32 16.06 - Construction Progress Schedule - Critical Path Method (CPM) .
  - .3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
  - .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
  - .5 Delivery schedule of specified equipment.



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- .6 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

**1.3 PROGRESS MEETINGS**

- .1 During course of Work schedule progress meetings bi-weekly
- .2 Agenda to include the following:
  - .1 Review, approval of minutes of previous meeting.
  - .2 Review of Work progress since previous meeting.
  - .3 Field observations, problems, conflicts.
  - .4 Problems which impede construction schedule.
  - .5 Review of off-site fabrication delivery schedules.
  - .6 Corrective measures and procedures to regain projected schedule.
  - .7 Revision to construction schedule.
  - .8 Progress schedule, during succeeding work period.
  - .9 Review submittal schedules: expedite as required.
  - .10 Maintenance of quality standards.
  - .11 Review proposed changes for affect on construction schedule and on completion date.
  - .12 Other business.

**Part 2 Products**

**2.1 NOT USED**

**Part 3 Execution**

**3.1 NOT USED**

**END OF SECTION**



**Part 1 General**

**1.1 REFERENCES**

- .1 Definitions:
  - .1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
  - .2 Bar Chart (Gantt chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars.
  - .3 Baseline: original approved plan (for Project, work package, or activity), plus or minus approved scope changes.
  - .4 Cash Flow: projection of progress payment requests based on cash loaded construction schedule.
  - .5 Completion Milestones: they are firstly Substantial Completion and secondly Final Certificate.
  - .6 Constraint: applicable restriction or limitation, either internal or external to project, that will affect performance of Project. Factors that affect activities can be scheduled.
  - .7 Control: process of comparing actual performance with planned performance, analyzing variances, evaluating possible alternatives, and taking appropriate corrective action as needed.
  - .8 Critical Activity: any activity on a critical path.
    - .1 Most commonly determined by using critical path method.
  - .9 Critical Path: sequence of activities that determines duration of Project. Generally, it is the longest path through Project.
    - .1 Usually defined as those activities with float less than or equal to specified value, often zero.
  - .10 Critical Path Method (CPM): network analysis technique used to determine the amount of scheduling flexibility (amount of float) on various logical network paths in Project schedule network, and to determine the minimum total Project duration.
  - .11 Data Date: date through which project status and progress were last determined and reported for analyses, such as scheduling and performance measurements.
  - .12 Duration: total number of work periods (not including holidays or other non-working periods) required to complete activity or other Project element.
    - .1 Usually expressed as workdays or work weeks.



- .13 Early Finish Date: in critical path method, earliest possible point in time on which uncompleted portions of activity (or Project) can finish, based on network logic and schedule constraints.
  - .1 Early finish dates can change as Project progresses and changes are made to Project plan.
- .14 Early Start Date: in critical path method, earliest possible point in time on which uncompleted portions of activity (or Project) can start, based on network logic and schedule constraints.
  - .1 Early start dates can change as Project progresses and changes are made to Project Plan.
- .15 Finish Date: point in time associated with activity's completion.
  - .1 Usually qualified by one of following: actual, planned, estimated, scheduled, early, late, baseline, target, or current.
- .16 Float: amount of time that activity may be delayed from its early start without delaying Project finish date.
  - .1 This resource is available to both the NGC and Contractor.
- .17 Impact Analysis: schedule analysis technique that adds a modeled delay to an accepted construction schedule to determined possible outcome of that delay on project completion.
- .18 Lag: modification of logical relationship that directs delay in successor activity.
- .19 Late Finish Date (LF): in critical path method, latest possible point in time that activity may be completed without delaying specified milestone (usually Project finish date).
- .20 Late Start Date (LS): in critical path method, latest possible point in time that activity may begin without delaying specified milestone (usually Project finish date).
- .21 Lead: modification of logical relationship that allows acceleration of successor task.
- .22 Logic Diagram: see Project network diagram.
- .23 Master Schedule: summary-level schedule that identifies major deliverable; work breakdowns structure and key milestones.
- .24 Milestone: significant point or event in Project, usually completion of major deliverable.
- .25 Monitoring: capture, analysis, and reporting of Project performance, usually as compared to plan.
- .26 Non-Critical Activities: activities which when delayed, do not affect specified Contract duration.
- .27 Project Control System: fully computerized system utilizing commercially available software packages.
- .28 Project Network Diagram: schematic display of logical relationships of Project activities.
  - .1 Always drawn from left to right to reflect Project chronology.



- .29 Project Plan: formal, approved document used to guide both Project execution and Project control.
  - .1 Primary uses of Project plan are to document planning assumptions and decisions, facilitate communication among stakeholders, and document approved scope, cost, and schedule baselines.
  - .2 Project plan may be summary or detailed.
- .30 Project Planning: development and maintenance of Project Plan.
- .31 Project Planning, Monitoring and Control System: overall system operated to enable monitoring of Project Work in relation to established milestones.
- .32 Project Schedule: planned dates for performing activities and planned dates for meeting milestones.
- .33 Quantified days duration: working days based on 5 day work week, discounting statutory holidays.
- .34 Risk: uncertain event or condition that, if it occurs, has positive or negative effect on Project's objectives.
- .35 Start Date: point in time associated with activity's start, usually qualified by one of following: actual, planned, estimated, scheduled, early, late, target, baseline, or current.
- .36 Work Breakdown Structure (WBS): deliverable-oriented hierarchical decomposition of Work to be executed by contractor to accomplish project objectives and create required deliverables. It organizes and defines total scope of Project. Each descending level represents an increasingly detailed definition of Project Work. WBS is decomposed into Work packages.

## **1.2 ADMINISTRATIVE REQUIREMENTS**

- .1 Project Meeting:
  - .1 Meet with Consultant within 10 working days of Award of Contract date, to establish Work requirements and approach to project construction operations.
  - .2 Participate in regular project progress meetings with Consultant specifically intended to discuss update of detailed schedule and contract changes.
- .2 Scheduling:
  - .1 Planning: ensure that planning process is iterative and results in generally top-down processing with more detail being developed as planning progresses, and decisions concerning options and alternatives are made.
  - .2 Ensure project schedule efficiencies through monitoring of Project in detail to ensure integrity of Critical Path, by comparing actual completions of individual activities with their scheduled completions, and review progress of activities that has started but are not yet completed..



- .3 Monitor sufficiently often so that causes of delays can immediately be identified and removed.
- .3 Project monitoring and reporting:
  - .1 Keep team aware of changes to schedule, and possible consequences as project progresses.
  - .2 Use narrative reports to provide advice on seriousness of difficulties and measures to overcome them.
  - .3 Begin narrative reporting with statement on general status of Project followed by summarization of delays, potential problems, corrective measures and Project status criticality.
- .4 Critical Path Method (CPM) Requirements:
  - .1 Ensure Master Plan and Detail Schedule are practical and remain within specified Contract duration.
  - .2 Revise Master Schedule and Detail Schedule deemed impractical by Consultant and resubmit for approval.
  - .3 Change to Contract Duration:
    - .1 Acceptance of Master Schedule and Detail Schedule showing scheduled Contract duration shorter than specified Contract duration does not constitute change to Contract.
    - .2 Duration of Contract may only be changed through bilateral Agreement.
  - .4 Consider Master Schedule and Detail Schedule deemed practical by Consultant, showing Work completed in less than specified Contract duration, to have float.
  - .5 First Milestone on Master Schedule and Detail Schedule will identify start Milestone with an "ES" constraint date equal to Award of Contract date.
  - .6 Calculate dates for completion milestones from Plan and Schedule using specified time periods for Contract.
  - .7 Interim Certificate with "LF" constraint equal to calculated date.
  - .8 Calculations on updates to be such that if early finish of Interim Certificate falls later than specified Contract duration then float calculation to reflect negative float.
  - .9 Delays to non-critical activities, those with float may not be basis for time extension.
  - .10 Do not use float suppression techniques such as imposed dates other than required by Contract.
  - .11 Allow for and show Master Plan and Detail Schedule adverse weather conditions normally anticipated.
    - .1 Specified Contract duration has been predicated assuming normal amount of adverse weather conditions.
  - .12 Provide necessary crews and manpower to meet schedule requirements for performing Work within specified Contract duration.



- .1 Simultaneous use of multiple crews on multiple fronts on multiple critical paths may be required.
- .13 Arrange participation on and off site of subcontractors and suppliers, as required by Consultant, for purpose of network planning, scheduling, updating and progress monitoring.
  - .1 Approvals by Consultant of original networks and revisions do not relieve Contractor from duties and responsibilities required by Contract.
- .14 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

### 1.3 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Consultant Project Control System for planning, scheduling, monitoring and reporting of project progress.
- .3 Submit Project Control System to Consultant for approval.
  - .1 Failure to comply with each required submission, may result in progress payment being withheld in accordance with Federal Government's GC 5 Terms of Payment.
- .4 Include costs for execution, preparation and reproduction of schedule submittals in bid documents.
- .5 Submit letter ensuring that schedule has been prepared in co-ordination with major sub-contractors.
- .6 Refer to article "PROGRESS MONITORING AND REPORTING" of this specification Section for frequency of Project control system submittals.
- .7 Submit impact analysis of schedule for changes that result in extension of contract duration.
  - .1 Include draft schedule update and report as outlined in article "PROGRESS MONITORING AND REPORTING".
- .8 Submit Project planning, monitoring and control system data as part of initial schedule submission and monthly status reporting in following form.
  - .1 Master Schedule Bar Chart.
  - .2 Construction Detail schedule Bar Chart.
  - .3 Listing of project activities including milestones and logical connectors, networks (sub-networks) from Project start to end. Sort activities by activity identification number and accompany with descriptions. List early and late start and finish dates together with durations, codes and float.
  - .4 Criticality report listing activities and milestones with zero total float used as first sort for ready identification of critical paths through entire project. List early and late starts and finishes dates, together with durations, codes and float for critical activities.



- .5 Progress report in early start sequence, listing for each trade, activities or finished within 2 months from monthly update date. List activity identification number, description and duration. Provide columns for entry of actual start and finish dates, duration remaining and remarks concerning action required.

#### **1.4 QUALITY ASSURANCE**

- .1 Use experienced personnel, fully qualified in planning and scheduling to provide services from start of construction to Final Certificate, including Commissioning.

#### **1.5 WORK BREAKDOWN STRUCTURE (WBS)**

- .1 Prepare construction Work Breakdown Structure (WBS) within 15 working days of Award of Contract date.
  - .1 Develop WBS through at least five levels: project, stage, element, sub-element and work package.

#### **1.6 MASTER SCHEDULE**

- .1 Structure and base CPM construction networks system on WBS coding in order to ensure consistency throughout Project.
- .2 Prepare comprehensive construction Master Schedule (CPM logic diagram) within 15 working days of finalizing Agreement to confirm validity or alternates of identified milestones.
  - .1 Master Schedule will be used as baseline.
    - .1 Revise baseline as conditions dictate and as required by Consultant.
    - .2 Consultant as Project progresses will review and return revised baseline within 7 work days.
- .3 Reconcile revisions to Master Schedule and Cash Flow Projections with previous baseline to provide continuous audit trail.
- .4 Initial and subsequent Master Schedule will include:
  - .1 Bar chart identifying coding, activity durations, early/late and start/finish dates, total float, completion as percentile, current status and budget amounts.
  - .2 Network diagram showing coding, activity sequencing (logic), total float, early/late dates, current status and durations.

#### **1.7 DETAIL SCHEDULE**

- .1 Provide detailed project schedule (CPM logic diagram) within 15 working days of Award of Contract date showing activity sequencing, interdependencies and duration estimates. Include listed activities as follows:
  - .1 Shop drawings.
  - .2 Samples.





- .3 Approvals.
- .4 Procurement.
- .5 Construction.
- .6 Installation.
- .7 Site works.
- .8 Testing.
- .9 Commissioning and acceptance.
- .2 Relate Detail Schedule activities to basic activities and milestones developed and approved in Master Schedule.
- .3 Clearly show sequence and interdependence of construction activities and indicate:
  - .1 Start and completion of all items of Work, their major components, and interim milestone completion dates.
  - .2 Activities for procurement, delivery, installation and completion of each major piece of equipment, materials and other supplies, including:
    - .1 Time for submittals, resubmittals and review.
    - .2 Time for fabrication and delivery of manufactured products for Work.
    - .3 Interdependence of procurement and construction activities.
  - .3 Include sufficient detail to assure adequate planning and execution of Work. Activities should generally range in duration from 3 to 15 workdays each.
- .4 Provide level of detail for project activities such that sequence and interdependency of Contract tasks are demonstrated and allow co-ordination and control of project activities. Show continuous flow from left to right.
- .5 Ensure activities with no float are calculated and clearly indicated on logical CPM construction network system as being, whenever possible, continuous series of activities throughout length of Project to form "Critical Path". Increased number of critical activities is seen as indication of increased risk.
- .6 Insert Change Orders in appropriate and logical location of Detail Schedule. After analysis, clearly state and report to Consultant for review effects created by insertion of new Change Order.

## **1.8 PROGRESS MONITORING AND REPORTING**

- .1 On ongoing basis, Detail Schedule on job site must show "Progress to Date". Arrange participation on and off site of subcontractors and suppliers, as, and when necessary, for purpose of network planning, scheduling, updating and progress monitoring. Inspect Work with Consultant at least once monthly to establish progress on each current activity shown on applicable networks.
- .2 Update and reissue project Work Breakdown Structure and relevant coding structures as project develops and changes.



- .3 Perform Detail Schedule update monthly with status dated (Data Date) on last working day of month. Update to reflect activities completed to date, activities in progress, logic and duration changes.
- .4 Do not automatically update actual start and finish dates by using default mechanisms found in project management software.
- .5 Submit to Consultant copies of updated Detail Schedule.
- .6 Requirements for monthly progress monitoring and reporting are basis for progress payment request.
- .7 Submit monthly written report based on Detail Schedule, showing Work to date performed, comparing Work progress to planned, and presenting current forecasts. Report must summarize progress, defining problem areas and anticipated delays with respect to Work schedule, and critical paths. Explain alternatives for possible schedule recovery to mitigate any potential delay. Include in report:
  - .1 Description of progress made.
  - .2 Pending items and status of: shop drawings,.
  - .3 Status of Contract completion date and milestones.
  - .4 Current and anticipated problem areas, potential delays and corrective measures.
  - .5 Review of progress and status of Critical Path activities.

**Part 2 Products**

**2.1 NOT USED**

**Part 3 Execution**

**3.1 NOT USED**

**END OF SECTION**



## Part 1 General

### 1.1 ADMINISTRATIVE

- .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 in SI Metric 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 coordinated 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 coordinated.
- .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 SHOP DRAWINGS AND PRODUCT DATA

- .1 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.
- .2 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
- .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 coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .4 Allow 10 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.
- .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, in duplicate, 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 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.



- .11 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 8 years of date of contract award for project.
- .12 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.
- .13 Submit electronic copies of manufacturer's 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.
- .14 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Consultant.
- .15 Documentation of the testing 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 The review of shop drawings by Consultant is for sole purpose of ascertaining conformance with general concept.



- .1 This review shall not mean that Consultant approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
- .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

### **1.3 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.

### **1.4 MOCK-UPS**

- .1 Erect mock-ups in accordance with 01 45 00 - Quality Control.

### **1.5 PHOTOGRAPHIC DOCUMENTATION**

- .1 Submit electronic colour digital photography in jpg format, fine resolution, monthly with progress statement.
- .2 Project identification: name and number of project and date of exposure indicated.
- .3 Number of viewpoints: 2 locations.
  - .1 Viewpoints and their location as determined by Consultant.
- .4 Frequency of photographic documentation: monthly.

### **1.6 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 REFERENCES**

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2 Province of Ontario
  - .1 Occupational Health and Safety Act and Regulations for Construction Projects, R.S.O. 1991, as amended by O. Reg. 252/142005

### **1.2 SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within 7 days after date of contract award and prior to commencement of Work. Health and Safety Plan must include:
  - .1 Results of site specific safety hazard assessment.
  - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
- .3 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to authority having jurisdiction.
- .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Consultant will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 7 days after receipt of plan. Revise plan as appropriate and resubmit plan to Consultant within 5 days after receipt of comments from Consultant.
- .7 Consultant's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .8 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

### **1.3 FILING OF NOTICE**

- .1 File Notice of Project with Provincial authorities prior to beginning of Work.
- .2 Contractor shall be responsible and assume the Principal Contractor role for each work zone location and not the entire complex. Contractor shall provide a written acknowledgement of this responsibility with 3 weeks of contract award.
- .3 Contractor shall agree to install proper site separation and identification in order to maintain time and space at all times throughout life of project.



#### **1.4 SAFETY ASSESSMENT**

- .1 Perform site specific safety hazard assessment related to project.

#### **1.5 SITE SPECIFIC SAFETY TRAINING**

- .1 All personnel must attend a mandatory site specific safety training session. Provide minimum 72 hours notice to Consultant requesting site training.

#### **1.6 MEETINGS**

- .1 Schedule and administer Health and Safety meeting with Consultant prior to commencement of Work.

#### **1.7 REGULATORY REQUIREMENTS**

- .1 Do Work in accordance with Section 01 41 00 – Regulatory Requirements.

#### **1.8 GENERAL REQUIREMENTS**

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Consultant may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

#### **1.9 RESPONSIBILITY**

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Contractor will be responsible and assume the role Constructor as described in the Ontario Occupational Health and Safety Act and Regulations for Construction Projects.
- .3 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

#### **1.10 UNFORESEEN HAZARDS**

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Consultant verbally and in writing.
- .2 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, advise Health and Safety co-ordinator and follow procedures in accordance with Acts and Regulations of Province having jurisdiction and advise Consultant verbally and in writing.



### 1.11 HEALTH AND SAFETY COORDINATOR

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Coordinator. Health and Safety Coordinator must:
  - .1 Have site-related working experience specific to activities associated with project.
  - .2 Have working knowledge of occupational safety and health regulations.
  - .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
  - .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
  - .5 Be on site during execution of Work and report directly to site supervisor.

### 1.12 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Consultant.

### 1.13 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Consultant.
- .2 Provide Consultant with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Consultant may stop Work if non-compliance of health and safety regulations is not corrected.

### 1.14 BLASTING

- .1 Blasting or other use of explosives is not permitted.

### 1.15 POWDER ACTUATED DEVICES

- .1 Use powder actuated devices only after receipt of written permission from Consultant.

### 1.16 WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.



**Part 2 Products**

**2.1 NOT USED**

**Part 3 Execution**

**3.1 NOT USED**

**END OF SECTION**



**Part 1 General**

**1.1 REFERENCES AND CODES**

- .1 Perform Work in accordance with National Building Code of Canada (NBC) including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Meet or exceed requirements of:
  - .1 Contract documents.
  - .2 Specified standards, codes and referenced documents.

**1.2 HAZARDOUS MATERIAL DISCOVERY**

- .1 Asbestos: demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work. Notify Consultant.
- .2 PCB: Polychlorinated Biphenyl: stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work. Notify Consultant.
- .3 Mould: stop work immediately when material resembling mould is encountered during demolition work. Notify Consultant.

**1.3 BUILDING SMOKING ENVIRONMENT**

- .1 Comply with smoking restrictions and municipal by-laws.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**





**Part 1 General**

**1.1 INSPECTION**

- .1 Allow Consultant access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Consultant, instructions or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 Consultant will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction.

**1.2 ACCESS TO WORK**

- .1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
- .2 Co-operate to provide reasonable facilities for such access.

**1.3 PROCEDURES**

- .1 Notify appropriate agency and Consultant in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

**1.4 REJECTED WORK**

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Consultant as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.

**1.5 REPORTS**

- .1 Submit 4 copies of inspection and test reports to Consultant.
- .2 Provide copies to manufacturer or fabricator of material being inspected or tested.



**1.6 TESTS AND MIX DESIGNS**

- .1 Furnish test results and mix designs as requested.
- .2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Consultant and may be authorized as recoverable.

**1.7 MOCK-UPS**

- .1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.
- .2 Construct in locations as specified in specific Section.
- .3 Prepare mock-ups for Consultant review with reasonable promptness and in orderly sequence, to not cause delays in Work.
- .4 Failure to prepare mock-ups 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.
- .5 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

**1.8 MILL TESTS**

- .1 Submit mill test certificates as required of specification Sections.

**Part 2 Products**

**2.1 NOT USED**

**Part 3 Execution**

**3.1 NOT USED**

**END OF SECTION**





**Part 1 General**

**1.1 INSTALLATION AND REMOVAL**

- .1 Provide temporary utilities controls in order to execute work expeditiously.
- .2 Remove from site all such work after use.

**1.2 WATER SUPPLY**

- .1 Provide own continuous supply of potable water for construction use. Site and building water services are not to be used.
- .2 Make arrangements and pay to deliver any water required for construction activities.

**1.3 TEMPORARY HEATING AND VENTILATION**

- .1 Supplementary to the Invitation to Tender, clause 3.3.4 in Appendix D, although the building will be heated, it is the Contractor's responsibility to provide secondary means of heating in order to complete the work of this Contract.
- .2 Provide temporary heat and ventilation in enclosed areas as required to:
  - .1 Facilitate progress of Work.
  - .2 Protect Work and products against dampness and cold.
  - .3 Prevent moisture condensation on surfaces.
  - .4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
  - .5 Provide adequate ventilation to meet health regulations for safe working environment.
- .3 Ventilating:
  - .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
  - .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
  - .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
  - .4 Ventilate storage spaces containing hazardous or volatile materials.
  - .5 Ventilate temporary sanitary facilities.
  - .6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.
- .4 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
  - .1 Conform with applicable codes and standards.
  - .2 Enforce safe practices.



- .3 Prevent abuse of services.
- .4 Prevent damage to finishes.
- .5 Vent direct-fired combustion units to outside.
- .5 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

**1.4 TEMPORARY POWER AND LIGHT**

- .1 Supplementary to the Invitation to Tender, clause 3.3.4 in Appendix D, the Owner will provide 120V power during construction. Should higher voltages be required, the Contractor to provide connection to existing panel.
- .2 Provide and pay for temporary power during construction for temporary lighting, operating of tools and equipment.
- .3 Arrange and pay for generators or other means of power supply for all construction and work activities. Site and building electrical services are not to be used.

**1.5 FIRE PROTECTION**

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction governing codes, regulations and bylaws.
- .2 Burning rubbish and construction waste materials is not permitted on site.

**Part 2 Products**

**2.1 NOT USED**

**Part 3 Execution**

**3.1 NOT USED**

**END OF SECTION**



**Part 1 General**

**1.1 SUBMITTALS**

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

**1.2 INSTALLATION AND REMOVAL**

- .1 Provide construction facilities in order to execute work expeditiously.
- .2 Remove from site all such work after use.

**1.3 SITE STORAGE/LOADING**

- .1 Confine work and operations of employees to work area as indicated in contract documents. Do not encumber premises with products.
- .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

**1.4 EQUIPMENT, TOOL AND MATERIALS STORAGE**

- .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
- .2 Locate materials not required to be stored in weatherproof sheds on site in staging area identified in contract documents.

**1.5 SANITARY FACILITIES**

- .1 Contractor is permitted to use the Tour Group public washroom facilities during regular Gallery hours and escorted during the public closed off and off hours periods.

**1.6 CONSTRUCTION SIGNAGE**

- .1 No signs or advertisements, other than warning and safety signs, are permitted on site.
- .2 Signs and notices for safety and instruction in both official languages Graphic symbols to CAN/CSA-Z321.
- .3 Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project or earlier if directed by Consultant.

**1.7 PROTECTION AND MAINTENANCE OF TRAFFIC**

- .1 Maintain and protect traffic on any roads during construction period except as otherwise specifically directed by Consultant.
- .2 Do not restrict or inhibit regular use and access of all roads and access routes.
- .3 Protect building occupants and public from damage to person and property.



- .4 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with regular traffic.
- .5 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
- .6 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.

**1.8 CLEAN-UP**

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways.
- .3 Store materials resulting from demolition activities that are salvageable.
- .4 Stack stored new or salvaged material not in construction facilities.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**



**Part 1 General**

**1.1 INSTALLATION AND REMOVAL**

- .1 Provide temporary controls in order to execute Work expeditiously.
- .2 Remove from site all such work after use.

**1.2 HOARDING**

- .1 Erect temporary hoarding as indicated.

**1.3 DUST TIGHT SCREENS**

- .1 Provide dust tight screens to localize dust generating activities and for protection of workers, finished areas of Work and public.
- .2 Maintain and relocate protection until such work is complete.

**1.4 FIRE ROUTES**

- .1 Maintain access to property including overhead clearances for use by emergency response vehicles.

**1.5 PROTECTION OF BUILDING AND SITE FINISHES**

- .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- .2 Provide necessary screens, covers and hoardings.
- .3 Be responsible for damage incurred due to lack of or improper protection.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**





**Part 1 General**

**1.1 REFERENCES**

- .1 Conform to these reference standards, in whole or in part as specifically requested in specifications.

**1.2 QUALITY**

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
- .3 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

**1.3 AVAILABILITY**

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Consultant of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In event of failure to notify Consultant at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Consultant reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

**1.4 STORAGE, HANDLING AND PROTECTION**

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.



- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials, lumber materials on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense and to satisfaction of Consultant.
- .9 Touch-up damaged factory finished surfaces to Consultant's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

#### **1.5 TRANSPORTATION**

- .1 Pay costs of transportation of products required in performance of Work.
- .2 Transportation cost of products supplied by Owner will be paid for by Owner. Unload, handle and store such products.

#### **1.6 MANUFACTURER'S INSTRUCTIONS**

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Consultant in writing, of conflicts between specifications and manufacturer's instructions, so that Consultant will establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Consultant to require removal and re-installation at no increase in Contract Price or Contract Time.

#### **1.7 QUALITY OF WORK**

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Consultant if required Work is such as to make it impractical to produce required results.





- .2 Do not employ anyone unskilled in their required duties. Consultant reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Consultant, whose decision is final.

### **1.8 CO-ORDINATION**

- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

### **1.9 CONCEALMENT**

- .1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- .2 Before installation inform Consultant if there is interference. Install as directed by Consultant.

### **1.10 REMEDIAL WORK**

- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.
- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

### **1.11 LOCATION OF FIXTURES**

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
- .2 Inform Consultant of conflicting installation. Install as directed.

### **1.12 FASTENINGS**

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.



- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

**1.13 FASTENINGS - EQUIPMENT**

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
- .3 Bolts may not project more than one diameter beyond nuts.
- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

**1.14 PROTECTION OF WORK IN PROGRESS**

- .1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Consultant.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**



**Part 1 General**

**1.1 SUBMITTALS**

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit written request in advance of cutting or alteration which affects:
  - .1 Structural integrity of elements of project.
  - .2 Efficiency, maintenance, or safety of operational elements.
  - .3 Visual qualities of sight-exposed elements.
  - .4 Work of Owner or separate contractor.
- .3 Include in request:
  - .1 Identification of project.
  - .2 Location and description of affected Work.
  - .3 Statement on necessity for cutting or alteration.
  - .4 Description of proposed Work, and products to be used.
  - .5 Alternatives to cutting and patching.
  - .6 Effect on Work of Owner or separate contractor.
  - .7 Written permission of affected separate contractor.
  - .8 Date and time work will be executed.

**1.2 MATERIALS**

- .1 Required for original installation.
- .2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

**1.3 PREPARATION**

- .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering, inspect conditions affecting performance of Work.
- .3 Beginning of cutting or patching means acceptance of existing conditions.
- .4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

**1.4 EXECUTION**

- .1 Execute cutting, fitting, and patching to complete Work.
- .2 Fit several parts together, to integrate with other Work.



- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .7 Cut rigid materials using precise hand tools, masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- .8 Restore work with new products in accordance with requirements of Contract Documents.
- .9 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .10 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**



**Part 1 General**

**1.1 PROJECT CLEANLINESS**

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors.
- .2 Remove waste materials from site at daily regularly scheduled times. Do not burn waste materials on site.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Provide on-site containers for collection of waste materials and debris.
- .5 Dispose of waste materials and debris off site.
- .6 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .7 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .8 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .9 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .10 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

**1.2 FINAL CLEANING**

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris other than that caused by Owner or other Contractors.
- .5 Remove waste materials from site at regularly scheduled times. Do not burn waste materials on site.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.



- .7 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
- .8 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, floors.
- .9 Clean lighting reflectors, lenses, and other lighting surfaces.
- .10 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
- .11 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.
- .12 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .13 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**



**Part 1 General**

**1.1 ADMINISTRATIVE REQUIREMENTS**

- .1 Acceptance of Work Procedures:
  - .1 Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
    - .1 Notify Consultant in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
    - .2 Request Consultant's inspection.
  - .2 Consultant's Inspection:
    - .1 Consultant and Contractor to inspect Work and identify defects and deficiencies.
    - .2 Contractor to correct Work as directed.
  - .3 Completion Tasks: submit written certificates in English that tasks have been performed as follows:
    - .1 Work: completed and inspected for compliance with Contract Documents.
    - .2 Defects: corrected and deficiencies completed.
    - .3 Equipment and systems: tested, balanced and fully operational.
    - .4 Certificates required by Utility companies: submitted.
    - .5 Operation of systems: demonstrated to Owner's personnel.
    - .6 Work: complete and ready for final inspection.
  - .4 Final Inspection:
    - .1 When completion tasks are done, request final inspection of Work by Consultant, and Contractor.
    - .2 When Work incomplete according to Consultant, complete outstanding items and request re-inspection.
  - .5 Declaration of Substantial Performance: when Consultant considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.
  - .6 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.
  - .7 Final Payment:



- .1 When Consultant considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.
- .8 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

**1.2 FINAL CLEANING**

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**





**Part 1 General**

**1.1 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Two weeks prior to Substantial Performance of the Work, submit to the Consultant, four final copies of operating and maintenance manuals in English. Include one complete soft copy of the operating and maintenance manuals in PDF format on a CD. All documents within the soft copy will be full-size.
- .3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.
- .4 Provide evidence, if requested, for type, source and quality of products supplied.

**1.2 FORMAT**

- .1 Organize data as instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
- .3 When multiple binders are used correlate data into related consistent groupings.
  - .1 Identify contents of each binder on spine.
- .4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .5 Arrange content by systems, under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab.
  - .1 Bind in with text; fold larger drawings to size of text pages.

**1.3 CONTENTS - PROJECT RECORD DOCUMENTS**

- .1 Table of Contents for Each Volume: provide title of project;
  - .1 Date of submission; names.
  - .2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.
  - .3 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system:



- .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Typewritten Text: as required to supplement product data.
  - .1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

#### 1.4 AS -BUILT DOCUMENTS AND SAMPLES

- .1 Maintain, at site for Consultant one record copy of:
  - .1 Contract Drawings.
  - .2 Specifications.
  - .3 Addenda.
  - .4 Change Orders and other modifications to Contract.
  - .5 Reviewed shop drawings, product data, and samples.
  - .6 Field test records.
  - .7 Inspection certificates.
  - .8 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction.
  - .1 Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.
  - .1 Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition.
  - .1 Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Consultant.

#### 1.5 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- .1 Record information on set of black line opaque drawings, provided by Consultant.
- .2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress.



- .1 Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
  - .1 Measured depths of elements of foundation in relation to finish first floor datum.
  - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
  - .4 Field changes of dimension and detail.
  - .5 Changes made by change orders.
  - .6 Details not on original Contract Drawings.
  - .7 References to related shop drawings and modifications.
- .5 Specifications: mark each item to record actual construction, including:
  - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
  - .2 Changes made by Addenda and change orders.
- .6 Other Documents: maintain field test records, required by individual specifications sections.
- .7 Provide digital photos, if requested, for site records.

## 1.6 EQUIPMENT AND SYSTEMS

- .1 For each item of equipment and each system include description of unit or system, and component parts.
  - .1 Give function, normal operation characteristics and limiting conditions.
  - .2 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
- .3 Include installed colour coded wiring diagrams.
- .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.
  - .1 Include regulation, control, stopping, shut-down, and emergency instructions.
  - .2 Include summer, winter, and any special operating instructions.
- .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.



- .6 Provide servicing and lubrication schedule, and list of lubricants required.
- .7 Include manufacturer's printed operation and maintenance instructions.
- .8 Include sequence of operation by controls manufacturer.
- .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .10 Provide installed control diagrams by controls manufacturer.
- .11 Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.
- .12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .14 Include test and balancing reports as specified in specification sections.
- .15 Additional requirements: as specified in individual specification sections.

## 1.7 MATERIALS AND FINISHES

- .1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.
  - .1 Provide information for re-ordering custom manufactured products.
- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .3 Moisture-protection and weather-exposed products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .4 Additional requirements: as specified in individual specifications sections.

## 1.8 MAINTENANCE MATERIALS

- .1 Spare Parts:
  - .1 Provide spare parts, in quantities specified in individual specification sections.
  - .2 Provide items of same manufacture and quality as items in Work.
  - .3 Deliver to site; place and store.
  - .4 Receive and catalogue items.
    - .1 Submit inventory listing to Consultant.
    - .2 Include approved listings in Maintenance Manual.
  - .5 Obtain receipt for delivered products and submit prior to final payment.
- .2 Extra Stock Materials:



- .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in Work.
- .3 Deliver to site; place and store.
- .4 Receive and catalogue items.
  - .1 Submit inventory listing to Consultant.
  - .2 Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered products and submit prior to final payment.
- .3 Special Tools:
  - .1 Provide special tools, in quantities specified in individual specification section.
  - .2 Provide items with tags identifying their associated function and equipment.
  - .3 Deliver to site; place and store.
  - .4 Receive and catalogue items.
    - .1 Submit inventory listing to Consultant.
    - .2 Include approved listings in Maintenance Manual.

**1.9 DELIVERY, STORAGE AND HANDLING**

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store paints and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged products at own expense and for review by Consultant.

**1.10 WARRANTIES AND BONDS**

- .1 Develop warranty management plan to contain information relevant to Warranties.
- .2 Warranty management plan to include required actions and documents to assure that Consultant receives warranties to which it is entitled.
- .3 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.
- .4 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
  - .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.



- .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
- .4 Verify that documents are in proper form, contain full information, and are notarized.
- .5 Co-execute submittals when required.
- .6 Retain warranties and bonds until time specified for submittal.
- .5 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .6 Conduct joint 10 month warranty inspection, measured from time of acceptance, by Consultant.
- .7 Include information contained in warranty management plan as follows:
  - .1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.
  - .2 Provide list for each warranted equipment, item, feature of construction or system indicating:
    - .1 Name of item.
    - .2 Model and serial numbers.
    - .3 Location where installed.
    - .4 Name and phone numbers of manufacturers or suppliers.
    - .5 Names, addresses and telephone numbers of sources of spare parts.
    - .6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
    - .7 Cross-reference to warranty certificates as applicable.
    - .8 Starting point and duration of warranty period.
    - .9 Summary of maintenance procedures required to continue warranty in force.
    - .10 Cross-Reference to specific pertinent Operation and Maintenance manuals.
    - .11 Organization, names and phone numbers of persons to call for warranty service.
    - .12 Typical response time and repair time expected for various warranted equipment.
  - .3 Procedure and status of tagging of equipment covered by extended warranties.



- .4 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.
- .8 Respond in timely manner to oral or written notification of required construction warranty repair work.

**1.11 WARRANTY TAGS**

- .1 Tag, at time of installation, each warranted item. Provide durable, oil and water resistant tag approved by Consultant.
- .2 Attach tags with copper wire and spray with waterproof silicone coating.
- .3 Leave date of acceptance until project is accepted for occupancy.
- .4 Indicate following information on tag:
  - .1 Type of product/material.
  - .2 Model number.
  - .3 Serial number.
  - .4 Contract number.
  - .5 Warranty period.
  - .6 Inspector's signature.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**







**Part 1 General**

**1.1 SITE CONDITIONS**

- .1 Review "Designated Substance Report" and take precautions to protect environment.
- .2 If material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify Consultant immediately.
  - .1 Proceed only after receipt of written instructions have been received from Consultant.
- .3 Notify Consultant before disrupting building access or services.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not used.

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Inspect site 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. Preserve active utilities traversing site in operating condition.
- .3 Notify and obtain approval of utility companies before starting demolition.
- .4 Disconnect, cap, plug or divert, as required, existing public utilities within the property where they interfere with the execution of the work, in conformity with the requirements of the authorities having jurisdiction. Mark the location of these and previously capped or plugged services on the site and indicate location (horizontal and vertical) on the record drawings. Support, shore up and maintain pipes and conduits encountered.
  - .1 Immediately notify Consultant and utility company concerned in case of damage to any utility or service
  - .2 Immediately notify the Consultant should uncharted utility or service be encountered, and await instruction in writing regarding remedial action.

**3.2 PREPARATION**

- .1 Protection of In-Place Conditions:



- .1 Prevent movement, settlement, or damage to adjacent and parts of building to remain in place. Provide bracing and shoring required.
  - .2 Keep noise, dust, and inconvenience to occupants to minimum. Building must remain fully operational and occupied at all times.
  - .3 Protect building systems, services and equipment.
  - .4 Provide temporary dust screens, covers, railings, supports and other protection as required.
  - .5 Building is under negative pressure. Ensure demolition work does not negatively impact building pressurization. Notify Consultant minimum 72 hours if openings or impact to building interior required.
- .2 Demolition/Removal:
- .1 Remove items as indicated.
  - .2 Remove parts of existing building to permit new construction.
  - .3 Trim edges of partially demolished building and elements to suit new work.

**3.3 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.

**END OF SECTION**



**Part 1 General**

**1.1 REFERENCES**

- .1 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop Drawings:
  - .1 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

**1.3 QUALITY ASSURANCE**

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

**1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Replace defective or damaged materials with new.

**Part 2 Products**

**2.1 MATERIALS**

- .1 Steel sections and plates: to CSA G40.20/G40.21, Grade 350W.
- .2 Welding materials: to CSA W59.
- .3 Welding electrodes: to CSA W48 Series.
- .4 Bolts and anchor bolts: to ASTM A307.



- .5 Stainless steel plate: to ASTM A480/A480M-15, Type 304. Brushed satin finish.

## 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 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.

## 2.3 FINISHES

- .1 Powder coat finish to all steel except stainless steel.
- .2 Powder coat colours as indicated on drawings.

## 2.4 HANGING RAILS FOR VITRINES

- .1 Steel sections: Sizes and thicknesses as detailed and welded to form hanging rails. Powder coated finish.

## 2.5 PLATES FOR TIMBER SLATS

- .1 Stainless steel plates: size and thickness as detailed. Brushed satin finish.

## 2.6 STEEL UPRIGHTS AT MDF WALL CLADDING

- .1 Steel uprights with slots for shelving: Sizes and thicknesses as detailed. Powder coated finish. Provide adjustable feet.

## 2.7 WINDOW DISPLAY UNITS

- .1 Steel uprights, plates, fins and shelves: Sizes and thicknesses as detailed. Powder coated finish. .
- .2 Provide height adjustable sleeved connection at top of uprights.
- .3 Uprights to provide wiring raceway for light fixtures as shown and be slotted to accommodate shelving.
- .4 Uprights to be made from electrical resistance welded bright mild steel.

## 2.8 CASH & WRAP

- .1 Stainless steel cladding, plates, upstands and edging: Size and thickness as detailed, brushed satin finish.
- .2 Folded metal surround: Size and thickness as detailed, powder coat finish.
- .3 Black smoked metal sheet: Size and thickness as detailed.



## 2.9 JEWELLERY COUNTER

- .1 Stainless steel cladding, plates, upstands and edging: Size and thickness as detailed, brushed satin finish.
- .2 Folded metal surround: Size and thickness as detailed, powder coat finish.
- .3 Black smoked metal sheet: Size and thickness as detailed.
- .4 Black smoked metal support bars, brackets and uprights at high display case: Size and thickness as detailed.

## 2.10 COLUMN UNITS

- .1 Stainless steel metal support bars: Brushed satin finish, size and thickness as detailed.
- .2 Stainless steel strip to exterior of glazing: Brushed satin finish, size and thickness as detailed.
- .3 Stainless steel tubular surrounds: Slotted, brushed satin finish, size and thickness as detailed.
- .4 Metal brackets to wall: Size and thickness as detailed with welded metal plates, powder coated finish.
- .5 Metal shelving brackets: Size and thickness as detailed, powder coated finish.

## 2.11 FEATURE TABLE

- .1 Built-in tray section: Folded metal, size and thickness as detailed. Powder coat finish.

## 2.12 ACCESSORIES

- .1 Standard, special, top display, box and postcard shelving: Folded metal, size and thickness as detailed. Powder coated finish.
- .2 Rear support bars, prongs and straight arms: Size and thickness as detailed. Powder coated finish.
- .3 Display tray: Folded stainless steel. Size and thickness as detailed. Brushed satin finish.
- .4 Pegboards: Folded metal panel. Size and thickness as detailed. Provide punched holes and integrated brackets. Powder coated finish.

## Part 3 Execution

### 3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for metal fabrications 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.

### **3.2 ERECTION**

- .1 Do welding work in accordance with CSA W59 unless specified otherwise.
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .3 Provide suitable means of anchorage acceptable to Consultant 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 Supply components for work by other trades in accordance with shop drawings and schedule.
- .6 Deliver items over for casting into concrete and building into masonry together with setting templates to appropriate location and construction personnel.

### **3.3 HANGING RAILS FOR VITRINES**

- .1 Supply and install steel hanging rails as detailed. Provide 4 steel offsets per rail as shown.

### **3.4 PLATES FOR TIMBER SLATS**

- .1 Supply and install stainless steel plates to top and bottom of timber slats as detailed.

### **3.5 STEEL UPRIGHTS AT MDF WALL CLADDING**

- .1 Supply and install steel uprights in locations as detailed.

### **3.6 WINDOW DISPLAY UNITS**

- .1 Supply and install steel uprights, plates, fins and shelves as detailed.

### **3.7 CASH & WRAP**

- .1 Supply and install stainless steel, powder coated and black smoked metal as detailed.

### **3.8 JEWELLERY COUNTER**

- .1 Supply and install steel uprights, brackets and shelf bar supports at high display case as detailed.



- .2 Supply and install stainless steel, powder coated and black smoked metal at table top display cases as detailed.

### 3.9 COLUMN UNITS

- .1 Supply and install stainless steel tubular surrounds supported on wall with metal brackets welded to metal plates. Use countersunk screws to fasten to wall. Surrounds and wall brackets to provide wiring raceway for light fixtures as detailed.
- .2 Supply and install stainless steel strips to exterior of glazing as detailed for type 2 units.
- .3 Supply and install stainless steel and metal shelves and brackets as detailed.

### 3.10 FEATURE TABLE

- .1 Line the inside of the built-in tray section with folded metal as detailed.

### 3.11 ACCESSORIES

- .1 Supply and install standard, special, top display, box and postcard shelving c/w brackets to fit into slotted uprights as detailed.
- .2 Rear support bars, prongs and straight arms:
  - .1 Supply and install rear support bars, prongs and straight arms as detailed. Rear support bars c/w brackets to fit into slotted uprights.
- .3 Display trays:
  - .1 Supply and install metal display trays as detailed.
- .4 Pegboards:
  - .1 Supply and install metal pegboards as detailed to fit into slotted uprights.

### 3.12 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .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 Section 01 74 11 - Cleaning.

### 3.13 PROTECTION

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

**END OF SECTION**







**Part 1 General**

**1.1 REFERENCES**

- .1 CSA International
  - .1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
  - .2 CSA O121-08, Douglas Fir Plywood.
  - .3 CAN/CSA-Z809-08, Sustainable Forest Management.
- .2 National Lumber Grades Authority (NLGA)
  - .1 Standard Grading Rules for Canadian Lumber 2010.

**1.2 ACTION AND INFORMATIONAL 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 rough carpentry work and include product characteristics, performance criteria, physical size, finish and limitations.

**1.3 QUALITY ASSURANCE**

- .1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood identification: by grade mark in accordance with applicable CSA standards.
- .3 Plywood, OSB and wood based composite panel construction sheathing identification: by grademark in accordance with applicable CSA standards.

**1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect wood from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.



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**Part 2 Products**

**2.1 MATERIALS**

- .1 Lumber: unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with following standards:
  - .1 CAN/CSA-O141.
  - .2 NLGA Standard Grading Rules for Canadian Lumber.
- .2 Furring, blocking, nailing strips:
  - .1 S2S is acceptable for blocking and accessories support.
  - .2 Board sizes: "Standard" or better grade.
  - .3 Dimension sizes: "Standard" light framing or better grade.
- .3 Panel Materials:
  - .1 Douglas fir plywood (DFP): to CSA O121, standard construction.
    - .1 Urea-formaldehyde free.

**2.2 ACCESSORIES**

- .1 Nails, spikes and staples: to CSA B111.
- .2 Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and washers.
- .3 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, explosive actuated fastening devices, recommended for purpose by manufacturer.

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for rough carpentry 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 .

**3.2 INSTALLATION**

- .1 Comply with requirements of NBC, supplemented by the following paragraphs.



- .2 Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding and other work as required.
- .3 Align and plumb faces of furring and blocking to tolerance of 1:600.
- .4 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.
- .5 Use caution when working with particle board. Use dust collectors and high quality respirator masks.
- .6 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .7 Countersink bolts where necessary to provide clearance for other work.

### 3.3

#### **CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .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 Section 01 74 11 - Cleaning.

**END OF SECTION**





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**Part 1 General**

**1.1 RELATED REQUIREMENTS**

- .1 Section 06 40 00 Architectural Woodwork, Section 08 14 16 Flush Wood Doors, Section 09 91 99 - Painting for Minor Works.

**1.2 REFERENCES**

- .1 American National Standards Institute (ANSI)
  - .1 ANSI A208.2-09, Medium Density Fibreboard (MDF) for Interior Applications.
  - .2 ANSI/HPVA HP-1-10, American National Standard for Hardwood and Decorative Plywood.
- .2 Architectural Woodwork Manufacturers Association of Canada (AWMAC) and Architectural Woodwork Institute (AWI)
  - .1 Architectural Woodwork Quality Standards, 1st edition, 2009.
- .3 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-11.3-M87, Hardboard.
- .4 CSA International
  - .1 CSA B111-74(R2003), Wire Nails, Spikes and Staples.
  - .2 CSA O121-08, Douglas Fir Plywood.
  - .3 CSA O141-05(R2009), Softwood Lumber.
- .5 National Lumber Grades Authority (NLGA)
  - .1 Standard Grading Rules for Canadian Lumber 2010.

**1.3 ACTION AND INFORMATIONAL 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 MDF and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit two copies of WHMIS MSDS in accordance with Section 01 35 43 - Environmental Procedures.
- .3 Shop Drawings:
  - .1 Indicate details of construction, profiles, jointing, fastening and other related details.



- .2 Indicate materials, thicknesses, finishes and hardware.
- .4 Samples:
  - .1 Submit for review and acceptance of each unit.
  - .2 Submit duplicate 300 x 300 mm samples of hardwood door frame, wood trims, and routed MDF panels..

#### **1.4 QUALITY ASSURANCE**

- .1 Lumber by grade stamp of agency certified by Canadian Lumber Standards Accreditation Board (CLSAB).
- .2 Sustainable Standards Certification:
  - .1 Certified Wood: submit listing of wood products and materials used in accordance with CAN/CSA-Z809 or FSC or SFI.
- .3 Plywood, particleboard, OSB and wood based composite panels to CSA and ANSI standards.

#### **1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect wood products from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

### **Part 2 Products**

#### **2.1 MATERIALS**

- .1 Softwood lumber: S4S, moisture content 19% or less in accordance with following standards:
  - .1 CSA O141.
  - .2 NLGA Standard Grading Rules for Canadian Lumber.
  - .3 AWMAC premium grade, moisture content as specified.
  - .4 Hardwood lumber: moisture content 5 to 7% or less in accordance:



- .1 National Hardwood Lumber Association (NHLA).
  - .2 AWMAC custom grade, moisture content as specified.
  - .3 White Maple (Hard Maple) and White Oak
- .2 Panel Material: urea-formaldehyde free
- .1 CAN/CSA-Z809 or FSC or SFI certified.
  - .2 Douglas fir plywood (DFP): to CSA O121, standard construction.
  - .3 Hardwood plywood: to ANSI/HPVA HP-1., and CSA O115, maple-faced hardwood plywood, good sequence matched, select White.
  - .4 Medium density fibreboard (MDF): to ANSI A208.2, density 640-800 kg/m<sup>3</sup>.

## 2.2 ACCESSORIES

- .1 Nails and staples: to CSA B111; galvanized to ASTM A123/A123M for exterior work, interior humid areas and for treated lumber; plain finish elsewhere.
- .2 Wood screws: steel, type and size to suit application.
- .3 Splines: wood.
- .4 Adhesive and Sealants: in accordance with Section 07 92 00 - Joint Sealants.
  - .1 VOC limit 30 g/L maximum to SCAQMD Rule 1168.

## 2.3 TIMBER SLATS

- .1 Type No.1: 20 mm x 70mm maple wood slats fixed to 4mm x 35mm stainless steel plates at top and bottom creating timber slat panels. Timber slat panels to be secured in place using concealed fasteners.
- .2 Type No.2(at Cash & Wrap Desk): 20 mm x 80mm maple wood slats complete with 2mm thick stainless steel bands at top and bottom creating timber slat panels. Timber slat panels to be secured in place using concealed fasteners.

## 2.4 MDF PANELLING

- .1 18mm thick routed MDF wall panelling, grooves to be 12mm wide x 3mm deep complete with radius groove edges, spacing of grooves as indicated. Routed MDF panels are to be secured in place using concealed fasteners as detailed. Routed MDF panels are to receive a sprayed applied paint finish.



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**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for wood products 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 INSTALLATION**

- .1 Do finish carpentry to Quality Standards of (AWMAC).
- .2 Scribe and cut as required, fit to abutting walls, and surfaces, fit properly into recesses and to accommodate piping, columns, fixtures, outlets, or other projecting, intersecting or penetrating objects.
- .3 Form joints to conceal shrinkage.

**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 Interior and exterior 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 Hardware:
  - .1 Install hardware, locations as indicated or required .

### 3.4 INSTALLATION OF TRIM

- .1 Standing and running trim:
  - .1 Interior:
    - .1 Grade: FAS.
    - .2 Solid stock: Hard Maple species.
    - .3 Size: 100mm x 25mm thick.

### 3.5 INSTALLATION OF FRAMES

- .1 Interior frames:
  - .1 Grade: FAS.
  - .2 Frames to be solid wood Hard Maple and White Oak, refer to drawings for location of each types species.
  - .3 Construction:
    - .1 Profile:AWMAC Design Single Rebate Detail, Type as detailed , size as dimensioned .
    - .2 Corner:AWMAC Design Detail , Type 1 Rabbet .

### 3.6 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .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 Section 01 74 11 - Cleaning.



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**3.7 PROTECTION**

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

**END OF SECTION**



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**Part 1 General**

**1.1 RELATED REQUIREMENTS**

- .1 Section 06 20 00 - Finish Carpentry.
- .2 Section 06 47 00 - Plastic Laminate

**1.2 REFERENCES**

- .1 American National Standards Institute (ANSI)
  - .1 ANSI A208.1-09, Particleboard.
  - .2 ANSI A208.2-09, Medium Density Fiberboard (MDF) for Interior Applications.
  - .3 ANSI/HPVA HP-1-10, Standard for Hardwood and Decorative Plywood.
- .2 ASTM International
  - .1 ASTM D2832-92(R2011), Standard Guide for Determining Volatile and Nonvolatile Content of Paint and Related Coatings.
- .3 Architectural Woodwork Manufacturers Association of Canada (AWMAC) and Architectural Woodwork Institute (AWI)
  - .1 Architectural Woodwork Quality Standards Illustrated, 8th edition, Version 1.0 (2009).
- .4 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-71.20-M88, Adhesive, Contact, Brushable.
- .5 CSA International
  - .1 CSA B111-74(R2003), Wire Nails, Spikes and Staples.
  - .2 CSA O121-08, Douglas Fir Plywood.
  - .3 CSA O141-05(R2009), Softwood Lumber.
  - .4 CSA O151-09, Canadian Softwood Plywood.
- .6 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .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 2010.

### 1.3 ACTION AND INFORMATIONAL 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 architectural woodwork and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit two copies of WHMIS MSDS in accordance with Section 01 35 43 - Environmental Procedures.
- .3 Shop Drawings:
  - .1 Indicate details of construction, profiles, jointing, fastening and other related details.
    - .1 Scales: profiles full size, details quarter full size.
  - .2 Indicate materials, thicknesses, finishes and hardware.
  - .3 Indicate locations of service outlets in casework, typical and special installation conditions, and connections, attachments, anchorage and location of exposed fastenings.
- .4 Samples:
  - .1 Submit for review and acceptance of each unit.
  - .2 Samples will be returned for inclusion into work.
  - .3 Submit duplicate samples of hardwood: sample size 300 x 300 mm or 600mm long.
  - .4 Submit duplicate samples of laminated plastic for colour selection.
  - .5 Submit duplicate samples of laminated plastic joints, edging, cutouts and postformed profiles.
- .5 Certifications: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

### 1.4 QUALITY ASSURANCE

- .1 Lumber by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Sustainable Standards Certification:
  - .1 Certified Wood: submit listing of wood products and materials used in accordance with CAN/CSA-Z809 or FSC or SFI.



- .3 Plywood, particleboard, OSB and wood based composite panels to CSA and ANSI standards.
- .4 Mock-ups:
  - .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
    - .1 Shop prepare one counter top, complete with hardware shop applied finishes, and install where directed by Consultant
    - .2 Allow 24 hours for inspection of mock-up by Consultant before proceeding with Work.
    - .3 When accepted, mock-up will demonstrate minimum standard for Work.
    - .4 Do not proceed with work prior to receipt of written acceptance of mock-up by Consultant.
    - .5 Mock-up may not remain as part of finished work.
- .5 Qualifications:
  - .1 The architectural woodwork fabricator shall be an established firm, experienced in the field of custom retail millwork fabrication.
  - .2 The fabricator and installer of the architectural woodwork shall have a minimum of ten (10) years experiences in the field of fabricating and installing custom retail millwork and have worked on at least five (5) projects of similar size, type and complexity.

## 1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
  - .1 Protect millwork against dampness and damage during and after delivery.
  - .2 Store millwork in ventilated areas, protected from extreme changes of temperature or humidity.
- .3 Storage and Handling Requirements:
  - .1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect architectural woodwork from nicks, scratches, and blemishes.



- .3 Replace defective or damaged materials with new.

## Part 2 Products

### 2.1 MATERIALS

- .1 Softwood lumber: unless specified otherwise, S4S, moisture content 15 % or less in accordance with following standards:
  - .1 CSA O141.
  - .2 CAN/CSA-Z809 or FSC or SFI certified.
  - .3 NLGA Standard Grading Rules for Canadian Lumber.
  - .4 AWMAC custom grade, moisture content as specified.
- .2 Machine stress-rated lumber is acceptable for all purposes.
- .3 Hardwood lumber: moisture content 7 % or less in accordance with following standards:
  - .1 National Hardwood Lumber Association (NHLA).
  - .2 CAN/CSA-Z809 or FSC or SFI certified.
  - .3 AWMAC premium grade, moisture content as specified.
- .4 Hardwood plywood: to ANSI/HPVA HP-1, CAN/CSA-Z809 or FSC or SFI certified.
  - .1 Plywood resin to contain no added urea-formaldehyde.
- .5 Hardboard:
  - .1 To CAN/CGSB-11.3, CAN/CSA-Z809 or FSC or SFI certified.
  - .2 Hardboard resin to contain no added urea-formaldehyde.
- .6 MDF (medium density fibreboard) core: to ANSI A208.2, Premium Grade, 13mm, 18mm, & 35mm thick, density 769 kg/m<sup>2</sup>, CAN/CSA-Z809 or FSC or SFI certified.
  - .1 Medium density fibreboard performance requirements to: ANSI A208.2.
  - .2 MDF resin to contain no added urea-formaldehyde.
- .7 Nails and staples: to CSA B111.
- .8 Wood screws: copper, type and size to suit application.
- .9 Splines: wood.
- .10 Sealant: in accordance with Section 07 92 00 - Joint Sealants.
  - .1 Sealants: VOC limit 250 g/L maximum to SCAQMD Rule 1168.
- .11 Metal Veneer: 2mm thick folded metal with powder coat finish.



- .12 Stainless Steel Veneer and Edging: 2mm thick stainless steel, formed to shapes indicated and adhered to outer surfaces of shelves and cabinet edges where indicated.
- .13 Lighting: LED concealed lighting fixtures, length and profile to suit conditions indicated.

## 2.2 MANUFACTURED UNITS

- .1 Casework:
  - .1 Fabricate caseworks to AWMAC custom quality grade.
  - .2 Furring, blocking, nailing strips, grounds and rough bucks and sleepers.
    - .1 S2S is acceptable for concealed blocking.
    - .2 Board sizes: "standard" or better grade.
    - .3 Dimension sizes: "standard" light framing or better grade.
    - .4 Urea-formaldehyde free.
  - .3 Framing: hardwood species, NLGA grade.
  - .4 Case bodies (ends, divisions and bottoms).
    - .1 MDF (medium density fibreboard), premium grade, square edge, 18 mm thick unless noted otherwise. Bottoms of tables to be 35mm thick.
    - .2 Solid wood (for blocking): hardwood species, S2S grade, 19mm minimum thickness.
  - .5 Backs:
    - .1 MDF (medium density fibreboard), premium grade, square edge, 18 mm thick unless noted otherwise.
  - .6 Shelving:
    - .1 MDF (medium density fibreboard), premium grade, square edge, 35 mm thick unless noted otherwise.
- .2 Drawers:
  - .1 Fabricate drawers to AWMAC custom grade supplemented as follows:
  - .2 Sides and Backs.
    - .1 MDF (medium density fibreboard), premium grade, square edge, 12 mm thick.
  - .3 Bottoms:
    - .1 MDF (medium density fibreboard), premium grade, square edge, 12 mm thick.



- .4 Fronts:
  - .1 MDF (medium density fibreboard), premium grade, square edge, 18 mm thick.
- .3 Casework Doors:
  - .1 Fabricate doors to AWMAC premium grade supplemented as follows:
  - .2 MDF (medium density fibreboard), painted, premium grade, square edge, 18 mm thick.

## 2.3 FABRICATION

- .1 Set nails and countersink screws apply stained wood filler to indentations, sand smooth and leave ready to receive finish.
- .2 Shop install cabinet hardware for doors, shelves and drawers. Recess shelf standards unless noted otherwise.
- .3 Shelving to cabinetwork to be adjustable unless otherwise noted.
- .4 Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures.
- .5 Shop assemble work for delivery to site in size easily handled and to ensure passage through building openings.
- .6 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.
- .7 Ensure adjacent parts of continuous laminate work match in colour and pattern.
- .8 Veneer laminated plastic to core material in accordance with adhesive manufacturer's instructions and Section 06 47 00. Ensure core and laminate profiles coincide to provide continuous support and bond over entire surface. Use continuous lengths up to 3000 mm. Keep joints 600 mm from sink cutouts.
- .9 Use straight self-edging laminate strip for flatwork to cover exposed edge of core material. Chamfer exposed edges uniformly at approximately 20 degrees. Do not mitre laminate edges.
- .10 Apply laminate backing sheet to reverse side of core of plastic laminate work.
- .11 Apply laminated plastic liner sheet where indicated.
- .12 Apply metal veneer and stainless steel veneer and edging where indicated, shaped to profiles indicated. Provide suitable adhesive for application.





- .13 Install concealed continuous LED lighting fixtures within the millwork units where indicated, to CSA and all applicable Codes. Coordinate with the electrical trade.

## 2.4 FINISHING

- .1 Finish in accordance with Section 09 91 23 – Painting for Minor Works.

## Part 3 Execution

### 3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for architectural woodwork installation in accordance with manufacturer's 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 INSTALLATION

- .1 Do architectural woodwork to Quality Standards of AWMAC.
- .2 Install prefinished millwork at locations shown on drawings.
  - .1 Position accurately, level, plumb straight.
- .3 Fasten and anchor millwork securely.
  - .1 Supply and install heavy duty fixture attachments for wall mounted cabinets.
- .4 Use draw bolts in countertop joints.
- .5 Scribe and cut as required to fit abutting walls and to fit properly into recesses and to accommodate piping, columns, fixtures, outlets or other projecting, intersecting or penetrating objects.
- .6 At junction of plastic laminate counter back splash and adjacent wall finish, apply small bead of sealant in accordance with Section 07 92 00 - Joint Sealants.
- .7 Apply bituminous coating over wood framing members in contact with masonry or cementitious construction.
- .8 Fit hardware accurately and securely in accordance with manufacturer's written instructions.



- .9 Site apply laminated plastic to units as indicated.
  - .1 Adhere laminated plastic over entire surface.
  - .2 Make corners with hairline joints.
  - .3 Use full sized laminate sheets.
  - .4 Make joints only where indicated on shop drawings and reviewed by Consultant.
  - .5 Slightly bevel arises.
- .10 For site application, offset joints in plastic laminate facing from joints in core.

### 3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .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 Section 01 74 11 - Cleaning.
  - .1 Clean millwork.
  - .2 Remove excess glue from surfaces.

### 3.4 PROTECTION

- .1 Protect cabinet work from damage until final inspection.
- .2 Protect installed products and components from damage during construction.
- .3 Repair damage to adjacent materials caused by architectural woodwork installation.

**END OF SECTION**



**Part 1 General**

**1.1 REFERENCES**

- .1 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-71.20-M88, Adhesive, Contact, Brushable.
- .2 CSA International
  - .1 CSA O121-08, Douglas Fir Plywood.
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).

**1.2 ACTION AND INFORMATIONAL 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 laminate, adhesive, and core materials and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
  - .1 Submit for review and acceptance of each unit.
- .4 Certifications: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

**1.3 CLOSEOUT SUBMITTALS**

- .1 Provide maintenance data for laminate work for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

**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 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.



- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect laminate, adhesive, and core materials from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

## Part 2 Products

### 2.1 MATERIALS

- .1 Laminated plastic for flatwork: to NEMA LD3.
  - .1 Type: general purpose.
  - .2 Grade: HGL.
  - .3 Size: 1.016 mm thick.
  - .4 Colour: P114 Poivre FA from Polyrey.
  - .5 Pattern: solid.
  - .6 Finish: satin.
- .2 Laminated plastic for liner: to NEMA LD3.
  - .1 Type: cabinet liner.
  - .2 Grade: CLS.
  - .3 Size: 0.51 mm thick
  - .4 Colour: white.
- .3 Plywood core: to CSA O121 solid two sides, Grade A, 19 mm thick.
  - .1 Ensure plywood core is urea-formaldehyde free.
- .4 Laminated plastic adhesive: contact adhesive to CAN/CGSB-71.20.
  - .1 VOC limit 250 maximum.

### 2.2 FABRICATION

- .1 Comply with NEMA LD3, Annex A.
- .2 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.
- .3 Ensure adjacent parts of continuous laminate work match in colour and pattern.



- .4 Veneer laminated plastic to core material in accordance with adhesive manufacturer's instructions. Ensure core and laminate profiles coincide to provide continuous support and bond over entire surface. Use continuous lengths up to 3000 mm. Keep joints 600 mm from sink cutouts.
- .5 Form shaped profiles and bends as indicated, using postforming grade laminate to laminate manufacturer's instructions.
- .6 Use straight self-edging laminate strip for flatwork to cover exposed edge of core material. Chamfer exposed edges uniformly at approximately 20 degrees. Do not mitre laminate edges.
- .7 Apply laminate backing sheet to reverse side of core of plastic laminate work.

### **Part 3 Execution**

#### **3.1 MANUFACTURER'S INSTRUCTIONS**

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

#### **3.2 INSTALLATION**

- .1 Install work plumb, true and square, neatly scribed to adjoining surfaces.
- .2 Make allowances around perimeter where fixed objects pass through or project into laminated plastic work to permit normal movement without restriction.
- .3 Use draw bolts and splines in countertop joints. Maximum spacing 450 mm on centre, 75 mm from edge. Make flush hairline joints.
- .4 Provide cutouts for inserts, grilles, appliances, outlet boxes and other penetrations. Round internal corners, chamfer edges and seal exposed core.
- .5 For site application, offset joints in plastic laminate facing from joints in core.

#### **3.3 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .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 Section 01 74 11 - Cleaning.
  - .1 Clean to NEMA LD3, Annex B.
  - .2 Remove traces of primer, caulking, epoxy and filler materials and clean doors and frames.



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**3.4 PROTECTION**

- .1 Cover finished laminated plastic veneered surfaces with heavy kraft paper or put in cartons during shipment.
- .2 Protect installed laminated surfaces in accordance with manufacturer's written recommendations.
  - .1 Remove protection only immediately before final inspection.
- .3 Protect installed products and components from damage during construction.
- .4 Repair damage to adjacent materials caused by laminate, adhesive, and core materials installation.

**END OF SECTION**



## 1 GENERAL

### 1.01 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures
- .2 Shop drawings: Include layout, dimensions, materials, finishes, cutouts, and attachments.
- .3 Samples:
  - .1 75 x 75 mm quartz samples in specified colour.
- .4 Manufacturer's Instructions:
  - .1 Submit manufacturer's installation instructions.

### 1.02 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, handle, store and protect materials of this section in accordance with manufacturer's printed instructions.
  - .1 Maintain relative humidity between 25 and 60% at 22 degrees C during storage and installation.

## 2 PRODUCTS

### 2.01 MATERIALS

- .1 Quartz sheet (S1):
  - .1 Product: Silestone Quartz.
  - .2 Composition: Quartz aggregate, polyester resin, and colour pigments formed into flat slabs.
  - .3 Colour: Blanco Nort/White Norte
  - .4 Thickness: As indicated.
  - .5 Surface Finish: Polished
- .2 Quartz sheet (C2):
  - .1 Product: Dupont Zodiaq Quartz Surfaces.
  - .2 Composition: Quartz aggregate, polyester resin, and colour pigments formed into flat slabs.
  - .3 Colour: Dove Grey
  - .4 Thickness: As indicated.
  - .5 Surface Finish: Polished

## 3 EXECUTION

### 3.01 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.

### **3.02 INSTALLATION**

- .1 Install work plumb, true and square, neatly scribed to adjoining surfaces.
- .2 Form field joints using manufacturer's recommended adhesive, with joint widths no greater than 3 mm in finished work.
- .3 Tops: Flat and true to within 3 mm of a flat surface over a 3050 mm length.
- .4 Provide cutouts for all penetrations. Round internal corners and round edges.

### **3.03 CLEANING**

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Remove traces of adhesives, sealants and other stains.

**END OF SECTION**





**Part 1 General**

**1.1 REFERENCES**

- .1 Underwriter's Laboratories of Canada (ULC)
  - .1 ULC-S115-1995, Fire Tests of Fire stop Systems.

**1.2 DEFINITIONS**

- .1 Fire Stop Material: device intended to close off opening or penetration during fire or materials that fill openings in wall or floor assembly where penetration is by cables, cable trays, conduits, ducts and pipes and poke-through termination devices, including electrical outlet boxes along with their means of support through wall or floor openings.
- .2 Single Component Fire Stop System: fire stop material that has Listed Systems Design and is used individually without use of high temperature insulation or other materials to create fire stop system.
- .3 Multiple Component Fire Stop System: exact group of fire stop materials that are identified within Listed Systems Design to create on site fire stop system.
- .4 Tightly Fitted; (ref: NBC Part 3.1.9.1.1 and 9.10.9.6.1): penetrating items that are cast in place in buildings of noncombustible construction or have "0" annular space in buildings of combustible construction.
  - .1 Words "tightly fitted" should ensure that integrity of fire separation is such that it prevents passage of smoke and hot gases to unexposed side of fire separation.

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
  - .1 Submit shop drawings to show location, proposed material, reinforcement, anchorage, fastenings and method of installation.
  - .2 Construction details should accurately reflect actual job conditions.
- .4 Samples:
  - .1 Submit duplicate 300 x 300 mm samples showing actual fire stop material proposed for project.



- .5 Quality assurance submittals: submit following in accordance with Section 01 45 00 - Quality Control.
  - .1 Test reports: in accordance with CAN-ULC-S101 for fire endurance and CAN-ULC-S102 for surface burning characteristics.
    - .1 Submit certified test reports from approved independent testing laboratories, indicating compliance of applied fire stopping with specifications for specified performance characteristics and physical properties.
  - .2 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
  - .3 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, cleaning procedures.
  - .4 Manufacturer's Field Reports: submit to manufacturer's written reports within 3 days of review, verifying compliance of Work, as described in PART 3 - FIELD QUALITY CONTROL.

#### 1.4 QUALITY ASSURANCE

- .1 Qualifications:
  - .1 Installer: person specializing in fire stopping installations approved by manufacturer.

#### 1.5 DELIVERY, STORAGE AND HANDLING

- .1 Packing, shipping, handling and unloading:
  - .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
  - .2 Deliver, store and handle materials in accordance with manufacturer's written instructions.
  - .3 Deliver materials to the site in undamaged condition and in original unopened containers, marked to indicate brand name, manufacturer, ULC markings.
- .2 Storage and Protection:
  - .1 Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Replace defective or damaged materials with new.



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**Part 2 Products**

**2.1 MATERIALS**

- .1 Fire stopping and smoke seal systems: in accordance with CAN-ULC-S115.
  - .1 Asbestos-free materials and systems capable of maintaining effective barrier against flame, smoke and gases in compliance with requirements of CAN-ULC-S115 and not to exceed opening sizes for which they are intended and conforming to specified special requirements described in PART 3.
  - .2 Fire stop system rating: to meet or exceed fire resistance rating of assembly.
- .2 Service penetration assemblies: systems tested to CAN-ULC-S115.
- .3 Service penetration fire stop components: certified by test laboratory to CAN-ULC-S115.
- .4 Fire-resistance rating of installed fire stopping assembly in accordance with NBC.
- .5 Fire stopping and smoke seals at openings intended for ease of re-entry such as cables: elastomeric seal.
- .6 Fire stopping and smoke seals at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control: elastomeric seal.
- .7 Primers: to manufacturer's recommendation for specific material, substrate, and end use.
- .8 Water (if applicable): potable, clean and free from injurious amounts of deleterious substances.
- .9 Damming and backup materials, supports and anchoring devices: to manufacturer's recommendations, and in accordance with tested assembly being installed as acceptable to authorities having jurisdiction.
- .10 Sealants for vertical joints: non-sagging.

**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 PREPARATION**

- .1 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials.



- .1 Ensure that substrates and surfaces are clean, dry and frost free.
- .2 Prepare surfaces in contact with fire stopping materials and smoke seals to manufacturer's instructions.
- .3 Maintain insulation around pipes and ducts penetrating fire separation.
- .4 Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.

### 3.3 INSTALLATION

- .1 Install fire stopping and smoke seal material and components in accordance with manufacturer's certified tested system listing.
- .2 Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated openings or joints to ensure continuity and integrity of fire separation are maintained.
- .3 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.
- .4 Tool or trowel exposed surfaces to neat finish.
- .5 Remove excess compound promptly as work progresses and upon completion.

### 3.4 SPECIAL REQUIREMENTS

- .1 Location of special requirements for fire stopping and smoke seal materials at openings and penetrations in fire resistant rated assemblies are as follows:
  - .1 Movement: up to 50 mm deflection at top of non-loadbearing wall assemblies.

### 3.5 SEQUENCES OF OPERATION

- .1 Proceed with installation only when submittals have been reviewed by Consultant.
- .2 Mechanical pipe insulation: certified fire stop system component.
  - .1 Ensure pipe insulation installation precedes fire stopping.

### 3.6 FIELD QUALITY CONTROL

- .1 Inspections: notify Consultant when ready for inspection and prior to concealing or enclosing fire stopping materials and service penetration assemblies.
- .2 Manufacturer's Field Services:
  - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - SUBMITTALS.



- .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
- .3 Schedule site visits, to review Work, as directed in PART 1 - QUALITY ASSURANCE.

**3.7 CLEANING**

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.
- .3 Remove temporary dams after initial set of fire stopping and smoke seal materials.

**3.8 SCHEDULE**

- .1 Fire stop and smoke seal at:
  - .1 Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls.
  - .2 Top of fire-resistance rated masonry and gypsum board partitions.
  - .3 Intersection of fire-resistance rated masonry and gypsum board partitions.
  - .4 Control and sway joints in fire-resistance rated masonry and gypsum board partitions and walls.
  - .5 Penetrations through fire-resistance rated floor slabs, ceilings and roofs.
  - .6 Openings and sleeves installed for future use through fire separations.
  - .7 Around mechanical and electrical assemblies penetrating fire separations.
  - .8 Rigid ducts: greater than 129 cm<sup>2</sup>

**END OF SECTION**





**Part 1 General**

**1.1 REFERENCES**

- .1 ASTM International
  - .1 ASTM C919-08, Standard Practice for Use of Sealants in Acoustical Applications.
  - .2 Canadian General Standards Board (CGSB)
    - .1 CAN/CGSB-19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.
    - .2 CAN/CGSB-19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.

**1.2 ACTION AND INFORMATIONAL 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 joint sealants and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Manufacturer's product to describe:
    - .1 Caulking compound.
    - .2 Primers.
    - .3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.
- .3 Samples:
  - .1 Submit 2 samples of each type of material and colour.
- .4 Manufacturer's Instructions:
  - .1 Submit instructions to include installation instructions for each product used.

**1.3 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for incorporation into manual.

**1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.



- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect joint sealants from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

## 1.5 SITE CONDITIONS

- .1 Ambient Conditions:
  - .1 Proceed with installation of joint sealants only when:
    - .1 Ambient and substrate temperature conditions are within limits permitted by joint sealant manufacturer or are above 4.4 degrees C.
    - .2 Joint substrates are dry.
    - .3 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.
  - .2 Joint-Width Conditions:
    - .1 Proceed with installation of joint sealants only where joint widths are more than those allowed by joint sealant manufacturer for applications indicated.
  - .3 Joint-Substrate Conditions:
    - .1 Proceed with installation of joint sealants only after contaminants capable of interfering with adhesion are removed from joint substrates.

## Part 2 Products

### 2.1 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 Where sealants are qualified with primers use only these primers.

### 2.2 SEALANT MATERIAL DESIGNATIONS

- .1 Silicones one part: to CAN/CGSB-19.13. Sealant type: A
- .2 Acrylic latex one part: to CAN/CGSB-19.17. Sealant type: B.
- .3 Acoustical sealant: to ASTM C919. Sealant type: C
- .4 Preformed compressible and non-compressible back-up materials:





- .1 Polyethylene, urethane, neoprene or vinyl foam:
  - .1 Extruded open cell foam backer rod.
  - .2 Size: oversize 30 to 50 %.
- .2 Bond breaker tape:
  - .1 Polyethylene bond breaker tape which will not bond to sealant.

### 2.3 SEALANT SELECTION

- .1 Perimeters of interior frames, as detailed and itemized: sealant type: Sealant type: B.
- .2 Concealed perimeter joints and seams of interior partitions to adjacent assemblies: Sealant type: C
- .3 Joint between flooring and frames: Sealant type: A

### 2.4 JOINT CLEANER

- .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant in accordance with sealant manufacturer's written recommendations.
- .2 Primer: in accordance with sealant manufacturer's written recommendations.

## Part 3 Execution

### 3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for joint sealants 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 SURFACE PREPARATION

- .1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
- .2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.
- .3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- .4 Ensure joint surfaces are dry and frost free.



- .5 Prepare surfaces in accordance with manufacturer's directions.

### 3.3 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.

### 3.4 BACKUP MATERIAL

- .1 Apply bond breaker tape where required to manufacturer's instructions.
- .2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

### 3.5 MIXING

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

### 3.6 APPLICATION

- .1 Sealant:
  - .1 Apply sealant in accordance with manufacturer's written instructions.
  - .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
  - .3 Apply sealant in continuous beads.
  - .4 Apply sealant using gun with proper size nozzle.
  - .5 Use sufficient pressure to fill voids and joints solid.
  - .6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
  - .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
  - .8 Remove excess compound promptly as work progresses and upon completion.
- .2 Curing:
  - .1 Cure sealants in accordance with sealant manufacturer's instructions.
  - .2 Do not cover up sealants until proper curing has taken place.

### 3.7 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
  - .2 Clean adjacent surfaces immediately.
  - .3 Remove excess and droppings, using recommended cleaners as work progresses.



- .4 Remove masking tape after initial set of sealant.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

**3.8 PROTECTION**

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

**END OF SECTION**





**Part 1 General**

**1.1 REFERENCES**

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM A653/A653M-06a, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.
- .3 Canadian Standards Association (CSA International)
  - .1 CSA-G40.20-04/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
  - .2 CSA W59-03, Welded Steel Construction (Metal Arc Welding).
- .4 Canadian Steel Door Manufacturers' Association (CSDMA)
  - .1 CSDMA, Recommended Specifications for Commercial Steel Doors and Frames, 2000.
  - .2 CSDMA, Selection and Usage Guide for Commercial Steel Doors, 1990.
- .5 National Fire Protection Association (NFPA)
  - .1 NFPA 80-99, Standard for Fire Doors and Fire Windows.
  - .2 NFPA 252-03, Standard Methods of Fire Tests of Door Assemblies.
- .6 Underwriters' Laboratories of Canada (ULC)
  - .1 CAN4-S104-M80, Standard Method for Fire Tests of Door Assemblies.

**1.2 SYSTEM DESCRIPTION**

- .1 Design Requirements:
  - .1 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104 NFPA 252 for ratings specified or indicated.
  - .2 Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with CAN4-S104, NFPA 252 and listed by nationally recognized agency having factory inspection services.

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide product data: in accordance with Section 01 33 00 - Submittal Procedures.



- .3 Provide shop drawings: in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, arrangement of hardware fire rating and finishes.
  - .2 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings fire rating finishes.
  - .3 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.
- .4 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.
- .5 Submit one 300 x 300 mm corner sample of each type of frame.

#### 1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

### Part 2 Products

#### 2.1 MATERIALS

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

#### 2.2 DOOR CORE MATERIALS

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

#### 2.3 ADHESIVES

- .1 Honeycomb cores and steel components: heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.
  - .1 Adhesive: maximum VOC content 50 g/L .
- .2 Lock-seam doors: fire resistant, resin reinforced polychloroprene, high viscosity, sealant/adhesive.

#### 2.4 PRIMER

- .1 Touch-up prime CAN/CGSB-1.181.
  - .1 Maximum VOC limit 50 g/L .



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**2.5 PAINT**

- .1 Field paint steel doors and frames in accordance with Sections, 09 91 99 - Painting for Minor Works. Protect weatherstrips from paint. Provide final finish free of scratches or other blemishes.

**2.6 ACCESSORIES**

- .1 Door silencers: single stud rubber/neoprene type.
- .2 Metallic paste filler: to manufacturer's standard.
- .3 Fire labels: metal rivited.

**2.7 FRAMES FABRICATION GENERAL**

- .1 Fabricate frames in accordance with CSDMA specifications.
- .2 Fabricate frames to profiles and maximum face sizes as indicated.
- .3 Interior frames: 1.6 mm welded type construction.
- .4 Blank, reinforce, drill and tap frames for mortised, templated hardware, electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.
- .5 Protect mortised cutouts with steel guard boxes.
- .6 Prepare frame for door silencers, 3 for single door, 2 at head for double door.
- .7 Manufacturer's nameplates on frames and screens are not permitted.
- .8 Conceal fastenings except where exposed fastenings are indicated.
- .9 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.

**2.8 FRAME ANCHORAGE**

- .1 Provide appropriate anchorage to floor and wall construction.
- .2 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.
- .3 Provide 2 anchors for rebate opening heights up to 1520 mm and 1 additional anchor for each additional 760 mm of height or fraction thereof.
- .4 Locate anchors for frames in existing openings not more than 150 mm from top and bottom of each jambs and intermediate at 660 mm on centre maximum.

**2.9 FRAMES: WELDED TYPE**

- .1 Welding in accordance with CSA W59.
- .2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile.



- .3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.
- .4 Grind welded joints and corners to a flat plane, fill with metallic paste and sand to uniform smooth finish.
- .5 Securely attach floor anchors to inside of each jamb profile.
- .6 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.

## **2.10 DOOR FABRICATION GENERAL**

- .1 Doors: swing type, flush, with provision for glass and/or louvre openings as indicated.
- .2 Interior doors: honeycomb construction.
- .3 Fabricate doors with longitudinal edges continuously welded. Seams: grind welded joints to a flat plane, fill with metallic paste filler and sand to a uniform smooth finish.
- .4 Blank, reinforce, drill doors and tap for mortised, templated hardware electronic hardware.
- .5 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.
- .6 Reinforce doors where required, for surface mounted hardware. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.
- .7 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.
- .8 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in conformance with NFPA 252 and CAN4-S104 and list by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.
- .9 Manufacturer's nameplates on doors are not permitted.

## **2.11 DOORS: HONEYCOMB CORE CONSTRUCTION**

- .1 Form face sheets for interior doors from 1.6 mm sheet steel with honeycomb core laminated under pressure to face sheets.

## **2.12 HOLLOW STEEL CONSTRUCTION**

- .1 Form face sheets for interior doors from 1.6 sheet steel.





**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 INSTALLATION GENERAL**

- .1 Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.
- .2 Install doors and frames to CSDMA Installation Guide.

**3.3 FRAME INSTALLATION**

- .1 Set frames plumb, square, level and at correct elevation.
- .2 Secure anchorages and connections to adjacent construction.
- .3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.
- .4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.
- .5 Caulk perimeter of frames between frame and adjacent material.

**3.4 DOOR INSTALLATION**

- .1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 00 - Door Hardware.
- .2 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows.
  - .1 Hinge side: 1.0 mm.
  - .2 Latchside and head: 1.5 mm.
  - .3 Finished floor, and thresholds: 13 mm.
- .3 Adjust operable parts for correct function.

**3.5 FINISH REPAIRS**

- .1 Touch up with primer finishes damaged during installation.
- .2 Fill exposed frame anchors surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

**END OF SECTION**





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**Part 1      General**

**1.1      REFERENCES**

- .1 Architectural Woodwork Manufacturers Association of Canada (AWMAC).
  - .1 Quality Standards for Architectural Woodwork 1998.
- .2 Canadian Standards Association (CSA International).
  - .1 CAN/CSA O132.2 Series-90(R1998), Wood Flush Doors.

**1.2      ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop Drawings:
  - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Indicate door types, sizes, core construction.

**1.3      SAMPLES**

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit one 300 x 300 mm corner sample of each type wood door.
- .3 Show door construction, core and faces.
- .4 Manufacturer's Instructions:
  - .1 Submit manufacturer's installation instructions.

**1.4      QUALITY ASSURANCE**

- .1 Regulatory Requirements:
- .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.

**1.5      DELIVERY, STORAGE, AND HANDLING**

- .1 Storage and Protection:
  - .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. Wrap doors.
- .4 Store doors away from direct sunlight.

## 1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Dispose of corrugated cardboard packaging material in appropriate on-site bin for recycling in accordance with site waste management program.
- .3 Unused or damaged glazing materials are not recyclable and must not be diverted to municipal recycling programs.
- .4 Divert unused adhesive material from landfill to official hazardous material collections site approved by Consultant.
- .5 Do not dispose of unused paint materials into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

## Part 2 Products

### 2.1 WOOD FLUSH DOORS

- .1 Solid core: to CAN/CSA-O132.2.1.
  - .1 Construction:
    - .1 Solid particleboard core: stile and rail frame bonded to particleboard core with wood lock blocks, 5-ply construction. 45 mm nominal thickness.
    - .2 Core: 449 kg/m<sup>3</sup> mat-formed particle board core to CSA O437 or ANSI A208.1 Grade LD-1.
    - .3 Stiles: minimum 35 mm wide (before prefitting), mill option engineered hardwood with the outer edge the same species as the face veneer. Outer stile shall be no less than 35 mm wide after trimming. Veneered edges are not permitted.
    - .4 Rails: minimum 35 mm wide (before prefitting) mill option engineered hardwood.
    - .5 Cross-banding: maximum 3.175 mm hardwood veneer.



- .2 Face Panels:
  - .1 Hardwood: Flat sliced, book matched select white maple for door DR03 and white oak for door DR 06 to Architectural Woodwork Quality Standards Section 200 (QSI 200), Grade A, edge-glued joints. Hand select wood veneer from architectural grade flitches of the specified species as required to provide a uniform grain pattern and colour throughout. Veneer representative of low end architectural grade quality will be unacceptable to the Consultant and will be rejected.
  - .2 Hardboard face panel: hardboard for paint finish.
  - .3 Stain or paint finish: See Section 09 91 99 - Painting for Minor Works
  - .4 Face Veneer: Apply veneer to the cross-banding in a hot press using adhesive.
- .3 Adhesive: Adhesive used to bond stiles, rails and layers of skins and face sheets to core: Type II (water resistant) urea-free water resistant adhesive conforming to the glue line requirements for wood doors under CAN/CSA-O132.2 for interior use.

## 2.2 FABRICATION

- .1 Vertical edge strips to match face veneer.
- .2 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.
- .3 Doors to be factory sealed at top, bottom and within all hardware cutouts.

## 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 manufacturer's printed instructions.
- .2 Install doors and hardware in accordance with manufacturer's printed instructions.
- .3 Adjust hardware for correct function.



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**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 On completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

**END OF SECTION**



**PART 1 General**

**1.1 SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures
- .2 Submit shop drawings.
  - .1 Submit catalogue details for each type of door illustrating profiles, dimensions and methods of assembly.

**CLOSEOUT SUBMITTALS**

- .3 Provide maintenance data for cleaning and maintenance access doors for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

**PART 2 Products**

**2.1 WALL AND CEILING ACCESS DOORS**

- .1 Sizes: Except as indicated otherwise, to be minimum sizes as follows:
  - .1 For hand entry: 460 x 460 mm.

**PART 3 Execution**

**3.1 INSTALLATION**

- .1 Install flush with adjacent finish materials
- .2 Ensure smooth operation of panel covers without binding

**3.1 LOCATION**

- .1 Location: Ensure that equipment is within view and accessible for operating, inspecting, adjusting, servicing without using special tools.
- .2 Install horizontal access door assembly in ceiling assembly as indicated.
- .3 As indicated on drawings.

**END OF SECTION**







**Part 1 General**

**1.1 REFERENCES**

- .1 Aluminum Association (AA)
  - .1 AA DAF 45-03(R2009), Designation System for Aluminum Finishes.
- .2 American Architectural Manufacturers Association (AAMA)
  - .1 AAMA 609/610-09, Cleaning and Maintenance Guide for Architecturally Finished Aluminum.

**1.2 ACTION AND INFORMATIONAL 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 side coiling grilles and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
  - .2 Indicate assembly and instruction details, dimensions of fabrication, required clearances materials, finishes, hardware .
- .4 Samples:
  - .1 Submit for review and acceptance of each unit.
  - .2 Samples will be returned for inclusion into work.
  - .3 Submit duplicate 300 mm long pieces of door curtains.
- .5 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

**1.3 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for side coiling grilles and enclosures and hardware for incorporation into manual.

**1.4 QUALITY ASSURANCE**

- .1 Certifications: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.



## 1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect side coiling grilles from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

## Part 2 Products

### 2.1 MATERIALS

- .1 Anodized aluminum sheet metal: plain anodizing quality.
- .2 Aluminum extrusions: Aluminum Association alloy AA6063-T5.

### 2.2 PRODUCT

- .1 Cascade Coil Drapery Security System or approved equivalent:
  - .1 Drapery: stainless steel, 9.5 mm weave, 16 gauge.
  - .2 Vertical Channels: aluminum.

### 2.3 HARDWARE

- .1 Top track: Secura Track System by Cascade Coil.
  - .1 Single track, stainless steel with stainless steel trolleys.
- .2 Locking: centre opening lock operable from both sides.
  - .1 Include one cylinder lock and locking footbolts at 1500 mm intervals.

### 2.4 ALUMINUM FINISHES

- .1 Finish exposed surfaces of aluminum components in accordance with Aluminum Association Designation System for Aluminum Finishes.
  - .1 Clear anodic finish: designation AA-M12-C22-A31.

### 2.5 OPERATION

- .1 Equip grille for operation by:
  - .1 Hand, install handles.



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**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for side coiling grilles 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 .

**3.2 INSTALLATION**

- .1 Manufacturer's Instructions: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
- .2 Erect side coiling grilles and closures in accordance with manufacturers' printed instructions.
- .3 Install masterkeyed cylinder specified in Section 08 71 00 - Door Hardware.
- .4 Adjust operating components to ensure smooth opening and closing of side coiling grilles and closures.

**3.3 CLEANING**

- .1 Perform cleaning of aluminum components in accordance with: AAMA 609.1 - Voluntary Guide Specification for Cleaning and Maintenance of Architectural Anodized Aluminum.
- .2 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
  - .2 Perform cleaning of aluminum components in accordance with: AAMA 609.
  - .3 Clean aluminum and stainless steel with damp rag and approved non-abrasive cleaner in accordance with manufacturer's instructions.
  - .4 Remove traces of primer, caulking; clean doors and frames.
- .3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

**3.4 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by side coiling grille installation.



**END OF SECTION**



**Part 1 General**

**1.1 REFERENCES**

- .1 American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA)
  - .1 ANSI/BHMA A156.9-2003, Cabinet Hardware.
  - .2 ANSI/BHMA A156.11- 2004, Cabinet Locks.
  - .3 ANSI/BHMA A156.18-2006, Materials and Finishes.

**1.2 ACTION AND INFORMATIONAL 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 cabinet hardware and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Manufacturer's Instructions: submit manufacturer's installation instructions.

**1.3 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for cabinet hardware for incorporation into manual.

**1.4 QUALITY ASSURANCE**

- .1 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 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Package items of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.
- .4 Storage and Handling Requirements:
  - .1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect cabinet hardware from nicks, scratches, and blemishes.
  - .3 Protect prefinished surfaces with strippable coating.



- .4 Replace defective or damaged materials with new.

## Part 2 Products

### 2.1 CABINET HARDWARE

- .1 Cabinet hardware: to ANSI/BHMA A156.9, designated by letter B and numeral identifiers listed in Hardware Schedule.
  - .1 Hinges: concealed hinge, 110 degree opening, soft-closing, finish to satin chrome .
  - .2 Latches: Magnetic one touch latch. Acceptable product: Lee Valley Long Latch 00S33.41 or approved equivalent.
  - .3 Shelf rests and standards: recessed steel standards with slotted shelf connectors at 25 mm intervals. Provided with a minum 4 open shelf rests per shelf.
  - .4 Drawer slides: side mounted and bottom edge mounted drawer slides as required for application, 34 kg weight capacity, full extension, soft-closing, zinc finish.
  - .5 Grommets: black plastic, diameter to suit cutout size indicated, flange depth to suit substrate.
  - .6 Piano hinge: nickel plated, concealed ball bearing.
  - .7 Hinges and locks for glazed doors: nickel plated or brushed stainless steel as indicated. Top and bottom pivot hinges. Hinges and locks to suit application and glass thickness and weight.
  - .8 Door bumpers: clear neoprene with adhesive backing.
  - .9 Poster display system: Multi-panel swinging panels wall display x 20 panels. Poster frame standard size 30" x 40" by Swingpanels.com or approved equivalent.
  - .10 Castors: 108 mm diameter, medium industrial bolt hole castor with brake. 70 kg capacity. 4000 Series from Ross Handling or approved equivalent. Black finish.
  - .11 Cupped magnet sets: magnet latches, 32 mm diameter. Acceptable product: Lee Valley #99K39.09.
  - .12 Showcase lights: Aktiva Showcase - Twig Lighting. Height: 170 mm. Matt silver finish..
  - .13 B-Line lights: Aktiva 39W B-Line/Fluor/Display. Height: 350 mm. Length: 1000 mm. Powder coated - RAL 7010.
  - .14 Finger pull handle: acceptable product: Hafele flush ring pull handle, 52 x 38 mm, item code #901.03.804.
- .2 Cabinet locks: to ANSI/BHMA A156.11, designated by letter E and numeral identifiers as listed below.



- .1 Door or drawer locks: half mortised into back of door or drawer, nickel plated finish.
- .2 Cylinders: key into keying system as directed.

## 2.2 FASTENINGS

- .1 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.
- .2 Exposed fastening devices to match finish of hardware.
- .3 Use fasteners compatible with material through which they pass.

## 2.3 KEYING

- .1 Cabinet locks to be great grand master keyed. Submit keying schedule for approval.
- .2 Supply keys in duplicate for every lock in this Contract.
- .3 Supply 3 master keys for each master key or grand master key group.
- .4 Stamp keying code numbers on keys and cylinders.
- .5 Install key cabinet where indicated.

## Part 3 Execution

### 3.1 INSTALLATION

- .1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
- .2 Install hardware to standard hardware location dimensions in accordance with manufacturer's recommendations and to project design requirements.
- .3 Install key control cabinet and establish key control set-up.

### 3.2 ADJUSTING

- .1 Adjust cabinet hardware for optimum, smooth operating condition.
- .2 Lubricate hardware and other moving parts.
- .3 Adjust cabinet door hardware to ensure tight fit at contact points with frames.

### 3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
  - .2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturer's instructions.
  - .3 Remove protective material from hardware items where present.



- .4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

### 3.4 DEMONSTRATION

- .1 Keying System Setup and Cabinet:
  - .1 Set up key control system with file key tags, duplicate key tags, numerical index, alphabetical index and key change index, label shields, control book and key receipt cards.
  - .2 Place file keys and duplicate keys in key cabinet on their respective hooks.
  - .3 Lock key cabinet and turn over key to Consultant.
- .2 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 Demonstrate operation, operating components, adjustment features, and lubrication requirements.

### 3.5 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by cabinet and miscellaneous hardware installation.

### 3.6 SCHEDULE

- .1 Install recessed shelf standards in each millwork unit with doors where indicated for full height of unit. Provide 2 standards per side.
- .2 Install millwork doors with hinges.
- .3 Install millwork drawers with slides.
- .4 Install grommets at all penetrations as indicated.
- .5 Install cabinet locks at each door and drawer as indicated.
- .6 Installer lights as indicated.
- .7 Install other items as indicated.

**END OF SECTION**





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**Part 1 General**

**1.1 RELATED REQUIREMENTS**

- .1 Section 08 11 00 – Metal Doors and Frames.
- .2 Section 08 14 16 – Flush Wood Doors

**1.2 REFERENCES**

- .1 American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA)
  - .1 ANSI/BHMA A156.1-2000, American National Standard for Butts and Hinges.
  - .2 ANSI/BHMA A156.2-2003, Bored and Preassembled Locks and Latches.
  - .3 ANSI/BHMA A156.3-2001, Exit Devices.
  - .4 ANSI/BHMA A156.4-2000, Door Controls - Closers.
  - .5 ANSI/BHMA A156.5-2001, Auxiliary Locks and Associated Products.
  - .6 ANSI/BHMA A156.6-2005, Architectural Door Trim.
  - .7 ANSI/BHMA A156.8-2005, Door Controls - Overhead Stops and Holders.
  - .8 ANSI/BHMA A156.13-2002, Mortise Locks and Latches Series 1000.
  - .9 ANSI/BHMA A156.16-2002, Auxiliary Hardware.
  - .10 ANSI/BHMA A156.18-2006, Materials and Finishes.
- .2 Canadian Steel Door and Frame Manufacturers' Association (CSDMA)
  - .1 CSDMA Recommended Dimensional Standards for Commercial Steel Doors and Frames - 2009.

**1.3 ACTION AND INFORMATIONAL 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 door hardware and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
  - .1 Submit for review and acceptance of each unit.



- .2 Samples will be returned for inclusion into work.
- .3 Identify each sample by label indicating applicable specification paragraph number, brand name and number, finish and hardware package number.
- .4 After approval samples will be returned for incorporation in Work.
- .4 Hardware List:
  - .1 Submit contract hardware list.
  - .2 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.
- .5 Manufacturer's Instructions: submit manufacturer's installation instructions.

#### **1.4 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for door hardware for incorporation into manual.

#### **1.5 MAINTENANCE MATERIALS SUBMITTALS**

- .1 Extra Stock Materials:
  - .1 Supply maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
  - .2 Tools:
    - .1 Supply 2 sets of wrenches for door closers.

#### **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 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 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.



- .3 Package items of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.
- .4 Storage and Handling Requirements:
  - .1 Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect door hardware from nicks, scratches, and blemishes.
  - .3 Protect prefinished surfaces with strippable coating.
  - .4 Replace defective or damaged materials with new.

## Part 2 Products

### 2.1 HARDWARE ITEMS

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

### 2.2 DOOR HARDWARE

- .1 Locks and latches:
  - Mortice deadlock, profile cylinder, stainless steel finish. Functions as specified. Provide dust boxes behind all strikes. Acceptable product: Hafele Model 911.22.550
  - .1 Knob: Lever handle, 20 mm diameter, Hafele model 904.21.501
  - .2 Roses : round.
  - .3 Normal strikes: box type, lip projection not beyond jamb.
  - .4 Cylinders: key into keying system as required by Client.
- .2 Butts and hinges:
  - .1 Butts and hinges: to ANSI/BHMA A156.1, stainless steel 2BB butt hinge, 102 x 76mm.
  - .2 Supply 1-1/2 pair per door leaf for doors up to 2285mm in height. Supply one additional hinge for each additional 762mm of height or fraction thereof.
  - .3 Acceptable product: Hafele model 926.90.131
- .3 Concealed hinges:
  - .1 SOSS concealed hinges, bright nickel plated, complete with SOSS concealed door closer kit. Acceptable product: Hafele 927.50.207. Required for door DR-01.



- .4 Exit devices: to ANSI/BHMA A156.3, type Von Duprin "98" series flat bar type.
- .5 Door Closers and Accessories:
  - .1 Door controls (closers): to ANSI/BHMA A156.4, satin nickel plated finish. Hafele Model 931.82.606
- .6 Architectural door trim: to ANSI/BHMA A156.6.
  - .1 Door protection plates: kick plate type and mid rail plate, 1.27 mm thick, 304 stainless steel, size: 700mm length. Hafele model 987.18.300
  - .2 Push plates: 300 x 75mm x 1.27 mm thick, 304 stainless steel push plate. Hafele model 987.14.831
  - .3 Push/Pull units: 19 mm diameter pull handle, 225-425mm hole centres, bolt through fixing. Hafele model 903.01.352
  - .4 Flush ring pull handle: 52 x 38mm flush ring pull handle, Hafele model 901.03.804
- .7 Privacy Set Release hardware: emergency release indicator and inside turn, Hafele Model 902.53.870, required at washroom door.

## 2.3 FASTENINGS

- .1 Use only fasteners provided by manufacturer. Failure to comply may void warranties and applicable licensed labels.
- .2 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.
- .3 Exposed fastening devices to match finish of hardware.
- .4 Where pull is scheduled on one side of door and push plate on other side, supply fastening devices, and install so pull can be secured through door from reverse side. Install push plate to cover fasteners.
- .5 Use fasteners compatible with material through which they pass.

## 2.4 KEYING

- .1 Doors, and cabinet locks to be as noted in Door Schedule and drawings. Prepare detailed keying schedule in conjunction with Consultant.
- .2 Supply keys in duplicate for every lock in this Contract.
- .3 Supply 3 master keys for each master key or grand master key group.
- .4 Stamp keying code numbers on keys and cylinders.
- .5 Supply construction cores.



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- .6 Hand over permanent cores and keys to Consultant.

### **Part 3 Execution**

#### **3.1 INSTALLATION**

- .1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
- .2 Supply metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.
- .3 Supply manufacturers' instructions for proper installation of each hardware component.
- .4 Install hardware to standard hardware location dimensions in accordance with CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction).
- .5 Where door stop contacts door pulls, mount stop to strike bottom of pull.
- .6 Use only manufacturer's supplied fasteners.
  - .1 Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.
- .7 Remove construction locks when directed by Consultant.
  - .1 Install permanent cores and ensure locks operate correctly.

#### **3.2 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 ensure tight fit at contact points with frames.

#### **3.3 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
  - .2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturer's instructions.
  - .3 Remove protective material from hardware items where present.



- .4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

### 3.4 DEMONSTRATION

- .1 Keying System Setup and Cabinet:
  - .1 Set up key control system with file key tags, duplicate key tags, numerical index, alphabetical index and key change index, label shields, control book and key receipt cards.
  - .2 Place file keys and duplicate keys in key cabinet on their respective hooks.
  - .3 Lock key cabinet and turn over key to DCC Representative.
- .2 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 locksets.
  - .3 Demonstrate operation, operating components, adjustment features, and lubrication requirements.

### 3.5 PROTECTION

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

### 3.6 SCHEDULE

- .1 Provide and install all hardware as noted in the Door & Hardware Schedule listed on the drawings.

**END OF SECTION**



**Part 1 General**

**1.1 REFERENCES**

- .1 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-12.1-M90, Tempered or Laminated Safety Glass.
- .2 Glass Association of North American (GANA)
  - .1 GANA Glazing Manual - 2008.
  - .2 GANA Laminated Glazing Reference Manual - 2009.

**1.2 ACTION AND INFORMATIONAL 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 glass, sealants, and glazing accessories and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
  - .1 Submit for review and acceptance of each unit.
  - .2 Submit duplicate 300 mm x 300 mm size samples of glass.

**1.3 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for glazing for incorporation into manual.

**1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect glazing from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.



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**Part 2 Products**

**2.1 MATERIALS**

- .1 Flat Glass:
  - .1 Safety glass: to CAN/CGSB-12.1, transparent, thickness as indicated on drawings.
    - .1 Type 1-laminated and 2-tempered.
      - .1 Class B-float.
      - .2 Category 11.
      - .3 Edge treatment.
    - .2 Type 3-UV laminated.
      - .1 Class B-float.
      - .2 Category 1.
      - .3 Edge treatment.
      - .4 Plastic interlayer, clear, to block 99% of UV rays.
  - .3 Cast Acrylic:
    - .1 Cast acrylic sheet: Cell Cast Acrylic by Perspex.
    - .2 Thickness as indicated on drawings.
    - .3 Frosted.
    - .4 Colour to be selected from manufacturer's full colour range.
  - .4 Plastic Film: in accordance with Section 08 87 53 - Architectural Window Films.
  - .5 Sealant: in accordance with Section 07 92 00 - Joint Sealants.

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for glazing installation in accordance with manufacturer's written instructions.
  - .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 Visually inspect substrate in presence of Consultant.
  - .4 Inform Consultant of unacceptable conditions immediately upon discovery.
  - .5 Proceed with installation only after unacceptable conditions have been remedied.





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**3.2 PREPARATION**

- .1 Clean contact surfaces with solvent and wipe dry.
- .2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- .3 Prime surfaces scheduled to receive sealant.

**3.3 INSTALLATION**

- .1 Shopfront aluminum glass channels:
  - .1 Comply with manufacturer's written installation instructions and approved shop drawings.
  - .2 Fasten glass panel partition framing to building structure and supports as indicated on approved shop drawings, utilizing approved fasteners and spacing.
  - .3 Set frame in continuous bed of sealant.

**3.4 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
    - .1 Remove traces of primer, caulking.
    - .2 Remove glazing materials from finish surfaces.
    - .3 Remove labels.
    - .4 Clean glass using approved non-abrasive cleaner in accordance with manufacturer's instructions.
  - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

**3.5 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 After installation, mark each light with an "X" by using removable plastic tape or paste.
- .3 Repair damage to adjacent materials caused by glazing installation.

**END OF SECTION**





**Part 1 General**

**1.1 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Submit one 500 x 500 mm sample of film installed on 7 mm thick clear plate glass.
- .2 Submit Closeout Submittals in accordance with Section 01 78 00 - Closeout Submittals.
  - .1 Provide operation and maintenance data for window film for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.
  - .2 Follow manufacturers written instructions for care and maintenance of security and safety film.

**1.2 QUALITY ASSURANCE**

- .1 Health and Safety:
  - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.
  - .2 Comply with requirements of WHMIS regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets acceptable to Canada Labour Code.

**1.3 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with section 01 61 00 - Common Product Requirements.
- .2 Provide and maintain dry, off-ground weatherproof storage.
- .3 Store rolls of film flat on cross supports. Do not stand rolls of film on end.
- .4 Remove from storage, in quantities required for same day use.
- .5 Store materials in accordance with manufacturers written instructions.

**1.4 MAINTENANCE DATA**

- .1 Provide operation and maintenance data for window film for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.



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**Part 2 Products**

**2.1 MATERIALS**

- .1 Architectural Window Film - General: Glass and plastic finishes field-applied application to glass or plastic material as visual opaque or decorative film.
  - .1 Film: Polyester
  - .2 Product Family: Frost/Mat
  - .3 Adhesive Type: Pressure-sensitive
  - .4 Usage: Interior or exterior
  - .5 Shading Co-efficient (%): 0.40
  - .6 Visible Light Reflectance (%): 42
  - .7 Visible Light Transmittance (%): 19
  - .8 Acceptable Product: 3M Fasara Glass Finishes, Milky Crystal (SH2MLCRX)

**2.2 FABRICATION**

- .1 Shop installation of security film to glass panels:
  - .1 Ensure dust, grease, and chemical residue are removed from surface of glass before installation of film.
  - .2 Examine glass under natural daylight and identify cracks, blisters, bubbles, discolouration, edge defects or other anomalies that may cause film to delaminate, or cause vision transparency or distortion problems.
  - .3 View glass from 2.0 m minimum. Report findings to Consultant.
  - .4 Proceed with Work only after receipt of written approval from Consultant
    - .1 Install film to glass panels ensuring no blisters, bubbles, scratches, edge defects or distortions.
    - .2 Cut film edges straight and square to within 3 mm of edge of panel.
    - .3 Deliver glass panels complete with security film installed and labels intact and legible to site in accordance with section 01 61 00 - Common Product Requirements.

**Part 3 Execution**

**3.1 PREPARATION**

- .1 Clean glass before beginning installation using neutral cleaning solution.
- .2 Ensure no deleterious material adheres to glass by scraping surface of glass using industrial razors.
- .3 Ensure dust, grease, and chemical residue are removed from surface of glass before installation of film.



- .4 Examine glass under natural daylight and identify cracks, blisters, bubbles, discolouration, edge defects or other anomalies that may cause film to delaminate or cause vision transparency or distortion problems. Report findings to Consultant.
- .5 Proceed with Work only after receipt of written approval from Consultant.
- .6 Before beginning Work, place absorbent material on window sill to absorb moisture accumulation generated by film application.

### 3.2 INSTALLATION

- .1 Field Installation of Film to Glass Windows:
  - .1 Install film in the same manner as tested.
  - .2 Remove any window stops and window sealing device.
  - .3 Ensure no deleterious material adheres to glass by scraping surface of glass using industrial razors.
  - .4 Ensure dust, grease, and chemical residue are removed from surface of glass before installation of film.
  - .5 Examine glass under natural daylight and identify cracks, blisters, bubbles, discolouration, edge defects or other anomalies that may cause film to delaminate, or cause vision transparency or distortion problems. Report findings to Consultant before starting Work.
  - .6 Proceed with Work only after receipt of written approval from Consultant.
  - .7 Install film to glass windows ensuring no blisters, bubbles, scratches or distortions.
- .2 Cut film edges straight and square.
- .3 Ensure film is installed behind window stops.
- .4 Cut edges in accordance with manufacturers written instructions.
- .5 Apply and attach film to glass in accordance with manufacturer's written instructions.
- .6 Splicing:
  - .1 Splice film only when glass is greater in width than film.
  - .2 Splice film only after receipt of written approval from Consultant.
  - .3 Use butt factory edges only.
  - .4 Ensure maximum overlap of 3 mm.
- .7 Use only water and film slip solution on glass to facilitate positioning of film.
- .8 Ensure removal of excess water from between film and glass.
- .9 Remove left over material from work area and return work area to original condition.



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**3.3 INSTALLER'S INSPECTION**

- .1 Visual Inspection: in accordance with IWFA - Visual Quality Standard for Applied Window Film.
- .2 Remove and replace without glass replacement, film that continues to show blisters, bubbles, tears, scratches, edge defects or vision distortion in film when viewed under natural daylight from 2.0 m minimum after 30day period.

**3.4 FINAL CLEANING**

- .1 Wash interior and exterior of each window and film using cleaning solution recommended by film manufacturer.

**END OF SECTION**



**Part 1 General**

**1.1 REFERENCES**

- .1 ASTM International
  - .1 ASTM C1396/C1396M-09a, Standard Specification for Gypsum Wallboard.
  - .2 ASTM C475/C475M-02(2007), Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
  - .3 ASTM C645-09a, Standard Specification for Nonstructural Steel Framing Members.
  - .4 ASTM C754-09a, Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
  - .5 ASTM C840-08, Standard Specification for Application and Finishing of Gypsum Board.
  - .6 ASTM C1002-07, 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 C1047-10, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
- .2 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
  - .1 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.
- .3 Underwriters' Laboratories of Canada (ULC)
  - .1 CAN/ULC-S102-07, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

**1.2 ACTION AND INFORMATIONAL 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, framing, sealants and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Test and Evaluation Reports: submit test reports in accordance with Section 01 45 00 - Quality Control, from approved independent testing laboratory, certifying partition system complies with sound transmission rating, fire-resistance rating as specified.



### 1.3 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store materials inside, level, under cover. Protect from weather, damage from construction operations and other causes, in accordance with manufacturer's printed instructions.
  - .3 Handle materials to prevent damage to edges or surfaces. Protect metal accessories and trim from being bent or damaged.
  - .4 Store and protect partition materials from nicks, scratches, and blemishes.
  - .5 Replace defective or damaged materials with new.

## Part 2 Products

### 2.1 MATERIALS

- .1 Performance / Design Criteria:
  - .1 Partition assembly to be non-combustible construction and fire resistance rated.
  - .2 Minimum sound transmission class rating of installed panel partition to be STC 30, tested to ASTM E90.
- .2 Non-structural Metal Framing:
  - .1 Non-load bearing channel stud framing: to ASTM C645, 92 mm stud size, roll formed from 0.53 mm thickness hot dipped galvanized steel sheet, for screw attachment of gypsum board. Knock-out service holes at 460 mm centres.
  - .2 Floor and ceiling tracks: to ASTM C645, in widths to suit stud sizes, 32 mm flange height.
  - .3 Metal channel stiffener: 19 x 1.4 mm thick cold rolled steel, coated with rust inhibitive coating.
- .3 Gypsum Board:
  - .1 Standard board: to ASTM C1396/C1396M, Type X, 16 mm thick, 1200 mm wide x maximum practical length, ends square cut, edges tapered.
  - .2 Metal furring runners, hangers, tie wires, inserts, anchors: to ASTM C645.





- .3 Drywall furring channels: 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board.
- .4 Steel tapping screws: to ASTM C1002.
- .5 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, Zinc, 0.5 mm base thickness, perforated flanges, one piece length per location.
- .6 Joint compound: to ASTM C475, asbestos free.

## 2.2 ACCESSORIES

- .1 Acoustical insulation: type recommended by manufacturer to achieve STC rating specified.
- .2 Sealants: in accordance with Section 07 92 00.
- .3 Insulating strip: rubberized, moisture resistant, 3 mm thick closed cell neoprene strip, 12 mm wide, with self sticking permanent adhesive on one face, lengths as required.

## Part 3 Execution

### 3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's written instructions prior to partition installation.
  - .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 .

### 3.2 ERECTION OF FRAMING

- .1 Install steel framing members to receive screw-attached gypsum board in accordance with ASTM C754 except where specified otherwise.
- .2 Align partition tracks at floor and ceiling and secure at 600 mm on centre maximum.
- .3 Place studs vertically at 400 mm on centre generally and maximum of 50 mm from abutting walls, and at each side of openings and corners. Place studs at 300 mm on centre where honed concrete finish is to be applied to gypsum board. Position studs in tracks at floor and ceiling. Cross brace steel studs as required to provide rigid installation to manufacturer's instructions. Where honed concrete finish is to be applied, install stud framing horizontally at all gypsum board joints.
- .4 Erect metal studding to tolerance of 1:1000.



- .5 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.
- .6 Include 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.
- .7 Install heavy gauge single jamb studs at openings.
- .8 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.
- .9 Include 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.
- .10 Install steel studs or furring channel between studs for attaching electrical and other boxes.
- .11 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs. Use double track slip joint.
- .12 Install insulating strip under studs and tracks around perimeter of all partitions.

### 3.3

#### **ERECTION OF GYPSUM BOARD AND ACCESSORIES**

- .1 Do application and finishing of gypsum board in accordance with ASTM C840 except where specified otherwise.
- .2 Erect hangers and runner channels for suspended gypsum board ceilings in accordance with ASTM C840 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 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles.
- .5 Install 19 x 64 mm furring channels parallel to, and at exact locations of steel stud partition header track.
- .6 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.
- .7 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
- .8 Install wall furring for gypsum board wall finishes in accordance with ASTM C840, except where specified otherwise.
- .9 Install acoustical sealant in sound rated partitions to correspond with tested assembly.



- .10 Install gypsum boards in direction that will minimize number of end-butt joints. Stagger end joints 250 mm minimum.

### 3.4 APPLICATION

- .1 Apply gypsum board after bucks, anchors, blocking, sound attenuation, electrical and mechanical work are approved.
- .2 Apply gypsum board to metal furring or framing using screw fasteners. Maximum spacing of screws 300 mm on centre.

### 3.5 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 access doors to electrical and mechanical fixtures specified in respective sections.
  - .1 Rigidly secure frames to furring or framing systems.
- .5 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.
- .6 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.
- .7 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.
- .8 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

### 3.6 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .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 Section 01 74 11 - Cleaning.

### 3.7 PROTECTION

- .1 Protect installed products and components from damage during construction.



- .2 Repair damage to adjacent materials caused by partition installation.

**END OF SECTION**



**Part 1 General**

**1.1 RELATED REQUIREMENTS**

- .1 Section 09 21 99 - Partitions for Minor Works.

**1.2 REFERENCES**

- .1 ASTM International
  - .1 ASTM C28-00(2005), Standard Specification for Gypsum Plasters.
  - .2 ASTM C35-01(2009), Standard Specification for Inorganic Aggregates for Use in Gypsum Plaster.
  - .3 ASTM C206-03, Standard Specification for Finishing Hydrated Lime.
  - .4 ASTM C587-04, Standard Specification for Gypsum Veneer Plaster.
  - .5 ASTM C631-09, Standard Specification for Bonding Compounds for Interior Gypsum Plastering.
  - .6 ASTM C842-05, Standard Specification for Application of Interior Gypsum Plaster.
  - .7 ASTM C843-99(2006), Standard Specification for Application of Gypsum Veneer Plaster.
  - .8 ASTM C844-04, Standard Specification for Application of Gypsum Base to Receive Gypsum Veneer Plaster.
  - .9 ASTM C1396/C1396M-09a, Standard Specification for Gypsum Wallboard.
- .2 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).

**1.3 ACTION AND INFORMATIONAL 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 polished plaster concrete materials and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit two copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.



- .3 Samples:
  - .1 Submit for review and acceptance of each unit.
  - .2 Samples will be returned for inclusion into work.
  - .3 Submit duplicate 300 x 300 mm samples of polished plaster concrete honed plaster finishes.
- .4 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .5 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

#### **1.4 QUALITY ASSURANCE**

- .1 Certifications: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

#### **1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
  - .1 Ensure materials remain in original wrapping and containers until used.
  - .2 Deliver polished plaster concrete products to job site just prior to application.
  - .3 Deliver fresh plaster as needed to job site.
- .3 Storage and Handling Requirements:
  - .1 Store gypsum plastering materials in dry location away from heavy traffic areas and in accordance with manufacturer's recommendations.
  - .2 Store and protect bagged goods from direct contact with rain, snow, splashing water, wet or damp surfaces, condensation and absorption from the atmosphere.
  - .3 Stack plaster bags on planks or platforms away from damp floors and walls.
  - .4 Replace defective or damaged materials with new.

#### **1.6 SITE CONDITIONS**

- .1 Site Requirements:



- .1 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of materials.
- .2 Ambient Conditions:
  - .1 Ventilation:
    - .1 Provide free circulation of air to carry off excess moisture.
    - .2 Mechanically remove moisture laden air in areas lacking normal ventilation.
    - .3 Protect plaster from vent drafts, heaters or windows, to avoid uneven drying.
    - .4 Avoid excessive ventilation or air movement to allow plaster to properly set.
    - .5 Screen exterior openings in building.
    - .6 Maintain minimal ventilation.
  - .2 Temperature:
    - .1 Do not apply plaster to surfaces containing frost.
    - .2 Maintain temperature above 13 degrees C for 48 hours prior to erection of gypsum plaster base, prior to and during application of plaster, and for 48 hours following installation of plaster or until plaster is dry.
    - .3 Distribute heat well to areas.
    - .4 Prevent irregular heat on plaster near source by providing deflection or protective screens.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Reinforcing Basecoat:
  - .1 Special reinforcing system that greatly reduces the risk of cracks appearing from weak substrates. Acceptable product: Anti-Crack System by Surfaceform or acceptable equivalent. Reinforcing coat to be 1.25mm minimum.
- .2 Polished plaster Concrete:



- .1 A matt decorative polished plaster used for interior decoration. Lime based plaster with over 40% marble powder content. Low VOC content of 0g/L uncoloured and 20 g/L coloured. Thickness of 0.75 - 1.75mm. Finish: honed. Acceptable product: Polished Plaster Concrete by Surfaceform or approved equivalent. Colours: from full Manufacturer colour range and as indicated on drawings, allow for more than one colour.
- .3 Water:
  - .1 Clean, fresh, potable.
  - .2 Free from mineral and organic substances which affect plaster set.
  - .3 Minimum required for plaster of workable consistency.
  - .4 20 degrees C.
- .4 Bonding agent: as recommended by the Manufacturer.
- .5 Accessories: as recommended by the Manufacturer..

## 2.2 MIXES

- .1 Mix plasters to Manufacturer's written instructions..

## Part 3 Execution

### 3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for gypsum plastering 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 .

### 3.2 PREPARATION

- .1 Prepare surfaces to receive plaster to ASTM C1396/C1396M.
- .2 Ensure outlets are properly plugged, capped or covered before starting work.
- .3 Where plaster butts exposed masonry walls, insert 1 m wide strip of polyethylene before applying plaster to protect masonry. Cut polyethylene neatly at junction with plaster when plastering is completed.





- .4 Do not plaster adjacent to aluminum or finished work until such work is masked.

### 3.3 APPLICATION

- .1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
- .2 Do plastering work to ASTM C587.
- .3 Apply plaster finish level and plumb.
- .4 Use 3 - 5 coats plaster in specify area depending on desired finish.
- .5 Form small vee groove where plaster finish is flush with bases, window frames, glazed wall tiles or similar construction.
- .6 Reinforcing Basecoat Plaster:
  - .1 1.75 mm thick.
  - .2 Mix by hand, following manufacturer's directions.
  - .3 Apply initial reinforcing basecoat application (scratch coat) to gypsum and/or concrete substrate, by hand using hand held tools such as trowels, spatulas, brushes, and rollers with sufficient material and pressure to form good bond to base and to cover well.
  - .4 Leave surface ready to receive the polished plaster concrete finish.
- .7 Finishing Plaster/polished plaster concrete:
  - .1 Mix in accordance with applicable bag mixing instructions.
  - .2 Application:
    - .1 Apply 0.75 - 1.75 mm finish coat.
    - .2 Applied and finished using hand held tools, such as trowels, spatulas, brushes and rollers. 3-5 coats to achieve dense, hard, smooth surface with a honed finish to the colours specified.

### 3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .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 Section 01 74 11 - Cleaning.



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**3.5 PROTECTION**

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

**END OF SECTION**



**Part 1 General**

**1.1 REFERENCES**

- .1 American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)
  - .1 ANSI A108.1-99, Specification for the Installation of Ceramic Tile (Includes ANSI A108.1A-C, 108.4-.13, A118.1-.10, ANSI A136.1).
  - .2 CTI A118.4-92, Specification for Latex Cement Mortar (included in ANSI A108.1).
- .2 American Society for Testing and Materials International (ASTM)
  - .1 ASTM C144-04, Specification for Aggregate for Masonry Mortar.
  - .2 ASTM C979-05, Specification for Pigments for Integrally Coloured Concrete.
- .3 Canadian General Standards Board (CGSB)
- .4 Canadian Standards Association (CSA International)
  - .1 CAN/CSA-A3000-03(R2006), Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
- .5 Terrazzo Tile and Marble Association of Canada (TTMAC)
  - .1 Tile Specification Guide 09 30 00 2012/2014, Tile Installation Manual.
  - .2 Tile Maintenance Guide 2000.

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide product data in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Include manufacturer's information on:
    - .1 Ceramic tile, marked to show each type, size, and shape required.
    - .2 Divider strip.
    - .3 Levelling compound.
    - .4 Latex cement mortar and grout.
    - .5 Commercial cement grout.
    - .6 Slip resistant tile.
- .3 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Floor tile: submit duplicate, full tile sample panels of each colour, texture, size, and pattern of tile.



### 1.3 QUALITY ASSURANCE

- .1 Quality Assurance Submittals:
  - .1 Manufacturer's Instructions: manufacturer's installation instructions.

### 1.4 DELIVERY, STORAGE AND HANDLING

- .1 Packing, shipping, handling and unloading:
  - .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

### 1.5 AMBIENT CONDITIONS

- .1 Maintain air temperature and structural base temperature at ceramic tile installation area above 12 degrees C for 48 hours before, during, and 48 hours after, installation.
- .2 Do not install tiles at temperatures less than 12 degrees C or above 38 degrees C.
- .3 Do not apply epoxy mortar and grouts at temperatures below 15 degrees C or above 25 degrees C.

### 1.6 MAINTENANCE

- .1 Extra Materials:
  - .1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
  - .2 Provide minimum 2% of each type and colour of tile required for project for maintenance use. Store where directed.
  - .3 Maintenance material same production run as installed material.

## Part 2 Products

### 2.1 FLOOR TILE

- .1 Porcelain tile: Solus Ceramics, 165 x 1000 x 11 mm size, Heartwood, 3AZQ510, Caucés, matt glaze R10.
  - .1 Water Absorbption : 0.05% to ISO 10545-3.
  - .2 Flexural Strength : 50 N/mm<sup>2</sup> to ISO 10545-4
  - .3 Slip Resistance : Natural R10, DIN 51130-51097

### 2.2 MORTAR AND ADHESIVE MATERIALS

- .1 Cement: to CSA-A3000, type 10.
- .2 Sand: to ASTM C144, passing 16 mesh.



- .3 Latex additive: formulated for use in cement mortar and thin set bond coat.
- .4 Water: potable and free of minerals and chemicals which are detrimental to mortar and grout mixes.

### 2.3 BOND COAT

- .1 Polymer modified thin-set mortar: to ANSI A118.4.

### 2.4 GROUT

- .1 Colouring Pigments:
  - .1 Pure mineral pigments, limeproof and nonfading, complying with ASTM C979.
  - .2 Colouring pigments to be added to grout by manufacturer.
  - .3 Job coloured grout are not acceptable.
  - .4 Use in Commercial Cement Grout.
- .2 Commercial Cement Grout: to ANSI A118.7.

### 2.5 ACCESSORIES

- .1 Divider strips:
  - .1 Purpose made metal extrusion; anodized aluminum type.
- .2 Transition Strips: purpose made metal extrusion; anodized aluminum type.
- .3 Reducer Strips: purpose made metal extrusion; anodized aluminum type; maximum slope of 1:2.

### 2.6 PATCHING AND LEVELLING COMPOUND

- .1 Cement base, acrylic polymer compound, manufactured specifically for resurfacing and leveling concrete floors. Products containing gypsum are not acceptable.
- .2 Have not less than the following physical properties:
  - .1 Compressive strength - 25 MPa.
  - .2 Tensile strength - 7 MPa.
  - .3 Flexural strength - 7 MPa.
  - .4 Density - 1.9.
- .3 Capable of being applied in layers up to 50 mm thick, being brought to feather edge, and being trowelled to smooth finish.
- .4 Ready for use in 48 hours after application.



## **2.7 CLEANING COMPOUNDS**

- .1 Specifically designed for cleaning masonry and concrete and which will not prevent bond of subsequent tile setting materials including patching and leveling compounds and elastomeric waterproofing membrane and coat.
- .2 Materials containing acid or caustic material are not acceptable.

## **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 WORKMANSHIP**

- .1 Do tile work in accordance with TTMAC Tile Installation Manual 2012/2014, "Ceramic Tile", except where specified otherwise.
- .2 Apply tile to clean and sound surfaces.
- .3 Fit tile around corners, fitments, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Cut edges smooth and even. Do not split tiles.
- .4 Maximum surface tolerance 1:800.
- .5 Make joints between tile uniform and approximately 1.5 mm wide, plumb, straight, true, even and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.
- .6 Lay out tiles so perimeter tiles are minimum 1/2 size.
- .7 Sound tiles after setting and replace hollow-sounding units to obtain full bond.
- .8 Install divider strips at junction of tile flooring and dissimilar materials.
- .9 Allow minimum 24 hours after installation of tiles, before grouting.
- .10 Clean installed tile surfaces after installation and grouting cured.

### **3.3 FLOOR TILE**

- .1 Install in accordance with appropriate TTMAC detail.

### **3.4 CLEANING**

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.

**END OF SECTION**



**Part 1 General**

**1.1 REFERENCES**

- .1 ASTM International
  - .1 ASTM C635/C635M-07, Standard Specifications for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
  - .2 ASTM C636/C636M-08, Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
  - .3 ASTM E580/E590M-09a, Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).

**1.2 ACTION AND INFORMATIONAL 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 ceiling panels and ceiling suspension system and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
  - .2 Submit reflected ceiling plans for special grid patterns as indicated.
  - .3 Indicate change in level details, and acoustical unit support at ceiling fixture.

**1.3 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.



- .2 Store materials inside, level, under cover. Protect from weather, damage from construction operations and other causes, in accordance with manufacturer's printed instructions.
- .3 Handle materials to prevent damage to edges or surfaces. Protect metal accessories and trim from being bent or damaged.
- .4 Store and protect acoustic ceiling materials from nicks, scratches, and blemishes.
- .5 Replace defective or damaged materials with new.

## Part 2 Products

### 2.1 COMPONENTS

- .1 Acoustic units to: CAN/CGSB-92.1.
  - .1 Edge type square.
  - .2 Colour White.
  - .3 Size 610 x 610 x 16 mm thick.
  - .4 Shape flat.
  - .5 Acceptable products:
    - .1 Radar ClimaPlus by CGC.
    - .2 Vantage 10 by Certainteed.
    - .3 Fine Fissured by Armstrong.
- .2 Acoustical Suspension:
  - .1 Intermediate duty system to ASTM C635.
  - .2 Basic materials for suspension system: commercial quality cold rolled steel, zinc coated.
  - .3 Suspension system: non fire rated, two directional exposed tee bar grid.
  - .4 Exposed tee bar grid components: shop painted satin sheen, white colour. Components die cut. Main tee with double web, rectangular bulb and 25 mm rolled cap on exposed face. Cross tee with rectangular bulb; web extended to form positive interlock with main tee webs; lower flange extended and offset to provide flush intersection.
  - .5 Hanger wire: galvanized soft annealed steel wire, 3.6 mm diameter for access tile ceilings.
  - .6 Hanger inserts: purpose made.
  - .7 Accessories: splices, clips, wire ties, retainers and wall moulding reveal, to complement suspension system components, as recommended by system manufacturer.
- .3 Performance/Design Criteria:
  - .1 Maximum deflection: 1/360th of span to ASTM C635 deflection test.





**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's written instructions prior to acoustical ceiling installation.
  - .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 INSTALLATION**

- .1 Installation: in accordance with ASTM C636 except where specified otherwise.
- .2 Suspension System:
  - .1 Erect ceiling suspension system after work above ceiling has been inspected by Consultant.
  - .2 Secure hangers to overhead structure using attachment methods suitable to accommodate imposed dead and seismic loads..
  - .3 Install hangers spaced at maximum 1200 mm centres and within 150 mm from ends of main tees.
  - .4 Lay out system according to reflected ceiling plan.
  - .5 Install wall moulding to provide correct ceiling height.
  - .6 Completed suspension system to support super-imposed loads, such as diffusers, lighting fixtures and grilles..
  - .7 Support diffusers and light fixtures with additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
  - .8 Interlock cross member to main runner to provide rigid assembly.
  - .9 Ensure finished ceiling system is square with adjoining walls and level within 1:1000.
- .3 Acoustic Panels:
  - .1 Install acoustical panels and tiles in ceiling suspension system.
  - .2 Co-ordinate ceiling work with work of other sections such as interior lighting, fire protection communication, and intrusion and detection systems.

**3.3 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.



- .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 Section 01 74 11 - Cleaning.

**3.4 PROTECTION**

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

**END OF SECTION**



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**Part 1 General**

**1.1 REFERENCES**

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).

**1.2 ACTION AND INFORMATIONAL 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 wood strip plank flooring and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
  - .1 Submit for review and acceptance of each unit.
  - .2 Submit duplicate 300 mm long samples of finish flooring strips.
- .4 Certifications: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .5 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

**1.3 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for wood strip plank flooring for incorporation into manual.

**1.4 QUALITY ASSURANCE**

- .1 Certifications: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

**1.5 MOCK-UPS**

- .1 Construct mock-up in accordance with Section 01 45 00 - Quality Control.
- .2 Construct mock-up 10 m<sup>2</sup> minimum, of wood strip flooring including one inside corner and one outside corner.
- .3 Mock-up will be used:
  - .1 To judge quality of work, substrate preparation, operation of equipment and material application.



- .4 Locate mock-up where directed.
- .5 Allow 24 hours minimum for inspection of mock-up before proceeding with work.
  - .1 Proceed with work only after receipt of written acceptance by Consultant.
- .6 When accepted, mock-up will demonstrate minimum standard of quality required for this work.

## 1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
  - .1 Ensure concrete, masonry, sheet rock, paint and framing members are thoroughly dry before flooring is delivered.
  - .2 Do not truck or unload flooring in rain, snow or excessively humid conditions.
- .3 Storage and Handling Requirements:
  - .1 Store materials in fully enclosed ventilated, clean and dry storage space for 72 hours minimum before starting of work.
    - .1 Remove packaging and allow 72 hours for wood to acclimatize in accordance with manufacturer's written recommendations..
  - .2 Cover flooring with tarpaulin or vinyl if atmosphere is foggy or damp.
  - .3 Leave adequate room for good air circulation around stacks of flooring.
  - .4 Divide flooring into small lots and store in spaces where it will be installed.
  - .5 Store and protect wood strip flooring from nicks, scratches, and blemishes.
  - .6 Replace defective or damaged materials with new.

## 1.7 SITE CONDITIONS

- .1 Site Requirements:
  - .1 Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of materials.
- .2 Ambient Conditions:
  - .1 Ventilation:
    - .1 Provide continuously during and after installation. Run system 24 hours per day during installation; provide continuous ventilation for 7 days after completion of installation.
    - .2 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities.



- .2 Temperature:
  - .1 Maintain ambient temperature minimum of 18 degrees C and minimum of 21 degrees 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.
  - .2 Maintain minimum temperature 10 degrees C within area of installation until final acceptance of building.
  - .3 Ensure substrate is within moisture limits prescribed by flooring manufacturer.
  - .4 Maintain heat and humidity levels near occupancy levels for 5 days prior to delivery and until sanding and finishing are complete during winter months.

## Part 2 Products

### 2.1 MATERIALS

- .1 Nydree Acrylic Infused Flooring or approved equivalent.
  - .1 Acrylic Infused 2.54mm thick genuine hardwood.
  - .2 Plywood platform; 4" wide plank: 9 mm thick, 7 ply marine grade baltic birch.
  - .3 Laminating adhesive to contain no formaldehyde.
  - .4 Length: 12" to 47" random.
  - .5 Nominal thickness: 3/8"
  - .6 Tongue and groove sides and ends with micro-bevelled edges.
  - .7 Series: Maple Bella Luna
- .2 Adhesive: Lecol, Wakol PU 225 Parquet Adhesive or approved equivalent.
  - .1 2-Component reaction adhesive according to DIN EN 14293.
  - .2 Solvent-free.
  - .3 Water-free, no wood swelling.
- .3 Floor finish; Infused Colour: Natural, Topical Stain, Ivory.
- .4 Underlayment: as recommended by manufacturer.

## Part 3 Execution

### 3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for wood strip and plank flooring installation in accordance with manufacturer's written instructions.



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- .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.

### 3.2 PREPARATION

- .1 Check and record moisture content of both flooring and subflooring before beginning installation.
  - .1 Ensure moisture content is within acceptable limits in accordance with manufacturer's written recommendations.
- .2 Underlayment: Install underlayment per manufacturer's written instructions.
- .3 Concrete Subfloor:
  - .1 Grind down high spots with 20 grit (no. 3 ½) paper.
  - .2 Fill low spots with proper levelling compound.
  - .3 Clean up grease, oil and other contaminants, and sweep slab clean.

### 3.3 INSTALLATION

- .1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
- .2 Install finish flooring, with adhesive as indicated, parallel to long dimension of room.
- .3 Maintain expansion space at perimeter of floor surface as recommended by manufacturer.

### 3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .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 Section 01 74 11 - Cleaning.

### 3.5 PROTECTION

- .1 Protect new floors from time of final set of adhesive until final inspection.
- .2 Prohibit traffic on floor for 48 hours after installation.
- .3 Repair damage to adjacent materials caused by wood strip plank flooring installation.

**END OF SECTION**



**Part 1 General**

**1.1 ACTION AND INFORMATIONAL 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 and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
  - .1 Submit duplicate full size samples of tile.
  - .2 Submit 300 mm long base and edge strips.

**1.2 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for resilient flooring for incorporation into manual.

**1.3 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect resilient flooring from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

**1.4 SITE CONDITIONS**

- .1 Ensure high ventilation rate, with maximum outside air, during installation.
  - .1 Vent directly to outside.
  - .2 Do not let contaminated air recirculate through a district or whole building air distribution system.
  - .3 Maintain extra ventilation for 1 month minimum after building occupation.



## Part 2 Products

### 2.1 RESILIENT TILE FLOORING MATERIALS

- .1 Linoleum tile flooring: composed of natural ingredients which are mixed and calendered onto a jute backing:
  - .1 Pattern: marbleized.
  - .2 Thickness: 2.5 mm.
  - .3 Size: 50 cm x 50 cm.
  - .4 Colour: t3048 Graphite.
  - .5 Acceptable product: Forbo Marmoleum Modular Marble or approved equivalent.

### 2.2 ACCESSORIES

- .1 Primers and adhesives: of types recommended by resilient flooring manufacturer for specific material on applicable substrate, above, on or below grade.
  - .1 Adhesives: VOC limit 50 g/L maximum.
  - .2 Primer: in accordance with manufacturer's recommendations for surface conditions:
    - .1 VOC limit: 100 g/L maximum.
- .2 Sub-floor filler and leveller: white premix latex requiring water only to produce cementitious paste as recommended by flooring manufacturer for use with their product.
- .3 Metal edge strips: extruded aluminum, smooth, mill finish with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.

## Part 3 Execution

### 3.1 PREPARATION

- .1 Prepare for installation in accordance with manufacturer's written recommendations.
- .2 Remove sub-floor ridges and bumps and fill low spots, cracks, joints, holes and other defects with sub-floor filler.
- .3 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface.
  - .1 Prohibit traffic until filler is completely cured and dry.
- .4 Remove or treat existing adhesives to prevent residual bleeding through to new flooring or interfering with bonding of new adhesives.





### 3.2 APPLICATION: FLOORING

- .1 Apply adhesive uniformly using recommended trowel. Do not spread more adhesive that can be covered by flooring before initial set takes place.
- .2 Run sheets in direction of traffic. according to manufacturer's written instructions.
- .3 Resilient tile flooring:
  - .1 Lay flooring with joints parallel to building lines to produce symmetrical tile pattern.
  - .2 Border tiles: half tile width minimum.
  - .3 Install flooring to square grid pattern with joints aligned.
- .4 As installation progresses, and after installation roll flooring with 45 kg minimum roller to ensure full adhesion.
- .5 Cut flooring neatly around fixed objects.
- .6 Continue flooring over areas which will be under built-in furniture.
- .7 Terminate resilient flooring at centreline of door in openings where adjacent floor finish or colour is dissimilar.
- .8 Install metal edge strips at unprotected or exposed edges where flooring terminates.

### 3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .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 Section 01 74 11 - Cleaning.
  - .1 Remove excess adhesive from floor, base and wall surfaces without damage.

### 3.4 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Protect new floors in accordance with manufacturer's printed instructions.
- .3 Repair damage to adjacent materials caused by resilient flooring installation.

**END OF SECTION**





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**Part 1 General**

**1.1 REFERENCES**

- .1 ASTM International
  - .1 ASTM E662-09, Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
- .2 Carpet and Rug Institute (CRI)
  - .1 CRI Carpet Installation Standard 2009.

**1.2 ACTION AND INFORMATIONAL 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 each carpet and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
  - .1 Submit for review and acceptance of each unit.
  - .2 Submit duplicate 675 x 900 mm pieces of each type carpet specified, duplicate 225 x 225 mm pieces for each colour selected, divider strips.
- .4 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .5 Test and Evaluation Reports:
  - .1 Certified test reports showing compliance with specified performance characteristics and physical properties.
- .6 Manufacturer's Instructions: submit manufacturer's installation instructions.

**1.3 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for installed products for incorporation into manual.

**1.4 MAINTENANCE MATERIAL SUBMITTALS**

- .1 Extra Stock Materials: deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Section 01 78 00 - Closeout Submittals.
  - .1 Quantity: provide minimum 3 m of carpeting. Provide in one continuous full width roll.



- .2 Delivery, storage and protection: comply with Owner's requirements for delivery and storage of extra materials.

## 1.5 QUALITY ASSURANCE

- .1 Qualifications:
  - .1 Flooring Installer:
    - .1 Experienced in performing work of this Section who has specialized in installation of work similar to that required for this project.
    - .2 Certified by carpet manufacturer prior to tender submission.
    - .3 Must not sub-contract labour without written approval of Consultant.
    - .4 Responsible for proper product installation, including floor testing and preparation as specified and in accordance with carpet manufacturers written instructions.

## 1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
  - .3 Store and protect carpet in original containers or wrapping with manufacturer's seals and labels intact.
  - .4 Store and protect carpeting and accessories in location as directed by Consultant.
  - .5 Store carpet and adhesive at minimum temperature of 18 degrees C and relative humidity of maximum 65% for minimum of 48 hours before installation.
  - .6 Prevent damage to materials during handling and storage. Keep materials under cover and free from dampness.
  - .7 Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.
  - .8 Replace defective or damaged materials with new.

## 1.7 SITE CONDITIONS

- .1 Ambient Conditions:



- .1 Temperature: maintain ambient temperature of not less than 18 degrees C from 48 hours before installation to at least 48 hours after completion of work.
- .2 Relative humidity: maintain between 10 and 65% for 48 hours before, during and 48 hours after installation.
- .3 Ventilation:
  - .1 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities. Provide fans with HEPA filters.
  - .2 Provide continuous ventilation during and after carpet application. Run ventilation system 24 hours per day during installation; provide continuous ventilation for 7 days after completion of carpet installation.
- .4 Install carpet after space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete.

## Part 2 Products

### 2.1 MATERIALS

- .1 Manufacturers:
  - .1 Ensure manufacturer has minimum 5 years experience in manufacturing components similar to or exceeding requirements of project.
- .2 Description:
  - .1 Sealants: VOC limit 150 g/L maximum.
  - .2 Primer: in accordance with manufacturer's recommendations for surface conditions:
    - .1 VOC limit: 100 g/L maximum.
  - .3 Carpet and Accessories:
    - .1 Green Label Plus certified.

### 2.2 PERFORMANCE

- .1 Flame Resistance: Passes (DOC FF-1-70).
- .2 Radiant Panel: Class 1 (ASTM E-648).
- .3 Smoke Development: 450 or less per ASTM E662.
- .4 Wear: maximum 10% of pile face fiber by weight for 10 years.
- .5 Edge Ravel: none for 10 years.
- .6 Static Generation: less than 3.5 kV Step.
- .7 Stain resistance: Commercial Stain Protection.
- .8 Soil Resistance: Commercial Anti-Soil Protection.
- .9 Indoor Air Quality Certification: certified to CRI Green Label IAQ requirements.



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## 2.3 FABRICATION

- .1 Acceptable Product: Bolyu Wynford III, 6258.
- .2 Colour: Black Magic 2702.
- .3 Face construction:
  - .1 Woven.
- .4 Pile Surface Appearance:
  - .1 Level loop:textured.
- .5 Pile fibre: to Avalor SD Nylon.
- .6 Dyeing Method: solution dyed.
- .7 Stitch Count: 10.0 S.P.I.
- .8 Average Density: 6,933.
- .9 Secondary Backing: woven polypropylene.
- .10 Mill Width: 12 ft..
- .11 Gauge: 1/10 in.
- .12 Yarn Weight Tufted: 26 oz/yd<sup>2</sup>.
- .13 Finished Pile Height: minimum 3.5 mm average.

## 2.4 ACCESSORIES

- .1 Seaming Sealer Adhesive:
  - .1 Type in accordance with carpet manufacturer's written instructions for purpose intended.
    - .1 VOC limit: 50 g/L maximum.
- .2 Adhesive:
  - .1 Multi-purpose adhesive type: in accordance with carpet manufacturer's written instructions for direct glue down installation.
  - .2 On site application VOC limit: 50 g/L maximum.
- .3 Transition Mouldings:
  - .1 Carpet edge/reducer strip: mill finish aluminum.
- .4 Carpet protection: non-staining heavy duty kraft paper.
- .5 Subfloor patching compound: Portland cement base filler, mix with latex to form cementitious paste.



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**Part 3 Execution**

**3.1 INSTALLERS**

- .1 Use experienced and qualified technicians to carry out assembly and installation of sheet carpet.

**3.2 EXAMINATION**

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for sheet carpet installation in accordance with manufacturer's written instructions.
  - .1 Inform Consultant of unacceptable conditions immediately upon discovery.
  - .2 Proceed with installation only after unacceptable conditions have been remedied.

**3.3 PREPARATION**

- .1 Subfloor Preparation:
  - .1 Inspect concrete and determine special care required to make it suitable for carpet.
  - .2 Remove dust, old adhesive, dirt, sealer and wax from existing surfaces.
  - .3 Remove ridges and bumps.
  - .4 Fill and level cracks 3 mm wide or protrusions over 0.8 mm with appropriate and compatible latex patching compound. Apply sub-floor filler to low spots and cracks to achieve floor level to a tolerance of 1:500. Allow filler to cure.
  - .5 Comply with manufacturer's written recommendations for maximum patch thickness.
  - .6 Prime large patch areas with compatible primer.
  - .7 Ensure concrete substrates are cured, clean and dry.
  - .8 Ensure concrete substrates are free of paint, dirt, grease, oil, curing or parting agents, and other contaminates, including sealers, that interfere with the bonding of adhesive.
  - .9 Where powdery or porous concrete surface is encountered, apply primer compatible with adhesive to provide a suitable surface for glue-down installation.
- .2 Sheet Carpet Preparation:
  - .1 Pre-condition carpeting: following manufacturer's written instructions.

**3.4 INSTALLATION**

- .1 Install sheet carpet in accordance with manufacturer's written instructions, and CRI Carpet Installation Standard and co-ordinate with Section 01 73 00 - Execution.



- .2 Co-ordinate sheet carpet work with work of other trades, for proper time and sequence to avoid construction delays.
- .3 Install carpeting using minimum of pieces.
- .4 Install carpet after finishing work is completed but before demountable office partitions and telephone and electrical pedestal outlets are installed.
- .5 Inspect finished installation for smooth wearing surface free from conspicuous seams, burring and other faults.
- .6 Use material from same dye lot.
  - .1 Ensure colour, pattern and texture match within visual areas.
  - .2 Maintain constant pile direction.
- .7 Adhesive seams and cross-joints.
  - .1 Ensure seams are sealed.
- .8 Fit around architectural, mechanical, electrical and telephone outlets, and furniture fitments, around perimeter of rooms into recesses, and around projections.
- .9 Extend carpet into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- .10 Install carpet smooth and free from bubbles, puckers, and other defects.

### 3.5 CARPET TRANSITION STRIPS

- .1 Protect exposed carpet edges at transition to other flooring materials with suitable transition strips.

### 3.6 DIRECT GLUE DOWN CARPET

- .1 Apply adhesive and install carpeting in accordance with manufacturer's written instructions, by direct glue-down method.

### 3.7 SEAMS

- .1 Seal edges of cut-outs with binding method.
- .2 Ensure visibility of carpet seams and joints are acceptable industry standards.

### 3.8 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .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 Section 01 74 11 - Cleaning.
    - .1 Vacuum carpets clean immediately after completion of installation.





**3.9**

**PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Prohibit traffic on carpet for period of 24 hours minimum after installation and until adhesive is completely cured.
- .3 Install carpet protection to satisfaction of Consultant.
- .4 Repair damage to adjacent materials caused by sheet carpeting installation.

**END OF SECTION**





**Part 1 General**

**1.1 REFERENCES**

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .2 The Master Painters Institute (MPI)
  - .1 Architectural Painting Specification Manual - current edition.
  - .2 Maintenance Repainting Manual - current edition.

**1.2 ACTION AND INFORMATIONAL 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 paint and coating products and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Samples:
  - .1 Submit for review and acceptance of each unit.
  - .2 Samples will be returned for inclusion into work.
  - .3 Submit duplicate 200 mm x 300 mm sample panels of each stain and paint with specified paint or coating in colours, gloss/sheen and textures required to MPI Painting Specification Manual standards.
- .4 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

**1.3 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Provide and maintain dry, temperature controlled, secure storage.
  - .2 Store painting materials and supplies away from heat generating devices.



- .3 Store materials and equipment in well ventilated area within temperature as recommended by manufacturer.
- .4 Fire Safety Requirements:
  - .1 Supply 1 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.

#### 1.4 SITE CONDITIONS

- .1 Heating, Ventilation and Lighting:
  - .1 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities.
  - .2 Co-ordinate use of existing ventilation system with Consultant and ensure its operation during and after application of paint as required.
  - .3 Provide minimum lighting level of 323 Lux on surfaces to be painted.
- .2 Temperature, Humidity and Substrate Moisture Content Levels:
  - .1 Apply paint finishes when ambient air and substrate temperatures at location of installation can be satisfactorily maintained during application and drying process, within MPI and paint manufacturer's prescribed limits.
  - .2 Test concrete, masonry and plaster surfaces for alkalinity as required.
  - .3 Apply paint to adequately prepared surfaces, when moisture content is below paint manufacturer's prescribed limits.
- .3 Additional application requirements:
  - .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 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 Supply paint materials for paint systems from single manufacturer.
- .2 Conform to latest MPI requirements for painting work including preparation and priming.



- .3 Materials in accordance with MPI - Maintenance Repainting Manual "Approved Product" listing.
  - .1 Use MPI listed materials having E3 rating.
- .4 Colours:
  - .1 Colours as indicated on drawings.
- .5 Mixing and tinting:
  - .1 Perform colour tinting operations prior to delivery of paint to site, in accordance with manufacturer's written recommendations. Obtain written approval from Consultant for tinting of painting materials.
  - .2 Use and add thinner in accordance with paint manufacturer's recommendations.
    - .1 Do not use kerosene or similar organic solvents to thin water-based paints.
  - .3 Thin paint for spraying in accordance with paint manufacturer's written recommendations.
  - .4 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.
- .6 Gloss/sheen ratings:
  - .1 Paint gloss is defined as sheen rating of applied paint, in accordance with following values:

Gloss Level-Category	Gloss @ 60 degrees	Sheen @ 85 degrees
Gloss Level 1 - Matte Finish	Max. 5	Max. 10
Gloss Level 2 - Velvet	Max.10	10 to 35
Gloss Level 3 - Eggshell	10 to 25	10 to 35
Gloss Level 4 - Satin	20 to 35	min. 35
Gloss Level 5 - Semi-Gloss	35 to 70	
Gloss Level 6 - Gloss	70 to 85	
Gloss Level 7 - High Gloss	More than 85	

- .2 Gloss level ratings of painted surfaces to be confirmed after tender award.
- .7 Interior painting:
  - .1 Metal Fabrications: miscellaneous metal for millwork.
    - .1 Powder coated finish.
  - .2 Galvanized Metal: high contact/high traffic areas (doors, frames).
    - .1 INT 5.3N - Institutional Low Odor/VOC gloss level 5 (over cementitious primer).
  - .3 Dressed Lumber: doors, door frames, base, etc.:
    - .1 INT 6.3F - Lacquer gloss level to be confirmed.



- .2 INT 6.3H - Lacquer, clear, gloss level to be confirmed.
- .3 INT 6.3V - Institutional Low Odor/VOC, gloss level to be confirmed.
- .4 MDF Paneling and Casework.
  - .1 INT 6.4T - Institutional Low Odor/VOC gloss level to be confirmed.
  - .2 INT 6.4F - Lacquer, gloss level to be confirmed.
- .5 Plaster and gypsum board: gypsum wallboard, drywall, "sheet rock" type material, etc.
  - .1 INT 9.2M - Institutional low odour/low VOC gloss level 3 generally, level 1 for ceilings.

### Part 3 Execution

#### 3.1 GENERAL

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheets.
- .2 Perform preparation and operations for interior painting in accordance with MPI - Architectural Painting Specifications Manual except where specified otherwise.

#### 3.2 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.

#### 3.3 PREPARATION

- .1 Protection of in-place conditions:
  - .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.
- .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.
- .4 Clean and prepare surfaces in accordance with MPI - Maintenance Repainting Manual specific requirements and coating manufacturer's recommendations.
- .5 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.
- .6 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.
- .7 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.
- .8 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.
- .9 Touch up of shop primers with primer as specified.

### 3.4 APPLICATION

- .1 Paint only after prepared surfaces have been accepted by Consultant
- .2 Use method of application approved by Consultant.
  - .1 Conform to manufacturer's application recommendations.
- .3 Apply coats of paint in continuous film of uniform thickness.
  - .1 Repaint thin spots or bare areas before next coat of paint is applied.
- .4 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .5 Sand and dust between coats to remove visible defects.



- .6 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.
- .7 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.
- .8 Mechanical/Electrical Equipment:
  - .1 Paint conduits, piping, hangers, ductwork and other mechanical and electrical equipment exposed in finished areas, to match adjacent surfaces, except as indicated.
  - .2 Do not paint over nameplates.
  - .3 Keep sprinkler heads free of paint.
  - .4 Paint fire protection piping red.
  - .5 Paint disconnect switches for fire alarm system and exit light systems in red enamel.
  - .6 Paint natural gas piping yellow.
  - .7 Paint both sides and edges of backboards for telephone and electrical equipment before installation.
    - .1 Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

### 3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .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 Section 01 74 11 - Cleaning.
- .3 Place stains and paint defined as hazardous or toxic waste, including tubes and containers, in containers or areas designated for hazardous waste.

**END OF SECTION**