

# Centennial College

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SPECIFICATIONS FOR  
**Story Arts Centre Relocation**

**Centennial College  
Progress Campus**

941 Progress Ave,  
Scarborough, Ontario M1G 3T8

PROJECT NUMBER:  
25-111

ISSUED FOR CONSTRUCTION: March 23, 2026

Gow Hastings Architects Inc.  
275 Spadina Rd  
Toronto, ON  
M5R 2V3

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## **Section 01 11 00**

### **Summary of Work**

#### **Part 1 General**

##### **1.1 Work covered by contract documents**

1. Work of this Contract comprises general construction of Centennial College Story Arts Relocation, located at 941 Progress Avenue, Scarborough, ON M1G 3T8; and further identified as GHA project number 25-111. The scope of work consists of complete renovation and fit-out work at Progress Campus (L Building / L Block) to enable the relocation of Story Arts Centre (SAC) programs including specialized studios and associated support spaces, computer labs and classrooms.
2. Scope of work includes all labour, materials, and equipment necessary to complete the work shown in the drawings and specifications including, but not limited to:
  - 2.1. Demolition
  - 2.2. Interior Partitions and Finishes
  - 2.3. Doors, screens and hardware
  - 2.4. HVAC and Plumbing
  - 2.5. Electrical: Power Distribution & Lighting
  - 2.6. Communications cabling
  - 2.7. Security (Refer to cash Allowance)
  - 2.8. Broadcasting AV fit out (refer to cash allowance)

##### **1.2 Contract method**

1. Construct Work under stipulated price CCDC2-2020 contract.

##### **1.3 Health and Safety Procedures**

1. Centennial College is committed to promoting a healthy working, learning and teaching environment. Adhere to Life Safety and Security guidelines - including and not limited to smoke-free policy and use of cannabis policy. Policy can be found at the following link: <https://www.centennialcollege.ca/about-centennial/safety-and-security/security-services>
2. Contractor to adhere to Centennial College Contractor Safety Manual, Appendix E. Return a signed copy as part of the Bid Submission package.

##### **1.4 Work by others**

1. Co-operate with other Contractors in carrying out their respective works and carry out instructions from Consultant.
2. Co-ordinate work with that of other Contractors. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to Consultant, in writing, any defects which may interfere with proper execution of Work.
3. Work of Project executed during Work of this Contract, and which is specifically excluded from this Contract:
  - 3.1. Furniture by Owner.

3.2. Owner IT/AV equipment fit out beyond that identified in the broadcasting AV scope.

## **1.5 Scheduling of Work and Work Restrictions**

1. Notify and obtain agreement from Owner before connecting or making modification to existing electrical, or mechanical services. Disruptions shall be kept to a minimum. Whenever the Contractor contemplates entering any occupied areas and any existing floors to carry out Work or to obstruct or take out of use any area, they shall make such request to the Owner in writing 72 hours before he intends to do the Work. Coordinate all work with the General Contractor.
2. All shut downs are to be performed at night - even on weekends (11pm to 6am. Power needs to be restored for daytime hours). Submit a detailed MOP for any shutdown for Project Team review and approval at least 3 weeks prior to any planned shutdown.
3. The working hours for Centennial College is from 7:30am to 10:30pm, Monday to Sunday. No noisy or disruptive work is to occur during working hours and the General Contractor is responsible for coordinating and scheduling the work for after Centennial College hours. Work to be completed after regular hours is to be coordinated with Centennial College with a 72 hr notice.
4. Owner has the right to revise the schedule to accommodate classroom schedule
5. Deliver materials outside of peak traffic hours (deliveries to be schedules between 6:00pm to 7:00 am and 1:00pm to 3:00 unless otherwise approved by College.)

## **1.6 Owner occupancy**

1. The existing buildings will remain in full use and occupancy throughout the construction of the Work except for such parts of the building that have been vacated for the work. Refer to the Schedule provided by the General Contractor.
2. Restrict access, material deliveries, execution of work, operations and procedures to designated locations and times, and do not deviate from designated procedures without prior acceptance by Owner.
3. Areas of the existing building adjacent to the Place of Work or areas affected by the Work, including circulation and access routes, shall be maintained in a clean state equivalent to the level of cleanliness maintained in the existing building.

## **1.7 Parking Procedures**

1. Contractors will be responsible to pay for parking of all vehicles onsite.
2. Refer to <https://www.centennialcollege.ca/student-life/campus-services/parking-services/parking-rates-and-important-information> for additional details on purchase of daily, or monthly passes.

## **1.8 Use of Site and Facilities**

1. Access of construction personnel to the buildings will be permitted only at locations approved by the Owner.
2. Ensure that construction personnel perform Work in existing building only as required under the Contract, and that they do not use it as access to Work areas, except for Work in existing building, or for other approved purposes. Access for construction personnel to their Work areas shall be approved by the Owner before the Work commences.

3. Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Owner to facilitate work as stated.
4. Contractor to provide their own sanitary facilities. College washrooms will not be available for use by the construction team.
5. Smoking is not permitted on site.

### **1.9 Documents required on site**

1. Maintain at job site, one copy each document as follows:
  - 1.1. Contract Drawings.
  - 1.2. Specifications.
  - 1.3. Addenda.
  - 1.4. Reviewed Shop Drawings.
  - 1.5. List of Outstanding Shop Drawings.
  - 1.6. Change Orders.
  - 1.7. Other Modifications to Contract.
  - 1.8. Copy of Approved Work Schedule.
  - 1.9. Health and Safety Plan and Other Safety Related Documents.
  - 1.10. 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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## **Section 01 21 00**

### **Allowances**

#### **Part 1 General**

##### **1.1 Reference standards**

1. Canadian Construction Documents Committee (CCDC)
  - 1.1. CCDC 2-(Most current version), Stipulated Price Contract.
2. Project Supplementary Conditions

##### **1.2 Cash allowances**

1. Refer to CCDC 2, GC 4.1.
2. Include in Contract Price specified cash allowances.
3. Cash allowances, unless otherwise specified, cover net cost to Contractor & Subcontractor of services, products, construction machinery and equipment, freight, handling, unloading, storage installation and other authorized expenses incurred in performing Work.
4. Contract Price, and not cash allowance, includes Contractor's overhead and profit in connection with such cash allowance.
5. Contract Price will be adjusted by written order to provide for excess or deficit to each cash allowance.
6. Where costs under a cash allowance exceed amount of allowance, Contractor will be compensated for excess incurred and substantiated plus allowance for overhead and profit as set out in Contract Documents.
7. Include progress payments on accounts of work authorized under cash allowances in Consultant's monthly certificate for payment.
8. Prepare schedule jointly with Consultant and Contractor to show when items called for under cash allowances must be authorized by Consultant for ordering purposes so that progress of Work will not be delayed.
9. Amount of each allowance, for Work specified in respective specification Sections is as follows:
  - 9.1. Cash Allowance CA1: Pipe Grids (Refer to RFQ Appendix D for value)
    - 9.1.1. Supply and install new pipe grids for Radio Studio B and Podcast Studio. Disassembly, modification and reinstallation of existing pipe grids for TV Studio A, TV Studio B and Journalism Workroom.
    - 9.1.2. RIGGING PROJEX CANADA  
Bracebridge, Ontario  
Cell: 519-998-0263  
Email: Riggingprojex@runbox.com
  - 9.2. Cash Allowance CA2: Broadcasting AV supply and installation (Refer to RFQ Appendix D for value)
    - 9.2.1. As outlined in attached Broadcasting AV Drawings by Engineering Harmonics drawings.
    - 9.2.2. GC will be responsible to tender this scope out to at least 3 AV contractors approved by the AV Consultant.

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- 9.2.2.1. Applied Electronics  
Mike Dalton  
[mdalton@appliedelectronics.com](mailto:mdalton@appliedelectronics.com)  
416-578-9077
  - 9.2.2.2. Dynamix Professional Video Systems  
Maurizio Fraccao  
[maurizio@dynamix.ca](mailto:maurizio@dynamix.ca)  
905-882-4000 |
  - 9.2.2.3. Matrix Video  
Pawan Nijhawan  
[pnijhawan@mvcc.ca](mailto:pnijhawan@mvcc.ca) [pnijhawan@mvcc.ca](mailto:pnijhawan@mvcc.ca)  
(647) 352-9557
- 9.3. Cash Allowance CA3: Security \$ (Refer to RFQ Appendix D for value)
    - 9.3.1. Access Control and Security Cameras
    - 9.3.2. JCI (Centennial's base building security vendor)
  - 9.4. Cash Allowance CA4: Acoustic sealing of existing penetrations in CMU partitions (Refer to RFQ Appendix D for value)

## **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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## **Section 01 31 00**

### **Project Management and Coordination**

#### **Part 1 General**

##### **1.1 Section includes**

1. Coordination Work with other contractors and work by Owner under administration of Consultant.
2. Scheduled progress meetings.

##### **1.2 Coordination**

1. Perform coordination of progress schedules, submittals, use of site, temporary utilities, construction facilities and construction Work, with progress of Work of others and Work by Owner, under instructions of Consultant.

##### **1.3 Construction organization and start-up**

1. Within fifteen (15) days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
2. Consultant, Owner, Contractor, major Subcontractors, field inspectors and supervisors are to be in attendance.
3. Establish time and location of meeting and notify parties concerned minimum five (5) days before meeting.
4. Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
5. Agenda to include following:
  - 5.1. Appointment of official representative of participants in Work.
  - 5.2. Schedule of Work, progress scheduling as specified in Section 01 32 00.
  - 5.3. Schedule of submission of shop drawings, samples, colour chips as specified in Section 01 33 00.
  - 5.4. Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences as specified in Section 01 51 00.
  - 5.5. Delivery schedule of specified equipment as specified in Section 01 32 00.
  - 5.6. Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements.
  - 5.7. Owner-furnished Products.
  - 5.8. Record drawings as specified in Section 01 78 00, 01 79 00 and consultant specifications.
  - 5.9. Maintenance material and data as specified in Section 01 78 00, 01 79 00 and consultant specifications.
  - 5.10. Take-over procedures, acceptance, and warranties as specified Section 01 78 00, 01 79 00 and consultant specifications.
  - 5.11. Monthly progress claims, administrative procedures, photographs, and holdbacks.
  - 5.12. Appointment of inspection and testing agencies or firms as specified in Section 01 45 00.
  - 5.13. Insurances and transcript of policies.

6. Comply with Consultant's allocation of mobilization areas of site; for field offices and sheds, for staging, access, traffic, and parking facilities.
7. During construction, coordinate use of site and facilities through Consultant's procedures for intra-project communications: Submittals, reports and records, schedules, coordination of drawings, recommendations, and resolution of ambiguities and conflicts.
8. Comply with instructions of Consultant for use of temporary utilities and construction facilities.
9. Coordinate field engineering and layout work with Consultant.

#### **1.4 Contract Administration - Web-Based Project Software**

1. The Contract Administration process shall be hosted through rform; which is an online construction contract administration software platform, administered by Gow Hastings Architects. This software is to be used to host and manage project documentation until final completion. All of the below project documents are to be issued via rform ([www.rform.ca](http://www.rform.ca)):
  - 1.1. Project Forms:
    - 1.1.1. Proposed Change Order (PCO)
    - 1.1.2. Change Order (CO)
    - 1.1.3. Change Directive (CD)
    - 1.1.4. Supplemental Instruction (SI)
    - 1.1.5. Request for Information
    - 1.1.6. Schedule of Values
    - 1.1.7. Certificates of Payment
  - 1.2. Project Files
  - 1.3. Submittals
2. The project will be setup on rform by Gow Hastings Architects and the contractor will be invited to collaborate online.

#### **1.5 On-site documents**

1. Maintain at job site, one copy each of the following:
  - 1.1. Contract drawings.
  - 1.2. Specifications.
  - 1.3. Addenda.
  - 1.4. Reviewed shop drawings.
  - 1.5. Change orders.
  - 1.6. Other modifications to Contract.
  - 1.7. Online access to rform as referenced in section 1.4 above.
  - 1.8. Field test reports.
  - 1.9. Copy of approved Work schedule.
  - 1.10. Manufacturers' installation and application instructions.
  - 1.11. Labour conditions and wage schedules.
  - 1.12. Applicable current editions of municipal regulations and by-laws. Current building codes, complete with addenda bulletins applicable to the Place of the Work.

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## **1.6 Schedules**

1. Submit preliminary construction progress schedule as specified in Section 01 32 16.9 to Consultant coordinated with Consultant's project schedule.
2. After review, revise and resubmit schedule to comply with revised project schedule.
3. During progress of Work revise and resubmit as directed by Consultant.

## **1.7 Construction progress meetings**

1. During course of Work schedule progress meetings biweekly unless otherwise requested by the Consultant or Owner.
2. Contractor, major subcontractors involved in Work , Consultant and Owner are to be in attendance.
3. Notify parties minimum of five days prior to meetings.
4. Record minutes of meetings, and circulate to attending parties and affected parties not in attendance within two days after meeting.
5. Agenda to include following:
  - 5.1. Review, approval of minutes of previous meeting.
  - 5.2. Review of Work progress since previous meeting.
  - 5.3. Field observations, problems, conflicts.
  - 5.4. Problems that impede construction schedule.
  - 5.5. Review of off-site fabrication delivery schedules.
  - 5.6. Corrective measures and procedures to regain projected schedule.
  - 5.7. Revision to construction schedule.
  - 5.8. Progress schedule, during succeeding work period.
  - 5.9. Review submittal schedules: expedite as required.
  - 5.10. Maintenance of quality standards.
  - 5.11. Review proposed changes for effect on construction schedule and on completion date.
  - 5.12. Review site safety and security issues.
  - 5.13. Other business.

## **1.8 Submittals**

1. Prepare and issue submittals to Consultant for review.
2. Submit preliminary Shop Drawings, product data and samples as specified in Section 01 33 00 for review for compliance with Contract Documents; for field dimensions and clearances, for relation to available space, and for relation to Work of other contracts. After review, revise and resubmit for transmittal to Consultant.
3. Submit requests for payment for review, and for transmittal to Consultant.
4. Submit requests for interpretation of Contract Documents, and obtain instructions through Consultant.
5. Process substitutions through Consultant.
6. Process change orders through Consultant.
7. Deliver closeout submittals for review and preliminary inspections, for transmittal to Consultant.

### **1.9 Coordination drawings**

1. Provide information required by Consultant for preparation of coordination Drawings.
2. Review and approve revised Drawings for submittal to Consultant.

### **1.10 Closeout procedures**

1. Notify Consultant when Work is considered ready for Substantial Performance, Permit Reivew and Ready-For-Takeover.
2. Accompany Consultant on preliminary inspection to determine items listed for completion or correction.
3. Comply with Consultant's instructions for correction of items of Work identified as deficient, incomplete or missing.
4. Notify Consultant of instructions for completion of items of Work determined in Consultant's final inspection.

**END OF SECTION**

## **Section 01 32 00**

# **Construction Progress Documentation**

### **Part 1 General**

#### **1.1 Section includes**

1. Schedules, form, content, submission.
2. Critical path scheduling.
3. Recording As-Built documents.
4. Progress photographs and videos.
5. Submittals schedule.

#### **1.2 Related requirements**

1. Section 01 33 00 - Submittal Procedures.
2. This section describes requirements applicable to all Sections within Divisions 02 to 49.

#### **1.3 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. Generally Bar Chart should be derived from commercially available computerized project management system.
3. Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
4. Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.
5. Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
6. Master Plan: summary-level schedule that identifies major activities and key milestones.
7. Milestone: significant event in project, usually completion of major deliverable.
8. Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.

#### **1.4 Requirements**

1. Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
2. Plan to complete Work in accordance with owner provided milestones and time frame.
3. Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.

4. 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.
5. Activities impacting programs must be scheduled after regular hours or during weekends. This work must be coordinated in advance with the Owner.

## **1.5 Schedules**

1. Submit schedules as follows:
  - 1.1. Submittal Schedule for Shop Drawings and Product Data.
  - 1.2. Submittal Schedule for Samples.
    - 1.2.1. Coordinate with the Architect a list of critical and required samples.
  - 1.3. Submittal Schedule for timeliness of Owner-furnished Products.
  - 1.4. Product Delivery Schedule.
  - 1.5. Cash Allowance Schedule for acquiring Products only or Products and Installation, or Installation only.
  - 1.6. Shutdown or closure activity.
2. Schedule Format.
  - 2.1. Prepare schedule in form of a horizontal GANTT bar chart.
  - 2.2. Provide a separate bar for each major item of work.
  - 2.3. Split horizontally for projected and actual performance.
  - 2.4. Provide horizontal time scale identifying first Working Day of each week.
  - 2.5. Format for listings: Chronological order of start of each item of work.
  - 2.6. Identification of listings: By specification subjects, specification Section numbers and systems description.
3. Schedule Submission.
  - 3.1. Submit initial format of schedules within ten (10) days after award of Contract.
  - 3.2. Submit schedules in electronic format, forward through e-mail as \*.pdf files.
  - 3.3. Submit one (1) opaque reproduction, plus two (2) copies to be retained by Consultant.
  - 3.4. Consultant will review schedule and return review copy within five (5) days after receipt.
  - 3.5. Resubmit finalized schedule within seven (7) days after return of review copy.
  - 3.6. Submit revised progress schedule with each application for payment.
  - 3.7. Distribute copies of revised schedule to:
    - 3.7.1. Job site office.
    - 3.7.2. Subcontractors.
    - 3.7.3. Other concerned parties.
  - 3.8. Instruct recipients to report to Contractor within ten (10) days, any problems anticipated by timetable shown in schedule.

## **1.6 Construction progress scheduling**

1. Revise and resubmit project schedule as required or as requested by Consultant and/or Owner.
2. Submit revised schedules with each Application for Payment, identifying changes since previous version.

3. Submit a Gantt chart with separate line for each major portion of Work or operation and/or section of Work, identifying first workday of each week.
4. Submit computer generated network analysis diagram using the critical path method.
5. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
6. Indicate estimated percentage of completion for each item of Work at each submission.
7. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner and required by Allowances.
8. Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:

Award  
Shop Drawings, Samples  
Permits  
Mobilization  
Excavation  
Backfill  
Building footings  
Slab on grade  
Structural Steel  
Siding and Roofing  
Interior Architecture (Walls, Floors and Ceiling)  
Plumbing  
Lighting  
Electrical  
Piping  
Controls  
Heating, Ventilating, and Air Conditioning  
Millwork  
Fire Systems  
Testing and Commissioning  
Supplied equipment long delivery items  
Engineer supplied equipment required dates

9. Indicate projected percentage of completion of each item as of first day of month.
10. Indicate progress of each activity to date of submission schedule.
11. Indicate changes occurring since previous submission of schedule:
  - 11.1. Major changes in scope.
  - 11.2. Activities modified since previous submission.
  - 11.3. Revised projections of progress and completion.
  - 11.4. Other identifiable changes.
12. Provide a narrative report to define:
  - 12.1. Problem areas, anticipated delays, and impact on schedule.
  - 12.2. Corrective action recommended and its effect.
  - 12.3. Effect of changes on schedules of other prime contractors.

## **1.7 Critical path scheduling**

1. Include complete sequence of construction activities.

2. Include dates for commencement and completion of each major element of construction .
3. Show projected percentage of completion of each item as of first day of month.
4. Indicate progress of each activity to date of submission schedule.
5. Show changes occurring since previous submission of schedule:
  - 5.1. Major changes in scope.
  - 5.2. Activities modified since previous submission.
  - 5.3. Revised projections of progress and completion.
  - 5.4. Other identifiable changes.
6. Provide a narrative report to define:
  - 6.1. Problem areas, anticipated delays, and impact on schedule.
  - 6.2. Corrective action recommended and its effect.
  - 6.3. Effect of changes on schedules of other prime contractors.

## **1.8 Recording actual conditions on as built documents**

1. Record updated information on drawings and Project Manual provided by Consultant.
2. Record changed information by annotating with separate colours for each major system.
3. Record information concurrently with construction progress. Do not conceal Work of the Project until required information is accurately recorded.
4. Contract drawings and Shop Drawings: record actual construction of each item, including :
  - 4.1. Measured depths of elements of foundation in relation to finish first floor datum.
  - 4.2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  - 4.3. Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
  - 4.4. Field changes of dimension and detail.
  - 4.5. Changes made by change orders.
  - 4.6. Details not indicated on original Contract Drawings.
  - 4.7. References to related shop drawings and modifications.
5. Specifications: legibly mark each item to record actual construction, including:
  - 5.1. Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
  - 5.2. Changes made by Addenda and change orders.
6. Other Documents: Maintain manufacturer's certifications, inspection certifications and field test records required by individual specifications sections.
7. Electronic as built document format
  - 7.1. Make as-built documents available electronically, accessible by all project personnel who require access, including Consultant.
  - 7.2. Enable navigation of electronic documents accessed from mobile devices such as computer tablets.
  - 7.3. Label as-built documents in accordance with section number listings in List of Contents of the Project Manual. Label each document AS-BUILT DOCUMENTS on every page.
8. Physical as built document format

- 
- 8.1. Store as-built documents in field office apart from documents used for construction, in an organized and easily accessible manner.
  - 8.2. Label as-built documents and file in accordance with section number listings in List of Contents of the Project Manual. Label each document AS-BUILT DOCUMENTS in neat, large, printed letters.
  - 8.3. Maintain as-built documents in clean, dry and legible condition. Do not use as-built documents for construction purposes.
  - 8.4. Keep as-built documents and samples available for inspection by Consultant.
9. Samples: Maintain physical samples of products installed in the project at field office in clean, dry condition. Keep samples available for inspection by Consultant. Do not use samples for construction purposes.

### **1.9 Submittals schedule**

1. Include schedule for submitting Shop Drawings, product data, samples.
2. Indicate dates for submitting, review time, resubmission time, and last date for meeting fabrication schedule.
3. Include dates when delivery will be required for Owner-furnished products.
4. Include dates when reviewed submittals will be required from Consultant.

**END OF SECTION**

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## **Section 01 33 00**

### **Submittal Procedures**

#### **Part 1 General**

##### **1.1 Reference standards**

1. CCDC 2-2020, Stipulated Price Contract..

##### **1.2 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. Review submittals prior to submission to Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
5. Notify Consultant, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
6. Verify field measurements and affected adjacent Work are co-ordinated.
7. Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review of submittals.
8. Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant review.
9. Keep one reviewed copy of each submission on site.

##### **1.3 Shop drawings and product data**

1. Refer to CCDC 2 GC 3.11.
2. The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
3. Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
4. Allow 10 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.

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7. Accompany submissions with electronic and/or hard copy transmittal letter, containing:
    - 7.1. Date.
    - 7.2. Project title and number.
    - 7.3. Contractor's name and address.
    - 7.4. Identification and quantity of each shop drawing, product data and sample.
    - 7.5. Other pertinent data.
  8. Submissions include:
    - 8.1. Date and revision dates.
    - 8.2. Project title and number.
    - 8.3. Name and address of:
      - 8.3.1. Subcontractor.
      - 8.3.2. Supplier.
      - 8.3.3. Manufacturer.
    - 8.4. Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
    - 8.5. Details of appropriate portions of Work as applicable:
      - 8.5.1. Fabrication.
      - 8.5.2. Layout, showing dimensions, including identified field dimensions, and clearances.
      - 8.5.3. Setting or erection details.
      - 8.5.4. Capacities.
      - 8.5.5. Performance characteristics.
      - 8.5.6. Standards.
      - 8.5.7. Operating weight.
      - 8.5.8. Wiring diagrams.
      - 8.5.9. Single line and schematic diagrams.
      - 8.5.10. Relationship to adjacent work.
  9. After Consultant's review, distribute copies.
  10. Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Consultant may reasonably request.
  11. Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Consultant where shop drawings will not be prepared due to standardized manufacture of product.
  12. Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Consultant.
    - 12.1. 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.
    - 12.2. Testing must have been within 3 years of date of contract award for project.

13. Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Consultant.
  - 13.1. 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.
  - 13.2. Certificates must be dated after award of project contract complete with project name.
14. Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Consultant.
  - 14.1. Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
15. Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Consultant.
16. Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
17. Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Consultant.
18. Delete information not applicable to project.
19. Supplement standard information to provide details applicable to project.
20. 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.

#### **1.4 Samples**

1. Submit for review samples as requested in respective specification Sections. Label samples with origin and intended use.
2. Deliver samples prepaid to site office or Consultant's place of work.
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.

#### **1.5 Mock-ups**

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

#### **1.6 Photographic documentation**

1. Contractor shall take photographs to document progress of the work on a daily basis and, when requested, provide these photos to the Consultant and/or Owner for their reference.

### **1.7 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**

1. Not Used.

### **Part 3 Execution**

#### **3.1 Not used**

1. Not Used.

**END OF SECTION**

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## **Section 01 41 00**

### **Regulatory Requirements**

#### **Part 1 General**

##### **1.1 References to regulatory requirements**

1. Perform Work in accordance with the current Ontario Building Code (OBC) 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. Coordinate all permits and inspections with building officials.
3. Specific design and performance requirements listed in specifications or indicated on Drawings may exceed minimum requirements established by referenced Building Code; these requirements will govern over the minimum requirements listed in Building Code
  - 3.1. Meet or exceed requirements of:
    - 3.1.1. Contract documents.
    - 3.1.2. 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**

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## **Section 01 45 00**

### **Quality Control**

#### **Part 1 General**

##### **1.1 Reference standards**

1. Canadian Construction Documents Committee (CCDC)
  - 1.1. CCDC 2-2020, Stipulated Price Contract.

##### **1.2 Inspection**

1. Refer to CCDC 2, GC 2.3.
2. 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.
3. Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Consultant instructions, or law of Place of Work.
4. 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.
5. 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, the contractor is to correct such Work and pay cost of examination and correction.

##### **1.3 Rejected work**

1. Refer to CCDC, GC 2.4.
2. 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.
3. Make good other Contractor's work damaged by such removals or replacements promptly.
4. If in opinion of Consultant it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined.

##### **1.4 Mock-ups**

1. Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.
  - 1.1. Provide Mock-ups for lenticular wall paneling. Refer to section 08 87 23
2. Construct in locations acceptable Consultant and Owner.
3. Prepare mock-ups for Consultant's 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. Remove mock-up at conclusion of Work or when acceptable to Consultant.
6. Mock-ups may remain as part of Work pending approval by Consultant.

### **1.5 Equipment and systems**

1. Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.
2. Refer to Section Mechanical and Electrical Specifications for definitive requirements.

## **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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## **Section 01 51 00**

### **Temporary Utilities**

#### **Part 1 General**

##### **1.1 Action and informational submittals**

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

##### **1.2 Installation and removal**

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

##### **1.3 Water supply**

1. The Owner will provide access to a hose bib located in the proximity of the construction area for water supply. GC will be responsible for all connections, maintenance and removal.

##### **1.4 Temporary power and light**

1. Owner will provide access to an existing electrical panel for temporary electrical panel connection during construction temporary lighting and operating of power tools, to a maximum supply of 230 volts 30 amps.
2. Temporary power for electric cranes, welding machines and other equipment requiring in excess of above is responsibility of Contractor based on General Conditions of Contract.
3. Provide and maintain temporary lighting throughout project. Ensure level of illumination on all floors and stairs is not less than 162 lx.
4. Electrical power and lighting systems installed under this Contract may be used for construction requirements only with prior approval of Owner and Consultant provided that guarantees are not affected.
  - 4.1. Repair damage to electrical system caused by use under this Contract.
  - 4.2. Replace lamps which have been used for more than 3 months.

##### **1.5 Temporary communication facilities**

1. Provide and pay for temporary telephone, and data hook up, lines and equipment necessary for own use and use of Consultant.

##### **1.6 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**

1. Not Used.

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**Part 3 Execution - Not Used**

**END OF SECTION**

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## **Section 01 52 00**

### **Construction Facilities**

#### **Part 1 General**

##### **1.1 Reference standards**

1. Canadian Construction Documents Committee (CCDC)
  - 1.1. CCDC 2-2020, Stipulated Price Contract.
2. Canadian General Standards Board (CGSB)
  - 2.1. CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.
  - 2.2. CGSB 1.59-97, Alkyd Exterior Gloss Enamel.
3. CSA Group (CSA)
  - 3.1. CSA-A23.1/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - 3.2. CSA-0121-M1978 (R2003), Douglas Fir Plywood.
  - 3.3. CAN/CSA-S269.2-M1987 (R2003), Access Scaffolding for Construction Purposes.
  - 3.4. CAN/CSA-Z321-96 (R2001), Signs and Symbols for the Occupational Environment.
4. Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as of: May 14, 2004.
5. U.S. Environmental Protection Agency (EPA)/Office of Water
  - 5.1. EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

##### **1.2 Scaffolding and Ladders**

1. Scaffolding in accordance with CAN/CSA-S269.2.
2. Provide and maintain ladders.

##### **1.3 Hoisting**

1. Provide, operate and maintain hoists cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.
2. Hoists cranes to be operated by qualified operator.

##### **1.4 Elevators**

1. permanent elevators to be used by construction personnel and transporting of materials. Coordinate use with Owner.
2. Provide protective coverings for finish surfaces of cars and entrances.

##### **1.5 Site storage/loading**

1. Refer to CCDC 2, GC 3.12.
2. Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
3. Do not load or permit to load any part of Work with weight or force that will endanger Work.

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## **1.6 Construction parking**

1. Pay Parking is available on site, Contractor is responsible to pay for parking on site for the purpose of Bidder's mandatory site visit and during construction. Refer to <https://www.centennialcollege.ca/student-life/campus-services/parking-services/parking-rates-and-important-information>

## **1.7 Security**

1. Contractor responsible for maintaining the site secure at all times.

## **1.8 Sanitary facilities**

1. Contractor to provide their own sanitary facilities. College washrooms will not be available for use by the construction team.

## **1.9 Energy Conservation**

1. Conserve energy where possible. Lights shall be turned off when rooms are left unoccupied.
2. Keep all windows closed where possible when working in enclosed spaces if building heating or cooling systems are operational.
3. Conserve water. Do not let taps or hoses run between tasks during work.

## **Part 2 Products**

### **2.1 Not used**

1. Not Used.

## **Part 3 Execution - Not Used**

**END OF SECTION**

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## **Section 01 56 00**

### **Temporary Barriers and Enclosures**

#### **Part 1 General**

##### **1.1 Reference standards**

1. Canadian General Standards Board (CGSB)
  - 1.1. CGSB 1.59-97, Alkyd Exterior Gloss Enamel.
  - 1.2. CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.
2. CSA Group (CSA)
  - 2.1. CSA-O121-M1978 (R2003), Douglas Fir Plywood.

##### **1.2 Installation and removal**

1. Provide temporary utilities, facilities and controls in order to execute Work expeditiously. Remove from the Place of the Work all such Work after use.
2. Remove from site all such work after use.

##### **1.3 Hoarding**

1. Interior Hoarding
  - 1.1. Erect temporary interior site enclosures using steel stud framing complete with GWB finish on one side. Partitions to extend from floor to ceiling. Provide Polyethylene sheet sealing the space from the top of partition to underside of slab or ceiling above to control dust
  - 1.2. Maintain public side of enclosure in clean condition.
  - 1.3. Refer to drawings for suggested hoarding layout. All hoarding locations are to be reviewed and approved by Owner on site prior to erection.

##### **1.4 Dust tight screens**

1. Provide dust tight screens or insulated partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.
2. Dust screens shall consist of, as a minimum, 0.15mm (6 mil) thick polyethylene sheets secured to appropriate framing and sealed at all joints and at perimeter to prevent migration of dust.
3. Maintain and relocate protection until such work is complete.

##### **1.5 Fire routes**

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

##### **1.6 Protection of building 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. Confirm with Owner locations and installation schedule 3 days prior to installation.
  4. Be responsible for damage incurred due to lack of or improper protection.

### **1.7 Temporary Controls**

1. Site Signs and Notices
  - 1.1. 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 Owner.
  - 1.2. No other signs or advertisements of any description except notices regarding safety and instruction shall be put up around the building, or site, without the approval of the Consultant.

### **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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## **Section 01 61 00**

### **Common Product Requirements**

#### **Part 1 General**

##### **1.1 Product Options**

1. Provide Products specified under individual Specifications Sections and noted on Drawings. Where Specifications / Drawings list two or more Products, or two or more manufacturers of the same Product, the Contractor may select one of the listed Products or manufacturers.
2. When only one Product or manufacturer is listed in the Specifications / Drawings, it is intended that only that Product or manufacturer is acceptable. Where the specifications/drawings list one product, "or Equal/Equivalent" substitutions may be submitted during the tender period for review a minimum of 2 days before the close of the question period. Alternatives will be approved at the Consultant's discretion and be confirmed via addendum. Once the Contract has been awarded, substitutions will only be considered when there are issues of product availability or lead times that jeopardize the project schedule.

##### **1.2 Quality**

1. Refer to CCDC 2-2020.
2. 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.
3. 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.
4. 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.
5. Should disputes arise as to quality or fitness of products, decision rests strictly with Consultant based upon requirements of Contract Documents.
6. Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
7. 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.

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#### **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. Store sheet materials and lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
6. 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.
7. Remove and replace damaged products at own expense and to satisfaction of Consultant.
8. 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. Transportation and delivery costs of Products required in the performance of the Work, are included in the Contract Price.
2. Transportation and delivery costs of Products supplied by the Owner will be paid for by the Owner.  
Include in the Contract Price the Contractor's costs for unloading, handling, and storing such Products at the Place of the Work.
3. Products must be appropriately crated, skidded, boxed, shrink-wrapped, or otherwise packaged to protect such Products from damage during shipment. Products which arrive at the Place of the Work in a damaged condition must be rejected and returned to the Supplier/manufacturer for immediate replacement.
4. Advise the Owner sufficiently in advance, but never less than ten (10) Working Days in advance of anticipated required delivery dates for Products supplied by the Owner.

#### **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 Remedial work**

1. Refer to DEFECTIVE WORK of CCDC2-2020.

## **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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## **Section 01 71 00**

### **Execution Requirements**

#### **Part 1 General**

##### **1.1 Examination**

1. Acceptance of Conditions:
  - 1.1. The Contractor shall examine all existing or pre-determined conditions, prior to commencing Work in that area, and report to the Consultant & Owner all conditions unacceptable for Work to proceed. Commencement of Work shall imply acceptance of conditions as is.
  - 1.2. Subcontractors shall examine all existing or pre-determined conditions affecting their portion of the Work, prior to commencing such Work, and report to the Contractor all conditions unacceptable for Work to proceed. Commencement of Work shall imply acceptance of conditions as is.

##### **1.2 Location of Equipment and Fixtures**

1. Location of Mechanical and Electrical equipment, fixtures and devices indicated or specified, are to be considered as approximate. Final location of such items will be determined at the Place of the Work, based on integration with structural and architectural elements, and as required by coordination with other trades. In the event of a conflict, final determination of location of these items rests with the Consultant.
2. Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
3. Request a review of items by Consultant & Owner once rough-in is underway, prior to final installation, and obtain approval for actual locations.
4. Provide and pay for all openings greater than 200mm (8") for penetrations of Mechanical and Electrical Work.
  - 4.1. Mechanical and Electrical Subcontractors shall provide list of quantities, sizes, and locations for such penetrations to the Contractor.
  - 4.2. Mechanical and Electrical Subcontractors shall supply all required sleeves and supports for setting or building-in to the Contractor, and all exact locations for installation.
5. Mechanical and Electrical Subcontractors shall Provide all required penetrations 200mm (8") or less, and carry the costs for such openings in their Bid Price. Mechanical and Electrical Subcontractors shall supply all required sleeves and supports, layout and install at exact locations for that portion of the Work.

##### **1.3 Concealment**

1. Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas, except where indicated otherwise.

##### **1.4 Lighting Fixtures at Suspended Ceilings**

1. Ensure that secure support is Provided for lighting fixtures by suspended ceilings, or by separate hangers, or by both.

2. Coordinate the ceiling system and lighting fixture installations to provide adequate support.
3. Conform to current requirements of the Electrical Safety Authority (ESA).

### **1.5 Existing Services**

1. Where Work involves the interruption of or connection to existing services, carry out such Work as directed by governing authorities and *Owner*, with minimum of disturbance to building occupants.
2. Submit schedule to, and obtain acceptance from Owner for any shutdown or closure of active service or facility. Adhere to approved schedule and provide Notice in Writing to affected parties.
3. Where unknown services are encountered, immediately advise the Consultant and confirm findings with Notice in Writing.
4. Remove abandoned service lines to extent of work area. Cap or otherwise seal lines at cut-off points as directed by the Consultant.
5. Record locations of maintained, re-routed and abandoned service lines on as-built drawings.

### **1.6 Alterations and/or Additions to Existing Buildings**

1. Execute Work with least possible interference or disturbance to occupants, public and normal use of premises. Arrange with Owner to facilitate execution of Work.

### **1.7 Protection of Work in Progress**

1. Adequately protect Work completed or in progress. Work damaged or defaced due to failure in providing such protection is to be removed and replaced, or repaired, as directed by the Consultant, at no increase in ContractPrice.
2. Prevent overloading of any part of the building. Do not cut, drill or sleeve any load bearing structural member, unless specifically indicated, without written approval of Consultant. Notify *Consultant* if additional structural testing or engineering may be required prior to any alteration.
3. Protect finished surfaces with overlays of protective materials such as Kraft paper, cardboard, or plywood, as required for individual applications to provide adequate protection.

## **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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## **Section 01 73 29**

### **Cutting and Patching**

#### **Part 1 General**

##### **1.1 Section includes**

1. Requirements and limitations for cutting and patching of Work.

##### **1.2 Related requirements**

1. Section 01 32 00 - Construction Progress Documentation: Submittals and scheduling.
2. Section 01 61 00 - Common Product Requirements.
3. Section 07 84 00 - Firestopping.
4. Individual Product Specification Sections:
  - 4.1. Cutting and patching incidental to work of the section.
  - 4.2. Advance notification to other sections of openings required in Work of those sections.
  - 4.3. Limitations on cutting structural members.

##### **1.3 Submittals**

1. Submit written request in advance of cutting or alteration that affects:
  - 1.1. Structural integrity of any element of Project.
  - 1.2. Integrity of weather exposed or moisture resistant element.
  - 1.3. Efficiency, maintenance, or safety of any operational element.
  - 1.4. Visual qualities of sight exposed elements.
  - 1.5. Work of Owner or separate contractor.
2. Include in request:
  - 2.1. Identification of Project.
  - 2.2. Location and description of affected Work.
  - 2.3. Necessity for cutting or alteration.
  - 2.4. Description of proposed Work and Products to be used.
  - 2.5. Alternatives to cutting and patching.
  - 2.6. Effect on work of Owner or separate contractor.
  - 2.7. Written permission of affected separate contractor.
  - 2.8. Date and time work will be executed.

#### **Part 2 Products**

##### **2.1 Materials**

1. Primary Products: Those required for original installation.
2. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 25 00.

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## **Part 3 Execution**

### **3.1 Examination**

1. Examine existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.
2. After uncovering existing Work, assess conditions affecting performance of work.
3. Beginning of cutting or patching means acceptance of existing conditions.

### **3.2 Preparation**

1. Provide temporary supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage.
2. Provide protection from elements for areas that may be exposed by uncovering work.
3. Maintain excavations free of water.

### **3.3 Cutting**

1. Execute cutting and fitting including excavation and fill to complete the Work.
2. Uncover work to install improperly sequenced work.
3. Remove and replace defective or non-conforming work.
4. Remove samples of installed work for testing when requested.
5. Provide openings in the Work for penetration of mechanical and electrical work.
6. Employ original or skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
7. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

### **3.4 Patching and repairing**

1. Floors and Walls:
  - 1.1. Where walls or partitions that are demolished extend from one finished area into another, patch and repair floor and wall surfaces in the new space.
  - 1.2. Provide a level and smooth surface having uniform finish colour, texture, and appearance.
  - 1.3. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform colour and appearance.
  - 1.4. Patch with durable seams that are as invisible as possible.
  - 1.5. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
  - 1.6. Where patching occurs in a painted surface, apply primer and intermediate paint coats over patch and apply final paint coat over entire unbroken surface containing patch. Provide additional coats until patch blends with adjacent surfaces.
  - 1.7. Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
2. Ceilings: patch, repair, or re hang existing ceilings as necessary to provide an even plane surface of uniform appearance.

**END OF SECTION**

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## **Section 01 74 00**

### **Cleaning and Waste Management**

#### **Part 1 General**

##### **1.1 Reference standards**

1. Canadian Construction Documents Committee (CCDC)
  - 1.1. CCDC 2-2020, Stipulated Price Contract.

##### **1.2 Project cleanliness**

1. During construction, maintain the Work and access to the Work in a tidy condition and free from the accumulation of waste products and debris other than that caused by the Owner, Other Contractors or their employees.
2. Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
3. Store volatile waste in covered metal containers, and remove from premises at end of each working day.
4. Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
5. Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
6. Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.
7. Maintain clean egress routes at all times.
8. Remove debris from areas in covered containers to minimize production of dust.
9. Lower waste materials in a controlled manner with minimum handling; do not drop or throw materials from heights. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces. Sprinkle dusty debris with water.

##### **1.3 Final cleaning**

1. Refer to CCDC 2, GC 3.14.
2. When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
3. Remove waste products and debris and leave Work clean and suitable for occupancy.
4. Prior to final review remove surplus products, tools, construction machinery and equipment.
5. Remove waste products and debris including that caused by Owner or other Contractors.
6. 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.
7. Remove stains, paint, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, millwork, floors, equipment. Also remove all temporary protection films and covers.

8. Clean lighting reflectors, lenses, and other lighting surfaces.
9. Vacuum clean and dust building interiors, behind grilles, louvres and screens.
10. Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.
11. Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
12. Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
13. Remove dirt and other disfiguration from exterior surfaces.
14. Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.

#### **1.4 Waste Management and Disposal**

1. Waste management procedures (e.g. location of waste bins, bin cover requirements for dust and/or hazardous material control, etc.) must be established and reviewed with the Owner prior to work start.
2. The Contractor shall make arrangements for recycling of construction materials. Segregate demolished and unused construction materials. Recycle off-site utilizing a certified waste management company. All associated costs shall be borne by the Contractor. **Contractors are not permitted to use any Owner bins for their recycling or waste materials.**
3. Provide clearly labeled waste sorting bins with recycling. Post a list or signage of acceptable and non-acceptable materials for the recycling bins and communicate same to all workers.
4. Store materials in a manner such that damage and waste will be minimized.
5. Drywall should be purchased in optimal dimensions to minimize cut-off waste. All unused and waste drywall shall be recycled.
6. During construction, separate metals for recycling, including copper piping, wire and flashing, aluminum siding, flashing and guttering, iron and steel banding from bundles, nails and fasteners, galvanized flashing and roofing, and rebar, lead chimney flashing, etc. Lead and other metals shall be kept out of landfills as they could leach into groundwater.
7. Fire and burning of rubbish and waste materials at the Place of the Work is not permitted.
8. Disposal of hazardous waste and/or volatile materials, such as kerosene, mineral spirits, oil or paint thinner into storm or sanitary sewers is prohibited.
9. Dispose of hazardous materials, including but not limited to chemicals, oils, solvents, excess paint, sealants, batteries, nickel cadmium batteries from portable power tools, asbestos etc., legally and appropriately utilizing a licensed hazardous waste management company.

### **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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## **Section 01 77 00**

### **Closeout Procedures**

#### **Part 1 General**

##### **1.1 Section includes**

1. Provision of all labour, materials, equipment and incidental services necessary for turnover to Owner at Substantial Performance of the Work.

##### **1.2 Inspection and declaration procedures**

1. Arrange for, conduct and document final inspections, close-out and commissioning at the completion of the Work or portions thereof in accordance with procedures described below, in the General Conditions of CCDC2-2020, and OAA/OGCA Document 100, OAA/OGCA Take-Over Procedures.

##### **1.3 Turnover requirements**

1. Should portions of the Work be ready for turnover and Owner occupancy in conjunction with phasing of the Work, prior to achievement of Substantial Performance of the Work, or if turnover corresponds to Substantial Performance of the Work, prior to turnover the Contractor shall:
  - 1.1. Arrange all final inspections of the Work or portion thereof with local Authorities Having Jurisdiction.
  - 1.2. Contractor's Inspection:
    - 1.2.1. The Contractor and all Subcontractors shall conduct an inspection of the Work, identify deficiencies and defects, and make corrections as required to conform with the Contract Documents.
    - 1.2.2. Provide Notice in Writing to the Owner of satisfactory completion of Contractor's Inspection, that corrections have been made and that the Work or portion thereof is ready for deficiency review by the Owner.
  - 1.3. *Consultant's* Deficiency Review:
    - 1.3.1. The *Consultants* will perform a deficiency review of the Work or portion thereof to identify outstanding life safety issues, obvious defects or deficiencies.
    - 1.3.2. Upon successful completion of the deficiency review, the *Consultant* will issue to the Contractor a comprehensive deficiency list of observed defects and deficiencies.
    - 1.3.3. Contractor shall correct the Work accordingly.
    - 1.3.4. When deficiencies and defects have been corrected, the Contractor shall provide Notice in Writing to the Owner of satisfactory completion of outstanding life safety issues, obvious defects or deficiencies and request a re-review of deficiency list items.
    - 1.3.5. The deficiency review by the Owner will not relieve the Contractor of his responsibilities under the Contract for completion or correction of the Work or any portion thereof not identified in the deficiency review required under the Contract Documents.
  - 1.4. Submit documentation confirming successful inspection/verification of the Work or portion thereof of affected specified systems:

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- 1.4.1. One copy of completed or in progress Operations & Maintenance Manual for all disciplines (remaining copies specified to be completed prior to the Work being deemed complete).
  - 1.4.2. Completed or in progress As-Built Drawings for all disciplines (No. of copies specified).
  - 1.4.3. Testing and Air Balancing Report (legible technicians worksheets are acceptable for phased *Work*).
  - 1.4.4. Mechanical equipment start-up reports (Boilers, HVAC Units, Chillers, Water Softeners, etc.).
  - 1.4.5. Building Monitoring System control Subcontractor verification letter confirming systems have been tested and are operational.
  - 1.4.6. Security System verification.
  - 1.4.7. Data/Voice Cabling System verification.
  - 1.4.8. Confirmation that all code-required signage (electromagnetic locks, etc.) have been *provided*.
  - 1.4.9. Fire Alarm Verification Report (legible technicians worksheets are acceptable for phased Work).
  - 1.4.10. Door Controls Verification Certificate.
  - 1.4.11. Emergency Lighting Verification.
  - 1.4.12. Electrical distribution system inspection and load balancing.
  - 1.4.13. ESA Certificate for electrical systems and devices.
  - 1.4.14. Systems operations have been demonstrated to Owner's personnel.
2. Upon successful completion of deficiency re-review, providing all life safety issues have been completed and receipt of all documentation requested in Sentence 1.4.1.4:
    - 2.1. If all non-life safety deficiencies and defects have not been completed during the deficiency re-review, submit to the Consultant within three (3) Working Days of the deficiency re-review a comprehensive schedule outlining corrective actions required and date for completion of correction of all outstanding deficiencies and defects noted.

#### **1.4 Substantial Performance of the work**

1. When the Contractor determines that the requirements of the Contract have been substantially performed in accordance with the requirements of Construction Act, R.S.O. 1990, c. C.30, the Constructor shall make application for issuance of Certificate of Substantial Performance in accordance with GC 5.4 – SUBSTANTIAL PERFORMANCE OF THE WORK of CCDC2-2020.
2. The Owner shall notify the Contractor of approval of the application for Substantial Performance of the Work and issue a Certificate, or advise the Contractor by Notice in Writing with reasons why the Work has not been substantially performed.
3. The Constructor shall publish a copy of the Certificate of Substantial Performance in an acceptable construction trade newspaper, and shall provide the Owner with proof of the date of publication.
4. Commencement of Lien and Warranty Periods:
  - 4.1. The day following the date of publication of Certificate of Substantial Performance shall be the date of commencement of the Warranty Period, and of the 60-day lien period prior to release of General Holdback, unless required otherwise by lien statute of the Place of the Work.

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## **1.5 Final review and statement of deemed complete**

1. Submit minimum three (3) weeks prior to application for Final Review the following documentation:
  - 1.1. Completed Operations & Maintenance Manuals for all disciplines (number of copies specified).
  - 1.2. Completed As-Built Drawings for all disciplines (number of copies specified).
  - 1.3. Final Testing and Air Balancing Report.
  - 1.4. Final Fire Alarm Verification Report.
  - 1.5. Mechanical and Electrical CAD electronic record drawings.
2. Submit a Notice in Writing to the Owner stating that following have been performed:
  - 2.1. Work has been completed and reviewed for compliance with Contract Documents.
  - 2.2. All defects have been corrected and deficiencies have been completed.
  - 2.3. Value of Work remaining, including outstanding deficiencies is less than \$1,000.00.
  - 2.4. Work is complete and ready for Final Review.
  - 2.5. Arrange for Final Review of the Work by Owner, and Contractor.
3. Final Review
  - 3.1. When Notice in Writing as identified in 1.6.2 has been received, the Owner shall make themselves available in accordance with GC 5.7 – FINAL PAYMENT of CCDC2-2020 for a final review of the Work.
  - 3.2. If Work is deemed incomplete by Owner, complete outstanding items and request a re-review.
4. If after Final Review the Work is deemed complete, Contractor shall make application for final Certificate For Payment.

## **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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## **Section 01 78 00**

### **Closeout Submittals**

#### **Part 1 General**

##### **1.1 RELATED SECTIONS**

1. Closeout Procedures Section 01 77 00

##### **1.2 REFERENCES**

1. OAA/OGCA Document 100; OAA/OGCA Take-Over Procedures.

##### **1.3 QUALITY**

1. Spare parts, maintenance materials and special tools provided shall be new, not damaged or defective, and of the same quality and manufacture as Products provided in the Work.
2. If requested, furnish evidence as to type, source and quality of Products provided.
3. Defective Products will be rejected, regardless of previous inspections. Replace Products at own expense.

##### **1.4 DELIVERY, STORAGE, AND HANDLING**

1. Deliver all materials required as maintenance materials, spare parts or special tools, to the Place of the Work, include shipping costs, and store as directed.
2. Store spare parts, maintenance materials and special tools in a manner to prevent damage, or deterioration.
3. Store in original and undamaged containers with manufacturer's seals or labels intact.
4. Store Products subject to damage from severe climatic changes in a climate-controlled, weatherproof enclosure.
5. Store paints and freezable materials in a moderately heated and ventilated room.

##### **1.5 MAINTENANCE MATERIALS, SPARE PARTS & TOOLS**

1. Supply spare parts in quantities specified in individual Specifications Sections or as agreed with *Owner*. Supply identical items to those installed in the Work.
2. Supply maintenance materials in quantities specified in individual Specifications Sections or as minimum 2% of installed materials. Supply identical items of same manufacturer, dye lot or production run as items in the Work.
3. Supply special tools in quantities specified in individual Specifications Sections or as agreed with *Owner*, and tag items identifying their function and equipment or Products to which they are associated.
4. Receive and catalogue all items. Check inventory against Operations and Maintenance manual guide. Include approved listings in Operations and Maintenance Manual.
5. Obtain receipts for delivered products and submit prior to Substantial Performance of the Work.

##### **1.6 OPERATIONS AND MAINTENANCE MANUAL**

1. General:

- 
- 1.1. Contractor to facilitate the compilation and organization of the Operation and Maintenance Manual.
  - 1.2. Prepare Operation and Maintenance Manual during the course of construction and have completed prior to date of Substantial Performance of the Work.
  2. Submission:
    - 2.1. Submit one digital copy in Adobe Acrobat PDF on memory stick or file share with the application for Substantial Performance of the Work in accordance with OAA/OGCA Document 100.
    - 2.2. Upon acceptance by the consultants, provide 1 physical copy in an 8 1/2" x 11" three ring binder with the spine and cover clearly labelled. Provide tabs to organize the binder by Project Manual section.
  3. Provide hyperlinked table of contents . Itemize and tabulate contents by Project Manual section.
  4. Content:
    - 4.1. Each copy of the Operation and Maintenance Manual shall contain, as a minimum, the following information:
      - 4.1.1. Contact information for maintenance and repairs.
      - 4.1.2. Warranty and guarantee certificates.
      - 4.1.3. Equipment start-up and troubleshooting instructions.
      - 4.1.4. Equipment schematics & diagrams.
      - 4.1.5. Catalogue of all maintenance materials and quantities.
      - 4.1.6. Operations and Maintenance Data.
      - 4.1.7. One copy of all of all reviewed Submittals (Shop Drawings, Product Data Sheets, Manufacturers Installation Instructions, Qualifications Statements, Test Reports etc.).

## **1.7 AS-BUILT DRAWINGS**

1. Record information on a clean set of PDF Drawings.
2. Maintain digital as-built drawings and update as construction progresses. Allow periodic review by Owner as requested.
3. Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
4. Drawings and Shop Drawings: legibly mark each item to record actual construction, including:
  - 4.1. Measured depths of elements of foundation in relation to finish first floor datum.
  - 4.2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  - 4.3. Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
  - 4.4. Field changes of dimension and detail.
  - 4.5. Changes made by Change Orders or Supplemental Instructions.
  - 4.6. Details not on original Drawings.
  - 4.7. References to related Shop Drawings and modifications.

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## **1.8 EQUIPMENT AND SYSTEMS**

1. Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. 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. Include regulation, control, stopping, shut-down, and emergency instructions. 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 coordination 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 all test and balancing reports
15. Additional requirements: As specified in individual specification sections.

## **1.9 MATERIALS AND FINISHES**

1. Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations. 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.
5. Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
6. List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
7. Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work.

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8. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.
  9. Verify that documents are in proper form, contain full information, and are notarized.
  10. Co-execute submittals when required.
  11. Retain warranties and bonds until time specified for submittal.

## **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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## **Section 01 79 00**

### **Demonstration and Training**

#### **Part 1 General**

##### **1.1 Administrative requirements**

1. Demonstrate scheduled operation and maintenance of equipment and systems to Owner's personnel two weeks prior to date of substantial performance.
2. Owner: provide list of personnel to receive instructions, and co-ordinate their attendance at agreed-upon times.
3. Preparation:
  - 3.1. Verify conditions for demonstration and instructions comply with requirements.
  - 3.2. Verify designated personnel are present.
  - 3.3. Ensure equipment has been inspected and put into operation in accordance with specifications.
  - 3.4. Ensure testing, adjusting, and balancing has been performed in accordance with specifications and equipment and systems are fully operational.
4. Demonstration and Instructions:
  - 4.1. Demonstrate start-up, operation, control, adjustment, trouble-shooting, warranty, servicing, and maintenance of each item of equipment at agreed upon times, at the equipment location.
  - 4.2. Instruct personnel in phases of operation and maintenance using operation and maintenance manuals as basis of instruction.
  - 4.3. Review contents of manual in detail to explain aspects of operation and maintenance.
  - 4.4. Prepare and insert additional data in operations and maintenance manuals when needed during instructions.

##### **1.2 Action and informational submittals**

1. Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
2. Submit schedule of time and date for demonstration of each item of equipment and each system two weeks prior to designated dates, for Consultant's approval.
3. Submit reports within one week after completion of demonstration, that demonstration and instructions have been satisfactorily completed.
4. Give time and date of each demonstration, with list of persons present.
5. Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.

##### **1.3 Quality assurance**

1. When specified in individual Sections requiring manufacturer to provide authorized representative to demonstrate operation of equipment and systems:
  - 1.1. Instruct Owner's personnel.
  - 1.2. Provide written report that demonstration and instructions have been completed.

## **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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## **Section 02 41 19.16**

### **Selective Interior Demolition**

#### **Part 1 General**

##### **1.1 Summary**

1. This Section includes the following:
  - 1.1. Demolition and removal of selected portions of interior building components and finishes.
  - 1.2. Repair procedures for selective demolition operations.
2. This section does not include the following:
  - 2.1. Removal of hazardous materials or asbestos abatement.
  - 2.2. Demolition of exterior building components or structural elements.
  - 2.3. Mechanical or electrical equipment, except as required to make minor modifications to allow the work to be completed.

##### **1.2 Reference standards**

1. American National Standards Institute (ANSI)
  - 1.1. ANSI A10.8 2011, Safety Requirements for Scaffolding
2. American Society for Testing and Materials (ASTM):
  - 2.1. ASTM C475/C475M-15, Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board
3. CSA Group (CSA)
  - 3.1. CSA S350 M1980 (R2003), Code of Practice for Safety in Demolition of Structures
4. Department of Justice Canada (Jus)
  - 4.1. Canadian Environmental Assessment Act (CEAA), 2012
  - 4.2. Canadian Environmental Protection Act (CEPA), 2012
    - 4.2.1. SOR/2003-2, On-Road Vehicle and Engine Emission Regulations
    - 4.2.2. SOR/2006-268, Regulations Amending the On-Road Vehicle and Engine Emission Regulations
    - 4.2.3. Transportation of Dangerous Goods Act (TDGA), 1992, c. 34
    - 4.2.4. Motor Vehicle Safety Act (MVSA), 1995
    - 4.2.5. Hazardous Materials Information Review Act, 1985
5. National Fire Protection Association (NFPA)
  - 5.1. NFPA 241 13, Standard for Safeguarding Construction, Alteration, and Demolition Operations

##### **1.3 Definitions**

1. Demolish: Detach items from existing construction and legally dispose of them off site, unless indicated to be removed and salvaged or removed and reinstalled.
2. Remove and Salvage: Detach items from existing construction and deliver them to Owner.

3. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
4. Existing to Remain: Existing items of construction that are not removed and that are not otherwise indicated as being removed, removed and salvaged, or removed and reinstalled.
5. Hazardous Substances: Dangerous substances, dangerous goods, hazardous commodities and hazardous products may include asbestos, mercury and lead, PCB's, poisons, corrosive agents, flammable substances, radioactive substances, or other material that can endanger human health or wellbeing or environment if handled improperly as defined by the Federal Hazardous Products Act (RSC 1985) including latest amendments.

#### **1.4 Administrative requirements**

1. Coordination: Coordinate with Owner for the material ownership as follows:
  - 1.1. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner 's property, demolished materials shall become Contractor 's property and shall be removed from Project site.
  - 1.2. Coordinate selective demolition work so that work of this Section adheres to aesthetic criteria established by the Drawings and specified dimensions with all elements in planes as drawn, maintaining their relationships with all other building elements.
2. Pre Demolition Meeting: Convene pre-installation meeting 1 week prior to beginning work of this Section, with Contractor in accordance with Section 01 31 19 - Project Meetings to:
  - 2.1. Confirm extent of salvaged and demolished materials
  - 2.2. Review Contractor 's demolition plan
    - 2.2.1. Verify existing site conditions adjacent to demolition work
    - 2.2.2. Coordination with other construction sub trades

#### **1.5 Quality assurance**

1. Regulatory Requirements: Perform work as follows; use most restrictive requirements where differences occur between the municipal, provincial and federal jurisdictions:
  - 1.1. Provincial and Federal Requirements: Perform work in accordance with governing environmental notification requirements and regulations of the Authority Having Jurisdiction.
  - 1.2. Municipal Requirements: Perform hauling and disposal operations in accordance with regulations of Authority Having Jurisdiction.
2. Qualifications: Provide proof of qualifications when requested by Consultant :
  - 2.1. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project:
    - 2.1.1. Conform to the provincial Occupational Health and Safety Act and Regulation.
    - 2.1.2. Conform to Workers' Compensation Board Regulations.
    - 2.1.3. Conform to City of local municipal bylaws and regulations governing this type of work.

#### **1.6 Site conditions**

1. Owner will occupy portions of building immediately adjacent to selective demolition area:
  - 1.1. Conduct selective demolition so that Owner 's operations will not be disrupted.

- 
- 1.2. Provide not less than 72 hours notice to Owner of activities that will affect Owner 's operations.
  2. Maintain access to existing means of egress, walkways, corridors, exits, and other adjacent occupied or used facilities:
    - 2.1. Do not close or obstruct means of egress, walkways, corridors, exits, or other occupied or used facilities without written acceptance from authorities having jurisdiction.
  3. Owner assumes no responsibility for condition of areas to be selectively demolished:
    - 3.1. Conditions existing at time of Pre Bid Site Review will be maintained by Owner as far as practical.
  4. Discovery of Hazardous Substances: It is not expected that Hazardous Substances will be encountered in the Work; immediately notify Consultant if materials suspected of containing hazardous substances are encountered and perform the following activities:
    - 4.1. Refer to Section 01 41 00– Regulatory Requirements for directives associated with specific material types.
    - 4.2. Hazardous materials will be as defined in the Hazardous Materials Act.
    - 4.3. Hazardous materials will be removed by Owner before start of the Work.
    - 4.4. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Owner. Hazardous materials will be removed by Owner under a separate contract or as a change to the Work.

## **Part 2 Products**

### **2.1 Temporary support structures**

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

### **2.2 Description**

1. This section of the Work includes, but is not necessarily limited to, the following:
  - 1.1. Demolition, removal completely from site, and disposal of all identified components, materials, equipment and debris
  - 1.2. Selective demolition to allow new walls, bulkheads, ceilings and other materials to meet existing construction as indicated
  - 1.3. All material from demolition shall be removed from site immediately with no salvage, selling, sorting or burning permitted on site
  - 1.4. Retain items indicated on drawings for re use in new construction

### **2.3 Debris**

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

### **2.4 Equipment**

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

### **2.5 Repair materials**

1. Use repair materials identical to existing materials:

- 1.1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
- 1.2. Use a material whose installed performance equals or surpasses that of existing material.
- 1.3. Comply with material and installation requirements specified in individual Specification Sections.
2. Gypsum Board Patching Compounds: Joint compound to ASTM C475/C475M, bedding and finishing types thinned to provide skim coat consistency to patch and prepare existing gypsum board walls ready for new finishes in accordance with Section 09 21 16 – Gypsum Board Systems.
3. Hoarding and Dust Screens: Stud framing and gypsum board sheathing.

## **2.6 Existing materials**

1. Items to be retained for re use in new construction include, but are not limited to the following:
  - 1.1. Miscellaneous items identified on drawings
  - 1.2. Confirm with Owner's Representative any materials that appear to be in re usable condition prior to disposal.
  - 1.3. Confirm with Owner's Representative any materials scheduled for re use that are not in re usable condition prior to installation.

## **Part 3 Execution**

### **3.1 Examination**

1. Verify that utilities have been disconnected and capped.
2. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
3. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
4. Notify the Representative Consultant where existing mechanical, electrical, or structural elements conflict with intended function or design:
  - 4.1. Investigate and measure the nature and extent of conflict and submit a written report to Representative Consultant.
  - 4.2. Representative Consultant will issue additional instructions or revise drawings as required to correct conflict.
5. Perform surveys as the work progresses to detect hazards resulting from selective demolition activities.

### **3.2 Utility services**

1. Coordinate existing services indicated to remain and protect them against damage during selective demolition operations.
2. Provide Owner with min. 3 weeks advance notice prior to a contemplated utility service shut off or temporary disconnection and obtain written approval prior to the scheduled demolition work.
3. Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
  - 3.1. Arrange to shut off affected utilities with utility companies.

- 3.2. If utility services are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary utilities that bypass area of selective demolition and that maintain continuity of service to other parts of building.
- 3.3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
- 3.4. Cut off pipe or conduit to a minimum of 25 mm below slab, and remove concrete mound. Patch concrete using cementitious grout.
4. Coordinate with Mechanical and Electrical Divisions for shutting off, disconnecting, removing, and sealing or capping utilities.
5. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

### **3.3 Preparation**

1. Identify and mark all equipment and materials identified to be retained by Owner or to be re used in subsequent construction. Separate and store items to be retained in an area away from area of demolition and protect from accidental disposal.
2. Post warning signs on electrical lines and equipment that must remain energized to serve other areas during period of demolition.
3. Confirm that all electrical and telephone service lines entering buildings are not disconnected.
4. Do not disrupt active or energized utilities crossing the demolition site.
5. Provide and maintain barricades, warning signs, protection for workmen and the public during the full extent of the Work. Read drawings carefully to ascertain extent of protection required.
6. Mark all materials required to be re used, store in a safe place until ready for re installation.
7. Adjust all junction boxes, receptacles and switch boxes flush with new wall construction where additional layers to existing construction are indicated.
8. Remove permanent marker lines used or found on exposed surfaces and at surfaces indicated for subsequent finish materials. Mechanically remove permanent marker lines and associated substrates where permanent marker lines occur and patch surface. Sealing or priming over permanent marker lines is not acceptable.

### **3.4 Concrete slab reinforcing**

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

### **3.5 Selective demolition**

1. Demolish and dismantle work in a neat and orderly manner and in strict accordance with all regulations.
2. At end of each day's work, leave Work in safe condition so that no part is in danger of toppling or falling.
3. Demolish in a manner to minimize dusting and to prevent migration of dust.
4. Selling or burning of materials on the site is not permitted.

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5. Remove concrete bases by cutting and chipping, take precautions against slab cracking and degradation. Grind edges smooth, fill and make level with self levelling grout.
  6. Fill all openings in concrete block walls with concrete masonry units, coursing to match existing, prepare ready to receive new finishes to match existing.
    - 6.1. Provide bond beams in new openings cut into existing concrete masonry unit walls.
    - 6.2. Provide finished end masonry units to patch and repair for new jamb sections in existing concrete masonry unit walls.
  7. Fill all openings in gypsum board walls with gypsum board and steel framing to match existing, skim coat to make wall smooth and even.
  8. Demolish existing carpet, resilient flooring and adhesive remnants as follows:
    - 8.1. Vacuum existing carpet thoroughly, prior to removal, using vacuum equipped with power head/sweeper.
    - 8.2. Apply fine mist water spray to carpet as required to minimize dust generation during removal. Avoid spraying near electrical outlets.
    - 8.3. Demolish existing carpet and resilient floor finishes, remove and dispose of off site.
    - 8.4. Remove adhesive to the greatest extent possible using scrapping tools and as follows:
      - 8.4.1. Do not use solvent based cleaners to remove adhesive remnants.
      - 8.4.2. Lightly shot blast or grind floor using machine designed for purpose to remove adhesive remnants.
      - 8.4.3. Vacuum floor ready for application of skim coating.
      - 8.4.4. Repair all slab depressions and damage with cementitious patching compound.
      - 8.4.5. Skim coat floor with minimum 1 mm thick cementitious floor underlayment compatible with new flooring materials.
    - 8.5. Floor substrate shall be smooth, free from ridges and depressions, and adhesive remnants that could telegraph through resilient flooring materials and carpets.
    - 8.6. Recycle materials in accordance with Section 01 74 00 – Cleaning and Waste Management.
  9. Demolish existing ceramic tile finishes. Remove setting bed or adhesive to the greatest extent possible using mechanical scrapping tools and as follows:
    - 9.1. Saw cut edge of tile for clean and even transition joint between existing tile to remain and new flooring materials
    - 9.2. Lightly shot blast or grind floor to remove remnants of setting materials
    - 9.3. Vacuum floor ready for application of skim coating
    - 9.4. Repair all slab depressions and damage with cementitious patching compound. Skim coat floor with minimum 1 mm thick cementitious floor underlayment compatible with new flooring materials
  10. Demolish completely all ceiling panels and grid as indicated.
  11. Patch and repair all walls, floor and ceilings damaged during demolition with material matching adjacent walls, prepare ready for new finishes.
  12. Patch and repair all radiation cabinets, mechanical equipment and electrical fixtures damaged or exposed during demolition to match adjacent finished surfaces.

### **3.6 Protection**

1. Prevent debris from blocking drainage inlets and systems and ground draining, and protect material and electrical systems and services that must remain in operation.
2. Arrange demolition and shoring work so that interference with the use of adjoining areas by the Owner and end users is minimized.
3. Maintain safe access to and egress from occupied areas adjoining.
4. Provide and maintain fire prevention equipment and alarms accessible during demolition.

### **3.7 Cleaning**

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

**END OF SECTION**

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## **Section 04 20 00**

### **Unit Masonry**

#### **Part 1 General**

##### **1.1 Reference standards**

1. ASTM International
  - 1.1. ASTM A1064/A1064M- 17 Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
  - 1.2. ASTM C73-14 Standard Specification for Calcium Silicate Face Brick (Sand-Lime Brick).
2. CSA Group (CSA)
  - 2.1. CAN/CSA-A82-14, Fired Masonry Brick Made From Clay or Shale.
  - 2.2. CAN/CSA-A165 SERIES-04 (R2014), CSA Standards on Concrete Masonry Units (Consists of A165.1-04 Concrete Block Masonry Units, A165.2 Concrete Brick Masonry Units, A165.3 Prefaced Concrete Masonry Units).
  - 2.3. CAN/CSA-A179-04 (R2014), Mortar and Grout for Unit Masonry.
  - 2.4. CAN/CSA-A370-14, Connectors for Masonry.
  - 2.5. CAN/CSA A371-04 (R2014), Masonry Construction for Buildings.
  - 2.6. CSA G30.18-09 (R2014), Carbon Steel Bars for Concrete Reinforcement.
  - 2.7. CSA S304-14 - Design of masonry structures.
3. Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - 3.1. Material Safety Data Sheets (SDS).

##### **1.2 Action and informational submittals**

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
  - 2.1. Submit manufacturer's instructions, printed product literature and data sheets for unit masonry products, mortar and grout, connectors, anchorage and reinforcing, and accessories. Include product characteristics, performance criteria, physical size, finish and limitations.
3. Samples:
  - 3.1. Submit duplicate samples of each unit exposed in final construction for review and acceptance.
  - 3.2. Samples will be returned for inclusion into work.

##### **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:

- 3.1. Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
- 3.2. Store and protect masonry products from nicks, scratches, and blemishes.
- 3.3. Replace defective or damaged materials with new.
4. Packaging Waste Management: As specified in Construction Waste Management Plan in accordance with Section 01 74 00 - Cleaning and Waste Management.

#### **1.4 Cold weather requirements**

1. Supplement requirements of CAN3-A371 as follows:
  - 1.1. Maintain temperature of mortar between -5C and 5C until used.

#### **1.5 Hot weather requirements**

1. Supplement requirements of CAN3-A371 as follows:
  - 1.1. Protect freshly laid masonry from drying too rapidly by means of waterproof, non-staining coverings.

### **Part 2 Products**

#### **2.1 Masonry units**

1. Standard concrete block units: to CAN/CSA-A165.1.
  - 1.1. Normal Weight Classification:
    - 1.1.1. Hollow units: H/15/A/O, H/20/A/O and H/25/A/O
    - 1.1.2. Semi-solid units: SS/15/A/O, SS/20/A/O and SS/25/A/O
    - 1.1.3. Full solid units: SF/15/A/O, SF/20/A/O and SF/25/A/O
  - 1.2. Light Weight Classification:
    - 1.2.1. Hollow units: H/15/C/O
    - 1.2.2. Semi-solid units: SS/15/C/O
    - 1.2.3. Full solid units: SF/15/C/O
  - 1.3. Colour: Grey
  - 1.4. Size: Metric
  - 1.5. Special shapes: provide square units for exposed corners. Provide purpose-made shapes for lintels and bond beams. Provide additional special shapes as indicated.

#### **2.2 Reinforcement and connectors**

1. Bar reinforcement: to CAN/CSA-A371, Grade 400.
2. Wire reinforcement: plain wire to ASTM A 1064/A 1064M, truss type.
3. Connectors: to CAN/CSA-A370.
  - 3.1. Corrosion resistance: to CAN/CSA-A370

#### **2.3 Mortar and grout**

1. Mortar: to CAN/CSA-A179.
  - 1.1. Use aggregate passing 1.18 mm sieve where 6 mm thick joints are indicated.
2. Mortar Type:

- 2.1. Exterior non-loadbearing walls and parapet walls: N based on proportion specifications.
- 2.2. Interior non-loadbearing walls: Type N based on proportion specifications.
3. Mortar for foundation walls, manholes, sewers, pavements, walks, patios and other exterior masonry at or below grade: type M based on proportion specifications.
4. Following applies regardless of mortar types and uses specified above:
  - 4.1. Mortar for stonework: type N based on proportion specifications.
  - 4.2. Mortar for grouted reinforced masonry: type S based on proportion specifications.
5. Grout: to CAN/CSA-A179, Table 3.
6. Parging mortar: to CAN/CSA-A179.

### **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.
  - 1.1. Visually inspect substrate in presence of Consultant.
  - 1.2. Inform Consultant of unacceptable conditions immediately upon discovery.
  - 1.3. Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Architectural or Structural Consultant.

#### **3.2 Installation**

1. Do masonry work in accordance with CAN/CSA-A371 except where specified otherwise.
  - 1.1. Bond: running stretcher bond with vertical joints in perpendicular alignment and centred on adjacent stretchers above and below.
  - 1.2. Ensure coursing matches existing
  - 1.3. Jointing: tool where exposed or where paint or other finish coating is specified to provide smooth compressed surface.
2. Build masonry plumb, level, and true to line, with vertical joints in alignment.
3. Layout coursing and bond to achieve correct coursing heights, and continuity of bond above and below openings, with minimum of cutting.

#### **3.3 Reinforcing and connecting**

1. Install masonry connectors and reinforcement in accordance with CAN/CSA-A370, CAN/CSA-A371 and CSA S304.1 unless indicated otherwise.
2. Prior to placing concrete, obtain Consultant's approval of placement of reinforcement and connectors.

#### **3.4 Bonding and tying**

1. Bond walls of two or more wythes using metal connectors in accordance with CAN/CSA-A371, and as indicated.
2. Tie masonry veneer to backing in accordance with National Building Code of Canada (NBC) 2015, CAN/CSA-A371, CSA S304.1 and as indicated.

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### **3.5 Modifications to existing masonry**

1. Match existing bond and coursing height of adjacent masonry to remain.
2. Tooth new masonry into existing masonry in run of wall and at intersections with existing partitions.
3. At new openings in masonry walls, remove units, clean and re-install rotated to conceal cut and expose finish surface.
4. Clean bond areas of adjacent masonry to remain, remove loose material and prepare masonry to receive new masonry toothed in.
5. Install reinforcement as necessary to provide continuity of reinforcing and stability between existing and new masonry work.
6. Provide repair anchors as necessary to stabilize existing masonry adjacent to and affected by the Work.

### **3.6 Grouting**

1. Grout masonry in accordance with CAN/CSA-A179, CAN/CSA-A371 and as indicated.

### **3.7 Anchors**

1. Supply and install metal anchors as indicated.

### **3.8 Lateral support and anchorage**

1. Supply and install lateral support and anchorage in accordance with CSA S304.1 and as indicated.

### **3.9 Site tolerances**

1. Tolerances of CAN/CSA-A371 apply.

### **3.10 Field quality control**

1. Inspection and testing will be carried out by Testing Laboratory designated by Consultant.

### **3.11 Cleaning**

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning and Waste Management.
  - 1.1. 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 00 - Cleaning and Waste Management .
3. Waste Management:
  - 3.1. separate waste materials for recycling in accordance with Section 01 74 00 - Cleaning and Waste Management.
  - 3.2. Return pallets to masonry manufacturer for re-use.
  - 3.3. Return surplus masonry materials to manufacturer for recycling and/or re-use.

### **3.12 Protection**

1. Keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect from wind-driven rain until masonry work is completed and protected by flashings or other permanent construction.
2. Protect masonry and other work from marking and other damage. Protect completed work from mortar droppings. Use non-staining coverings.
3. Repair damage to adjacent materials caused by masonry products installation.

**END OF SECTION**

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## **Section 05 50 00**

### **Metal Fabrications**

#### **Part 1 General**

##### **1.1 Reference standards**

1. ASTM International (ASTM)
  - 1.1. ASTM A 53/A 53M-12, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
  - 1.2. ASTM A269M-15a, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
  - 1.3. ASTM A307-14, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
2. CSA Group (CSA)
  - 2.1. CSA G40.20-13 /G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
  - 2.2. CAN/CSA G164-M92 (R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
  - 2.3. CSA S16-14, Design of Steel Structures.
  - 2.4. CSA W48-14, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
  - 2.5. CSA W59-13, Welded Steel Construction (Metal Arc Welding) Metric.
3. Green Seal Environmental Standards (GS)
  - 3.1. GS-11-2011, Paints and Coatings.
4. The Master Painters Institute (MPI)
  - 4.1. Architectural Painting Specification Manual - current edition.
5. ULC Standards (ULC)
  - 5.1. UL 2768-2011, Architectural Surface Coatings.
  - 5.2. UL 2760-2011, Surface Coatings - Recycled Water-borne.

##### **1.2 Action and informational submittals**

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
  - 2.1. Submit manufacturer's instructions, printed product literature and data sheets for all materials and include product characteristics, performance criteria, physical size, finish and limitations.
3. Shop Drawings:
  - 3.1. Submit drawings stamped and signed by professional engineer registered or licensed in Ontario, Canada.
  - 3.2. 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 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:
  - 3.1. Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - 3.2. 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 300W.
2. Steel pipe: to ASTM A53/A53M standard weight, black finish.
3. Welding materials: to CSA W59.
4. Welding electrodes: to CSA W48 Series.
5. Bolts and anchor bolts: to ASTM A307.
6. Stainless steel tubing: to ASTM A269, Type 302.
7. Lintels to support new openings in CMU partitions. Refer to Structural.
8. HSS posts to support freestanding partitions at Equipment Distribution and Return L1-26 and TV Production Control L1-08
9. Metal Trim at Corridor Lenticular Wall. Refer to **Alternate Price 1**.
  - 9.1. 16ga brake-shape steel, powder coat finish, RAL colour to be selected by Consultant.
10. Metal Plate at Equipment loans desk M1:
  - 10.1. 6mm steel plate, powder coated, powder coat finish, RAL colour to be selected by Consultant
11. Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.

### **2.2 Fabrication**

1. Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
2. Use self-tapping shake-proof flat headed screws on items requiring assembly by screws or as indicated.
3. Where possible, fit and shop assemble work, ready for erection.
4. Exposed welds continuous for length of each joint. File or grind exposed welds smooth and flush.

## **2.3 Finishes**

1. Galvanizing: hot dipped galvanizing with zinc coating 600 g/m<sup>2</sup> to CAN/CSA-G164.
2. Chromium plating: chrome on steel with plating sequence of 0.009 mm thickness of copper 0.010 mm thickness of nickel and 0.0025 mm thickness of chromium.
3. Shop coat primer: MPI- 5.1B.
4. Zinc primer: zinc rich, ready mix to MPI-INT 5.2C in accordance with chemical component limits and restrictions requirements and VOC limits.
5. Powder Coat: Manufacturer recommended pre-treatment followed by a baked-on polyester powder coat; minimum 2.5 mils (0.065 mm) cured film thickness. RAL colour to be selected by Architect.

## **2.4 Isolation coating**

1. Isolate aluminum from following components, by means of bituminous paint:
  - 1.1. Dissimilar metals except stainless steel, zinc, or white bronze of small area.
  - 1.2. Concrete, mortar and masonry.
  - 1.3. Wood.

## **2.5 Shop painting**

1. Primer: VOC limit 250 g/L maximum to UL 2768.
2. Apply one shop coat of primer to metal items, with exception of galvanized or concrete encased items.
3. Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Paint when temperature minimum 7 degrees C.
4. Clean surfaces to be field welded; do not paint.

## **2.6 Angle lintels**

1. Steel angles: prime painted, sizes indicated for openings. Provide 150 mm minimum bearing at ends.
2. Weld or bolt back-to-back angles to profiles as indicated.
3. Finish: shop painted.
  - 3.1. Primer: VOC limit 250 g/L maximum to GS-11 when applied onsite.

## **Part 3 Execution**

### **3.1 Examination**

1. Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts acceptable for metal fabrications installation in accordance with manufacturer's written instructions.
  - 1.1. Visually inspect substrate in presence of Consultant.
  - 1.2. Inform Consultant of unacceptable conditions immediately upon discovery.
  - 1.3. Proceed with installation only after unacceptable conditions remedied and after receipt of written approval to proceed from Consultant.

### **3.2 Erection - general**

1. Do welding work in accordance with CSA W59 unless specified otherwise.

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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. Weld field connection and Make field connections with bolts to CSA S16 as per indicated.
  7. Deliver items over for casting into concrete and building into masonry together with setting templates to appropriate location and construction personnel.
  8. Touch-up rivets, field welds, bolts and burnt or scratched surfaces with primer after completion of:
    - 8.1. Primer: maximum VOC limit 250 g/L to GS-11.
  9. Touch-up galvanized surfaces with zinc rich primer where burned by field welding.
    - 9.1. Primer: maximum VOC limit 250 g/L to GS-11.

### **3.3 Cleaning**

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
  - 1.1. 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 00 - Cleaning.

### **3.4 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**

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## **Section 06 10 53**

### **Miscellaneous Rough Carpentry**

#### **Part 1 General**

##### **1.1 Reference standards**

1. American National Standards Institute/National Particleboard Association (ANSI/NPA)
  - 1.1. ANSI/NPA A208.1-2009 Particleboard.
2. ASTM International
  - 2.1. ASTM A123/A123M-15, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - 2.2. ASTM A153/A153M-09 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
  - 2.3. ASTM A307-14 Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60000 PSI Tensile Strength.
  - 2.4. ASTM A653/A653M-15, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - 2.5. ASTM D 5055-13e1, Standard Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists.
  - 2.6. ASTM D 5456-14b, Standard Specification for Evaluation of Structural Composite Lumber Products.
  - 2.7. ASTM F1667-13 Standard Specification for Driven Fasteners: Nails, Spikes and Staples.
3. Canadian General Standards Board (CGSB)
  - 3.1. CAN/CGSB-11.3-M87, Hardboard.
  - 3.2. CAN/CGSB-71.26-M88, Adhesive for Field-Gluing Plywood to Lumber Framing for Floor Systems.
4. Canadian Wood Council
  - 4.1. Wood Design Manual 2010 (R2014) Edition
  - 4.2. Engineering Guide for Wood Frame Construction 2014
5. CSA Group (CSA)
  - 5.1. CAN/CSA-A123.2-03 (R2013), Asphalt Coated Roofing Sheets.
  - 5.2. CSA B111-1974 (R2003), Wire Nails, Spikes and Staples.
  - 5.3. CSA O86-14 Engineered Design in Wood
  - 5.4. CSA O112.9-10, Evaluation of Adhesives for Structural Wood Products (Exterior Exposure).
  - 5.5. CSA O121-08 (R2013), Douglas Fir Plywood.
  - 5.6. CSA O141-05 (R2014), Softwood Lumber.
  - 5.7. CSA O151-09 (R2014), Canadian Softwood Plywood.
  - 5.8. CSA O153-13, Poplar Plywood.
  - 5.9. CSA O325-07 (R2012), Construction Sheathing.
  - 5.10. CAN/CSA-S406-92 (R2008), Construction of Preserved Wood Foundations.

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- 5.11. CAN/CSA-Z809-08, Sustainable Forest Management.
  6. Forest Stewardship Council (FSC)
    - 6.1. FSC-STD-01-001-2004, FSC Principle and Criteria for Forest Stewardship.
  7. National Lumber Grades Authority (NLGA)
    - 7.1. Standard Grading Rules for Canadian Lumber 2010.
  8. National Research Council Canada (NRC)
    - 8.1. National Building Code of Canada 2015 (NBC).
  9. South Coast Air Quality Management District (SCAQMD), California State (SCAQMD)
    - 9.1. SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.
  10. Sustainable Forestry Initiative (SFI)
    - 10.1. SFI-2015-2019 Standard.
  11. Underwriters' Laboratories of Canada (ULC)
    - 11.1. CAN/ULC-S706-09, Standard for Wood Fibre Insulating Boards for Buildings.

## **1.2 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:
  - 3.1. Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - 3.2. Store materials off ground with moisture barrier at both ground level and as a cover forming a well-ventilated enclosure, with drainage to prevent standing water.
  - 3.3. Replace defective or damaged materials with new.

## **Part 2 Products**

### **2.1 Furring and blocking**

1. Furring, blocking:
  - 1.1. Board sizes: as shown on drawings, "Standard" or better grade.
  - 1.2. Fire retardant treated

### **2.2 Panel materials and application**

1. Electrical equipment mounting boards:
  - 1.1. Plywood, DFP, CSP or PP, square edge 19mm thick.
  - 1.2. Fire retardant treated.
2. Plywood blocking
  - 2.1. Where indicated on drawings
  - 2.2. Plywood, DFP, CSP or PP square edge 19mm thick.
  - 2.3. Fire retardant treated

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### **2.3 Accessories**

1. General purpose adhesive: to CSA O112.9.
2. Nails, spikes and staples: to ASTM F1667.
3. Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and washers.
4. Fastener Finishes:
  - 4.1. Galvanizing: to ASTM A653, use galvanized fasteners for exterior work.
  - 4.2. Plated finish: use cadmium plated fasteners for interior work.

## **Part 3 Execution**

### **3.1 Furring and blocking**

1. Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding electrical equipment mounting boards, AV equipment, and other work as required.

### **3.2 Cleaning**

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning and Waste management.
  - 1.1. 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 00 - Cleaning and Waste Management.

### **3.3 Waste management**

1. Separate waste materials for reuse or recycling in accordance with Section 01 74 00 - Cleaning and Waste Management .
2. Re-use scrap lumber to the greatest extent possible. Separate scrap lumber for use on site as accessory components, including: shims, bracing, and blocking.
3. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill. Prevent saw dust and wood shavings from entering the storm drainage system.
4. Do not burn scrap lumber that has been pressure treated.
5. Do not send lumber treated with pentachlorophenol, CCA, or ACA to co-generation facilities or "waste-to-energy" facilities.

### **3.4 Protection**

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

**END OF SECTION**

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## **Section 06 20 00**

### **Finish Carpentry**

#### **Part 1 General**

##### **1.1 Section Includes**

1. Millwork (M1 Service counter and Knee wall cap)
2. Custom Wood Window frames (Screen type S1)

##### **1.2 Related requirements**

1. Section 06 10 53 Miscellaneous Rough Carpentry
2. Section 09 91 23 Interior Painting: Site finishing for finish carpentry.
3. Section 07 92 00 Joint Sealants

##### **1.3 Reference standards**

1. American National Standards Institute (ANSI)
  - 1.1. ANSI A208.1-09, Particleboard.
  - 1.2. ANSI A208.2-09, Medium Density Fibreboard (MDF) for Interior Applications.
  - 1.3. ANSI/HPVA HP-1-10, American National Standard for Hardwood and Decorative Plywood.
  - 1.4. ANSI/BHMA A156.16 Auxiliary Hardware.
  - 1.5. ANSI/ASME 18.6.1 1981 (R2012) Wood Screws (Inch Series).
2. Architectural Woodwork Manufacturers Association of Canada (AWMAC) and Architectural Woodwork Institute (AWI)
  - 2.1. Architectural Woodwork Quality Standards, 2nd edition, 2014.
3. ASTM International
  - 3.1. ASTM A 153/A 153M-16, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
  - 3.2. ASTM E1333-14 Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates from Wood Products Using a Large Chamber.
  - 3.3. ASTM F1667-13 Standard Specification for Driven Fasteners: Nails, Spikes and Staples.
4. Canadian General Standards Board (CGSB)
  - 4.1. CAN/CGSB-11.3-M87, Hardboard.
5. CSA Group (CSA)
  - 5.1. CSA O121-08 (R2013), Douglas Fir Plywood.
  - 5.2. CSA O151-09 (R2014), Canadian Softwood Plywood.
  - 5.3. CSA O153-M13, Poplar Plywood.
  - 5.4. CAN/CSA-Z809-08 (R2013), Sustainable Forest Management.
6. Forest Stewardship Council (FSC)
  - 6.1. FSC-STD-01-001-2004, FSC Principle and Criteria for Forest Stewardship.

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7. Health Canada/Workplace Hazardous Materials Information System (WHMIS)
    - 7.1. Material Safety Data Sheets (SDS).
  8. South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
    - 8.1. SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.
  9. Sustainable Forestry Initiative (SFI)
    - 9.1. SFI-2015-2019 Standard.
  10. Underwriters Laboratories of Canada (ULC)
    - 10.1. CAN/ULC-S104-10, Standard Method for Fire Tests of Door Assemblies.
    - 10.2. CAN/ULC-S105-09, Standard Specification for Fire Door Frames.

#### **1.4 Action and informational submittals**

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
  - 2.1. Submit manufacturer's instructions, printed product literature, data sheets and catalogue pages for specified products. Include product characteristics, performance criteria, dimensions and profiles, finish and limitations on use.
  - 2.2. For S1 frames, provide product data for gasketing, sealants, and finish.
3. Shop Drawings:
  - 3.1. Indicate profiles and dimensions, assembly techniques, jointing, methods of fastening, terminations and other related details.
  - 3.2. Indicate materials, thicknesses, finishes and hardware.
  - 3.3. Where necessary, show location and type of blocking and backing required within supporting assemblies.
  - 3.4. For S1 frames, show frame profiles, glazing makeup, airspace, joinery, and installation details.
4. Samples:
  - 4.1. Submit duplicate 300 mm x 300 mm long representative samples of all wood and wood veneer finishes
  - 4.2. Applied coating samples:
    - 4.2.1. For transparent finish, submit duplicate samples of each species and cut of wood veneer to be used, finished as specified.
5. Certifications: submit certificates signed by manufacturer certifying materials comply with specified performance characteristics, physical properties and requirements of referenced standards.

#### **1.5 Quality assurance**

1. Perform Work of this Section by finish carpentry contractor with minimum 5 years of current experience.
2. Finish carpentry will conform to "Premium" quality standards of the Architectural Woodwork Manufacturers Association of Canada (AWMAC).
3. S1 Window frames to be built by a carpentry contractor with demonstrated experience constructing acoustically sealed windows for a studio environment. Provide examples of at least 3 completed comparable projects from the past 10 years.

## **1.6 Delivery, storage and handling**

1. Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with AWS recommendations and as follows.
2. Deliver finish carpentry materials only when area of work is enclosed, plaster and concrete work is dry, area is broom clean and site environmental conditions are acceptable for installation.
3. Storage and Handling Requirements:
  - 3.1. Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - 3.2. Maintain indoor temperature and humidity within range recommended by AWS for location of the Work.
  - 3.3. Store products on site as specified for minimum 72 hours prior to installation.
  - 3.4. Store and protect finish carpentry products from moisture, nicks, scratches, and blemishes.
  - 3.5. Replace defective or damaged materials with new.

## **Part 2 Products**

### **2.1 Materials**

1. MDF (medium density fibreboard) core: to ANSI A208.2, density 769 kg/m<sup>3</sup>, 19 mm thick unless indicated otherwise.
  - 1.1. Use moisture resistant MR grade for countertops and splash-backs to receive plumbing fixtures.
2. Interior mat-formed wood particleboard: to ANSI/NPA A208.1, industrial grade M-2 or M-3, medium density (640-800 kg/m<sup>3</sup>), thickness 19 mm unless indicated otherwise.
  - 2.1. Use moisture resistant grade 2-M-2 or 2-M-3 for countertops and splash-backs to receive plumbing fixtures.
3. Douglas fir plywood (DFP): to CSA O121, standard construction.
4. Canadian softwood plywood (CSP): to CSA O151, standard construction.
5. Hardwood plywood: to ANSI/HPVA HP-1.
6. Poplar plywood (PP): to CSA O153, standard construction.
7. Hardboard: to CAN/CGSB-11.3.
8. Low density fibreboard: to CSA-A247M.
9. Plastic Laminate (PLAM): Panolam Surface Systems Afternoon Showers, SD finish
10. Solid Surface Fabrications (SO): Corian Antarctica, 13mm thick
11. S1 Glazing Frames
  - 11.1. Solid maple hardwood, clear, furniture-grade, kiln-dried
  - 11.2. Shop applied paint finish with satin finish water-based polyurethane clear coat. Paint colour to be selected by architect
  - 11.3. All wood members sanded smooth; edges eased.
  - 11.4. Provide integrated stops for glazing, sized to accommodate sealant/gasket compression without bowing
  - 11.5. All joints to be fully sealed and airtight

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## **2.2 Flame Spread Rating of Wood Finishes**

1. Where wood material is used for wall finishes construction, the Flame Spread rating must be 150 or less on any exposed surface, or any surface that would be exposed by cutting through the material in any direction, unless noted otherwise. Use fire retardant spray to meet flame spread ratings required .

## **2.3 Fastenings**

1. Provide screws, bolts, expansion shields and other fastening devices required for satisfactory installation.
2. Exposed fasteners to match finish of hardware.
3. Nails and staples: to ASTM F1677, stainless steel galvanized to ASTM A 153/A 153M for exterior work, interior humid areas; stainless steel finish elsewhere.
4. Wood screws: to ANSI/ASME 18.6.1, countersunk flush type unless indicated otherwise, in sizes to suit application, galvanized to ASTM A 153/A 153M for exterior work, interior humid areas, stainless steel for other locations.
5. Splines: metal wood.
6. Panel adhesive: in accordance with Section 07 92 00 - Joint Sealants and as recommended by manufacturer.
  - 6.1. VOC limit 250 g/L maximum to GS-36.
  - 6.2. Use least toxic sealants, adhesives, sealers, and finishes necessary to comply with requirements of this section.

## **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 AWS tolerances and requirements of Contract Documents.
  - 1.1. Visually inspect substrate.
  - 1.2. Proceed with installation only after unacceptable conditions have been remedied ..

### **3.2 Preparation**

1. Back prime woodwork before installation, to AWS.

### **3.3 Installation**

1. Install items of finish carpentry in accordance with AWMAC AWS grade specified for respective items.
2. In case of conflict between Contract Documents and AWS grade requirements, Contract Documents govern.
3. Install items of finish carpentry at locations shown on drawings.
  - 3.1. Position accurately, level, plumb straight.
  - 3.2. Fasten and anchor securely.
4. 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.

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5. Form joints to conceal shrinkage.

### **3.4 Construction**

1. Fastening:
- 1.1. Position items of finished carpentry work accurately, level, plumb, true and fasten or anchor securely.
  - 1.2. Design and select fasteners to suit size and nature of components being joined. Use proprietary devices as recommended by manufacturer.
  - 1.3. 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.
  - 1.4. Replace items of finish carpentry with damage to wood surfaces including hammer and other bruises.

### **3.5 Cleaning**

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning and Waste Management.
  - 1.1. 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 00 - Cleaning and Waste Management.
3. Waste Management: separate waste materials for reuse or recycling in accordance with Section 01 74 00 - Cleaning and Waste Management.

### **3.6 Touchup and protection**

1. Fill and retouch all nicks, chips and scratches in factory finishes and substrate materials to AWS standards. Replace damaged items that cannot be repaired to AWS standards.
2. Protect installed products and components from damage during construction.
3. Repair damage to adjacent materials caused by finish carpentry installation.
4. Leave work to be site finished ready for finishing by Section 09 91 23 - Interior Painting.

**END OF SECTION**

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## **Section 07 21 16**

### **Blanket Insulation**

#### **Part 1 General**

##### **1.1 Section Includes**

1. Insulation for interior partitions.
2. Semi-rigid Insulation for exterior wall

##### **1.2 Reference standards**

1. ASTM International
  - 1.1. ASTM C553-13, Standard Specification for Mineral Fibre Blanket Thermal Insulation for Commercial and Industrial Applications.
  - 1.2. ASTM C665-12, Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
  - 1.3. ASTM C1320-10, Standard Practice for Installation of Mineral Fiber Batt and Blanket Thermal Insulation for Light Frame Construction.
2. CSA Group
  - 2.1. CSA B111-1974 (R2003), Wire Nails, Spikes and Staples.
  - 2.2. CSA B149 PACKAGE-10, Consists of B149.1, Natural Gas and Propane Installation Code and B149.2, Propane Storage and Handling Code.
3. Underwriters Laboratories of Canada (ULC)
  - 3.1. CAN/ULC-S604-2012, Standard for Factory-Built Type A Chimneys.
  - 3.2. CAN/ULC-S702-2012, Standard for Mineral Fibre Insulation for Buildings.

##### **1.3 Action and informational submittals**

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
  - 2.1. Submit manufacturer's instructions, printed product literature and data sheets for blanket insulation and include product characteristics, performance criteria, physical size, finish and limitations.
3. Certificates:
  - 3.1. Submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
4. Test Reports:
  - 4.1. Submit certified test reports showing compliance with specified performance characteristics and physical properties.
5. Sustainable Design Submittals:

##### **1.4 Delivery, storage and handling**

1. Storage and Handling Requirements:

- 1.1. Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
- 1.2. Store and protect specified materials from nicks, scratches, and blemishes.
- 1.3. Replace defective or damaged materials with new.

## **Part 2 Products**

### **2.1 Insulation**

1. Batt and blanket mineral fibre: to CAN/ULC-S702.
  - 1.1. Type: 1.
  - 1.2. Thickness: as indicated on drawings.
  - 1.3. Acoustical Performance: NRC - 1.05 or better.

### **2.2 Accessories**

1. Insulation clips:
  - 1.1. Impale type, perforated 50 x 50 mm cold rolled carbon steel 0.8 mm thick, adhesive back, spindle of 2.5 mm diameter annealed steel, length to suit insulation, 25 mm diameter washers of self locking type.
2. Nails: galvanized steel, length to suit insulation plus 25 mm, to CSA B111.
3. Staples: 12 mm minimum leg.
4. Tape: as recommended by manufacturer.

## **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 blanket insulation application in accordance with manufacturer's written instructions.
  - 1.1. Visually inspect substrate in presence of Consultant.
  - 1.2. Inform Consultant of unacceptable conditions immediately upon discovery.
  - 1.3. Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

### **3.2 Installation**

1. Install insulation to maintain continuity of thermal protection to building elements and spaces and to ASTM C1320.
2. Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.
3. Do not compress insulation to fit into spaces.
4. Keep insulation minimum 75 mm from heat emitting devices such as recessed light fixtures, and minimum 50 mm from sidewalls of CAN/ULC-S604 Type A chimneys.
5. Do not enclose insulation until it has been inspected and approved by Consultant.

### **3.3 Cleaning**

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
  - 1.1. 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 00 - Cleaning.
3. Waste Management: separate waste materials for reuse or recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
  - 3.1. Remove recycling containers and bins from site and dispose of materials at appropriate facility.

**END OF SECTION**

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## **Section 07 92 00**

### **Joint Sealants**

#### **Part 1 General**

##### **1.1 Reference standards**

1. ASTM International
  - 1.1. ASTM C919-18, Standard Practice for Use of Sealants in Acoustical Applications.
2. Canadian General Standards Board (CGSB)
  - 2.1. CGSB 19-GP-5M-1984, Sealing Compound, One Component, Acrylic Base, Solvent Curing (Issue of 1976 reaffirmed, incorporating Amendment No. 1).
  - 2.2. CAN/CGSB-19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.
  - 2.3. CGSB 19-GP-14M-1984, Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing (Reaffirmation of April 1976).
  - 2.4. CAN/CGSB-19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.
  - 2.5. CAN/CGSB-19.24-M90, Multi-component, Chemical Curing Sealing Compound.
3. General Services Administration (GSA) - Federal Specifications (FS)
  - 3.1. FS-SS-S-200-E(2)1993, Sealants, Joint, Two-Component, Jet-Blast-Resistant, Cold Applied, for Portland Cement Concrete Pavement.
4. Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - 4.1. Safety Data Sheets (SDS).

##### **1.2 Action and informational submittals**

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
  - 2.1. Submit manufacturer's instructions, printed product literature and data sheets for joint sealants and include product characteristics, performance criteria, physical size, finish and limitations.
  - 2.2. Manufacturer's product to describe:
    - 2.2.1. Caulking compound.
    - 2.2.2. Primers.
    - 2.2.3. Sealing compound, each type, including compatibility when different sealants are in contact with each other.
3. Samples:
  - 3.1. Submit 2 samples of each type of material and colour.
  - 3.2. Cured samples of exposed sealants for each colour where required to match adjacent material.
4. Manufacturer's Instructions:
  - 4.1. Submit instructions to include installation instructions for each product used.
5. Sustainable Design Submittals:

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### **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:
  - 3.1. Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - 3.2. Store and protect joint sealants from nicks, scratches, and blemishes.
  - 3.3. Replace defective or damaged materials with new.
4. Packaging Waste Management: remove for reuse and return of packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 19 - Waste Management and Disposal.

### **1.5 Site conditions**

1. Ambient Conditions:
  - 1.1. Proceed with installation of joint sealants only when:
    - 1.1.1. Ambient and substrate temperature conditions are within limits permitted by joint sealant manufacturer or are above 4.4 degrees C.
    - 1.1.2. Joint substrates are dry.
    - 1.1.3. 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:
  - 2.1. 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:
  - 3.1. Proceed with installation of joint sealants only after contaminants capable of interfering with adhesion are removed from joint substrates.

### **1.6 Environmental requirements**

1. Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Safety Data Sheets (SDS) acceptable to Health Canada.

## **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. When low toxicity caulks are not possible, confine usage to areas which off gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off gas time.
3. Where sealants are qualified with primers use only these primers.

## **2.2 Sealant material designations**

1. Polysulfide two part:
2. Silicones one part: to CAN/CGSB-19.13.
  - 2.1. ASTM C920, Type S, Grade NS, Class 25; non-sag type, standard colours
3. Acrylic latex one part: to CAN/CGSB-19.17.
  - 3.1. ASTM C834, paintable standard white colour.
4. Acoustical sealant: to ASTM C919.
5. Preformed compressible and non-compressible back-up materials:
  - 5.1. Polyethylene, urethane, neoprene or vinyl foam:
    - 5.1.1. Extruded closed cell foam backer rod.
    - 5.1.2. Size: oversize 30 to 50 %.
  - 5.2. Neoprene or butyl rubber:
    - 5.2.1. Round solid rod, Shore A hardness 70.
  - 5.3. High density foam:
    - 5.3.1. Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m<sup>3</sup> density, or neoprene foam backer, size as recommended by manufacturer.
  - 5.4. Bond breaker tape:
    - 5.4.1. Polyethylene bond breaker tape which will not bond to sealant.

## **2.3 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.
  - 1.1. Visually inspect substrate in presence of Consultant.
  - 1.2. Inform Consultant of unacceptable conditions immediately upon discovery.
  - 1.3. Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

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

### **3.7 Cleaning**

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning and Waste Management.
  - 1.1. Leave Work area clean at end of each day.

- 1.2. Clean adjacent surfaces immediately.
- 1.3. Remove excess and droppings, using recommended cleaners as work progresses.
- 1.4. 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 00 - Cleaning and Waste Management.

### **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**

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## **Section 08 11 00**

### **Metal doors and frames**

#### **Part 1 General**

##### **1.1 Reference standards**

1. American Society for Testing and Materials International (ASTM)
  - 1.1. ASTM A653/A653M-06a, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - 1.2. ASTM B29-03, Standard Specification for Refined Lead.
  - 1.3. ASTM B749-03, Standard Specification for Lead and Lead Alloy Strip, Sheet and Plate Products.
2. Canadian General Standards Board (CGSB)
  - 2.1. CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.
  - 2.2. CGSB 41-GP-19Ma-84, Rigid Vinyl Extrusions for Windows and Doors.
3. CSA Group (CSA)
  - 3.1. CSA-G40.20-04 /G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
  - 3.2. CSA W59-03, Welded Steel Construction (Metal Arc Welding).
4. Canadian Steel Door Manufacturers' Association (CSDMA)
  - 4.1. CSDMA, Recommended Specifications for Commercial Steel Doors and Frames, 2000.
  - 4.2. CSDMA, Selection and Usage Guide for Commercial Steel Doors, 1990.
5. National Fire Protection Association (NFPA)
  - 5.1. NFPA 80-99, Standard for Fire Doors and Fire Windows.
  - 5.2. NFPA 252-03, Standard Methods of Fire Tests of Door Assemblies.
6. Underwriters' Laboratories of Canada (ULC)
  - 6.1. CAN/ULC-S701-01, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.
  - 6.2. CAN/ULC-S702-97, Standard for Thermal Insulation, Mineral Fibre, for Buildings.
  - 6.3. CAN/ULC-S704-03, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.
  - 6.4. CAN4-S104-M80, Standard Method for Fire Tests of Door Assemblies.
  - 6.5. CAN4-S105-M85, Standard Specification for Fire Door Frames Meeting the Performance Required by CAN4-S104.

##### **1.2 System description**

1. Design Requirements:
  - 1.1. Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104 NFPA 80, NFPA 252 for ratings specified or indicated.

- 1.2. Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with CAN4-S104, NFPA 80, 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.
  - 3.1. Submit drawings stamped and signed by professional engineer registered or licensed in Ontario, Canada.
  - 3.2. Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed, louvred, arrangement of hardware fire rating and finishes.
  - 3.3. Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings ,reinforcing, fire rating and finishes.
  - 3.4. Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.
  - 3.5. Submit test and engineering data, and installation instructions.
4. Provide samples in accordance with Section 01 33 00 - Submittal Procedures.

### **1.4 Delivery, storage and handling**

1. Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
2. Waste Management and Disposal:
  - 2.1. Separate waste materials for reuse and recycling in accordance with Section 01 74 00 - Cleaning and Waste Management.

## **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.
  - 1.1. Minimum base steel thickness:
    - 1.1.1. Frames: 1.6mm
    - 1.1.2. Typical doors: 1.2mm
    - 1.1.3. Lock/strike reinforcements: 1.6mm
    - 1.1.4. Hinge reinforcements: 2.7mm
    - 1.1.5. All other reinforcements: 1.6mm
    - 1.1.6. Top and bottom channels: 1.2mm
    - 1.1.7. Glazing stops: 0.9mm
    - 1.1.8. Guard boxes: 0.9mm
    - 1.1.9. Jamb spreaders: 0.9mm
2. Reinforcement channel: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A653M, ZF75.

3. Composites: balance of core materials used in conjunction with lead: in accordance with manufacturers' proprietary design.

## **2.2 Door core materials**

1. New doors not scheduled as "Acoustic": Commercial grade steel doors with honeycomb core, steel frame.
2. New doors scheduled as "Acoustic": Commercial grade steel fire-rated doors with mineral fiber core.
3. Honeycomb construction:
  - 3.1. 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.
4. Stiffened: face sheets welded, insulated core.
  - 4.1. Fire Rated Doors: Mineral fibre insulation to CAN/ULC S702, Type 1A with min. face density 24 kg/m<sup>3</sup>.
5. Temperature rise rated (TRR): core composition to limit temperature rise on unexposed side of door to 250 degrees C at 60 minutes. Core to be tested as part of a complete door assembly, in accordance with CAN4-S104, NFPA 80, NFPA 252, covering Standard Method of Tests of Door Assemblies and listed by nationally recognized testing agency having factory inspection service.

## **2.3 Adhesives**

1. Honeycomb cores and steel components: heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.
2. Polystyrene and polyurethane cores: heat resistant, epoxy resin based, low viscosity, contact cement.
3. Lock-seam doors: fire resistant, resin reinforced polychloroprene, high viscosity, sealant/adhesive.

## **2.4 Primer**

1. Touch-up prime CAN/CGSB-1.181.
  - 1.1. Maximum VOC limit 50 g/L to GC-03.

## **2.5 Paint**

1. Field paint steel doors and frames in accordance with Section 09 91 23 - Interior Painting. Protect weatherstrips, door silencers, labels and hardware from paint. Provide final finish free of scratches or other blemishes.
  - 1.1. Maximum VOC emission level 50 g/L to GS-11.

## **2.6 Accessories**

1. Door silencers: single stud rubber/neoprene type.
2. Interior and Exterior bottom and top caps: steel.
3. Fabricate glazing stops as formed channel, minimum 16 mm height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.
4. Door bottom seal: In accordance with Door Hardware Schedule.
5. Metallic paste filler: to manufacturer's standard.
6. Fire labels: Brass plate, riveted to door and door frame, in accordance with ULC requirements..

7. Sealant: In accordance with Section 07 92 00 .
  - 7.1. Maximum VOC limit 250 g/L to SCAQMD Rule 1168.
8. Glazing: In accordance with Section 08 80 00.
9. Make provisions for glazing as indicated and provide necessary glazing stops.
  - 9.1. Provide removable stainless steel glazing beads for use with glazing tapes and compounds and secured with countersunk stainless steel screws.
  - 9.2. Design exterior glazing stops to be tamperproof.

## **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.
10. Insulate exterior frame components with polyurethane insulation.

## **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.
  - 1.1. Finished product to have no visible seams or joints, square, true and free of distortion.
  - 1.2. Welding to be continuous meeting requirements of CSA W47.1, unless specified otherwise.
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.

7. Securely attach lead to inside of frame profile from return to jamb soffit (inclusive) on door side of frame only.

## **2.10 Door fabrication general**

1. Doors: swing type, flush, with provision for glass and/or louvre openings as indicated.
2. Fabricate doors with longitudinal edges welded. Seams: grind welded joints to a flat plane, fill with metallic paste filler and sand to a uniform smooth finish.
3. Blank, reinforce, drill doors and tap for mortised, templated hardware electronic hardware.
4. Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.
5. Reinforce doors where required, for surface mounted hardware. Provide flush steel top caps to exterior doors. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.
6. Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.
7. Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in conformance with NFPA 80, NFPA 252, CAN4-S104, ASTM E152 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.
8. Manufacturer's nameplates on doors are not permitted.

## **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. Grout all frames where doors are identified as "Acoustic"
6. 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 - Doors Hardware.
2. Provide even margins between doors and jambs and doors and finished floor and thresholds as follows.
  - 2.1. Hinge side: 1.0 mm.
  - 2.2. Latchside and head: 1.5 mm.
  - 2.3. Finished floor, and thresholds: 13 mm.
3. Adjust operable parts for correct function.
4. Install louvres.

### **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.

### **3.6 Glazing**

1. Install glazing for doors frames in accordance with Section 08 80 50 - Glazing.

**END OF SECTION**

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## **Section 08 44 00**

### **Aluminum work**

#### **Part 1 General**

##### **1.1 Section includes**

1. Design, labour, Products, tool, equipment and services necessary for Aluminum Work in accordance with the Contract Documents.
2. Roll-up security shutter. **Refer to Separate Price 2.**
3. Aluminum glazing frames

##### **1.2 References**

1. AAMA 611, Voluntary Standards for Anodized Architectural Aluminum .
2. AAMA CW-10, Care and Handling of Architectural Aluminum from Shop to Site .
3. AAMA CW-DG-1, Aluminum Curtain Wall Design Guide Manual.
4. AAMA/WDMA/ICSA 101/I.S.2/A440, Standard Specification for Windows, Doors, and Unit Skylights.
5. ANSI H35.1 M, Alloy and Temper Designation Systems for Aluminum (Metric) .
6. ASTM A167, Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip .
7. ASTM B209M, Specification for Aluminum and Aluminum-Alloy Sheet and Plate .
8. ASTM 8221 M, Specification for Aluminum-Alloy Extruded Bars, Rods, Wires, Profiles and Tubes .
9. ASTM C920, Specification for Elastomeric Joint Sealants .
10. ASTM E283, Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen .
11. ASTM E330, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference .
12. ASTM E331, Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference .
13. ASTM F738M, Specification for Stainless Steel Metric Bolts, Screws, and Studs .
14. CAN/CGSB 1.108-M, Bituminous Solvent Type Paint.

##### **1.3 Submittals**

1. **Shop Drawings:**
  - 1.1. Submit shop drawings in accordance with the Conditions of the Contract indicating:
    - 1.1.1. Plans, sections, details, type of extrusions, profiles, finishes, panels, spandrels, operating components, doors, related flashings, closures, fillers, and end caps, and sealants .
    - 1.1.2. Products and glazing types .

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- 1.1.3. Anchorage inserts, system installation tolerances .
    - 1.1.4. Section and hardware reinforcement, anchorage, assembly fixings .
    - 1.1.5. Detailing, locations, and allowances for movement, expansion, contraction
    - 1.1.6. Path of cavity drainage and air pressure equalization.
  2. **Samples:**
    - 2.1. Submit two samples of following in accordance with the Conditions of the Contract.
      - 2.1.1. 250 mm long samples of each type of extrusion and finish
      - 2.1.2. 250 x 200 mm samples of insulating glass unit.
      - 2.1.3. One complete corner detail of door frame, glazing, and finish for each door type .
  3. **Reports:**
    - 3.1. Submit substantiating engineering data, and independent test results of pre-tested, Aluminum Work to substantiate compliance with the design criteria including air leakage and water penetration conforming to ASTM E283 and ASTM E331 .
    - 3.2. Submit documentation to substantiate ten years of experience in Aluminum Work manufacture and installation.
  4. **Close-out submittals:**
    - 4.1. Submit Aluminum Work data for incorporation into the Operations and Maintenance Manual as part of the Conditions of the Contract.

#### **1.4 Delivery, storage and handling**

1. Handle Aluminum Work in accordance with AAMA CW-10 .
2. Protect aluminum surfaces with strippable coating. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather. Do not remove before final cleaning of building.

### **Part 2 Products**

#### **2.1 Acceptable manufacturers and Systems**

1. Roll-up Security Grille
  - 1.1. Location: Equipment distribution and returns L1-26
  - 1.2. Manufacturer: Dynamic Closures or Equivalent
  - 1.3. Model: Mini Roll up EX59-P
  - 1.4. Finish: Clear Anodized
  - 1.5. Operation: Electric motor
2. Glazing Screen S2:
  - 2.1. Product: PC-350 Elite, 4 5/8"x 1 3/4" profile, clear anodized aluminum finish

#### **2.2 Fabrication**

1. Fabricate sections true to detail, free from defects impairing appearance, strength and durability. Fabricate extrusions with sharp, well defined corners .
2. Fabricate Aluminum Work in accordance with reviewed shop drawings and manufacturer's written instructions.

3. Fabricate, fit, and secure framing joints and corners accurately, with flush surfaces, and hairline joints. Apply frame sealant at joints for weatherproof seams .
4. Conceal anchors, reinforcement and attachments from view. Fabricate reinforcement in accordance with design requirements.
5. Do not expose manufacturer's identification labels on aluminum assemblies .
6. Fabricate doors and frames complete with internal reinforcements, cut-outs, and recesses to accommodate finish hardware. Reinforce cut-outs to assure adequate strength.
7. Fabricate Aluminum Work closures and trim from aluminum sheet. Form to profile shown. Make weathertight.
8. Fabricate doors of welded construction
9. Glazing stop: Aluminum, square, snap-on type, designed for glazing system.

### **2.3 Finishes**

1. Extrusion finish: Clear anodized to AAMA 611 per Aluminum Association Designation System for Aluminum Finishes AA-M12C22A31.

## **Part 3 Execution**

### **3.1 Examination**

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

### **3.2 Installation**

1. Install Aluminum Work in accordance with reviewed shop drawings, manufacturer's written instructions, and AAMAIWDMA/CSA -101/I.S.2/ A440 and CAN/CSA A440.2.
2. Install Work of this Section securely, in correct location, level, square, plumb, at proper elevations, free of warp or twist.
3. Apply isolation coating at 0.8 mm dry film thickness to prevent corrosive or electrolytic action between dissimilar materials such as aluminum to concrete, masonry, galvanized steel and similar conditions .
4. Install flashings, closures, and trim pieces.
5. Fill voids between aluminum framing and adjacent construction with foam insulation .
6. Install sills in maximum lengths possible. For sills over 1200 mm in length, maintain 3 mm to 6 mm space at each end.
7. Refer to Contract Drawings for glazing type locations. Install glazing in accordance with Section 08 80 00.
8. Install doors and hardware to manufacturers' written instructions. Clean and adjust hardware for correct performance.
9. Adjust operable parts for correct function.
10. Remove damaged or unacceptable Products and assemblies from Site and replace to Consultant's acceptance.
11. Install glass presence markers, in two cross stripes extending from diagonal comers. Maintain markers until final clean-up.

### **3.3 Erection Tolerances**

1. Maximum variation from plumb: 1.5 mm/3 m non-cumulative or 12 mm/30 m, whichever is less .
2. Maximum misalignment of two adjoining members abutting in plane: 0.8 mm.
3. Vertical and horizontal positions: +/- 3 mm.
4. Racking of face: 6 mm, nil in elevation.
5. Operable components: Consistent with smooth operation and weatherproof performance .
6. Maximum perimeter sealant joint between Aluminum Work and adjacent construction: 13 mm.

### **3.4 Cleaning**

1. Maintain Aluminum Work, inside and outside, in clean condition throughout construction period.
2. Remove labels, protective material, and glass presence markers from prefinished surfaces.
3. Remove AAMA/WDMA/CSA -101/I.S.2/A440 and CAN/CSA A440.2 certification labelling after review by consultant.
  - 3.1. Wash Aluminum Work with solution of mild detergent in warm water, with particular attention to recesses and corners. Wipe surfaces clean and dry.

**END OF SECTION**

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## **Section 08 71 00**

### **Door Hardware**

#### **Part 1 General**

##### **1.1 Reference standards**

1. American National Standards Institute (ANSI)/Builders Hardware Manufacturers Association (BHMA)
  - 1.1. ANSI/BHMA A156.1-2000, American National Standard for Butts and Hinges.
  - 1.2. ANSI/BHMA A156.2-2003, Bored and Preassembled Locks and Latches.
  - 1.3. ANSI/BHMA A156.3-2001, Exit Devices.
  - 1.4. ANSI/BHMA A156.4-2000, Door Controls - Closers.
  - 1.5. ANSI/BHMA A156.5-2001, Auxiliary Locks and Associated Products.
  - 1.6. ANSI/BHMA A156.6-2005, Architectural Door Trim.
  - 1.7. ANSI/BHMA A156.8-2005, Door Controls - Overhead Stops and Holders.
  - 1.8. ANSI/BHMA A156.10-1999, Power Operated Pedestrian Doors.
  - 1.9. ANSI/BHMA A156.12-2005, Interconnected Locks and Latches.
  - 1.10. ANSI/BHMA A156.13-2002, Mortise Locks and Latches Series 1000.
  - 1.11. ANSI/BHMA A156.14-2002, Sliding and Folding Door Hardware.
  - 1.12. ANSI/BHMA A156.15-2006, Release Devices - Closer Holder, Electromagnetic and Electromechanical.
  - 1.13. ANSI/BHMA A156.16-2002, Auxiliary Hardware.
  - 1.14. ANSI/BHMA A156.17-2004, Self-closing Hinges and Pivots.
  - 1.15. ANSI/BHMA A156.18-2006, Materials and Finishes.
  - 1.16. ANSI/BHMA A156.19-2002, Power Assist and Low Energy Power - Operated Doors.
  - 1.17. ANSI/BHMA A156.20-2006, Strap and Tee Hinges and Hasps.
2. Canadian Steel Door and Frame Manufacturers' Association (CSDMA)
  - 2.1. CSDMA Recommended Dimensional Standards for Commercial Steel Doors and Frames - 2009.

##### **1.2 Action and informational submittals**

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
  - 2.1. 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. Hardware List:
  - 3.1. Submit contract hardware list.
  - 3.2. Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.

4. 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 door hardware for incorporation into manual.

### **1.4 Maintenance material submittals**

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

### **1.5 Quality assurance**

1. Regulatory Requirements:
  - 1.1. 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.

### **1.6 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. 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:
  - 4.1. Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - 4.2. Store and protect door hardware from nicks, scratches, and blemishes.
  - 4.3. Protect prefinished surfaces with strippable coating.
  - 4.4. Replace defective or damaged materials with new.

## **Part 2 Products**

### **2.1 Hardware items**

1. Refer to attached schedule

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## **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. Install key control cabinet.
7. Use only manufacturer's supplied fasteners.
  - 7.1. Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.
8. Remove construction cores when directed by Owner.
  - 8.1. 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 00 - Cleaning.
  - 1.1. Leave Work area clean at end of each day.
  - 1.2. Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturer's instructions.
  - 1.3. Remove protective material from hardware items where present.
  - 1.4. Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
2. Waste Management: separate waste materials for reuse or recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
  - 2.1. Remove recycling containers and bins from site and dispose of materials at appropriate facility.

### **3.4 Demonstration**

1. Keying System Setup and Cabinet:
  - 1.1. 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.
  - 1.2. Place file keys and duplicate keys in key cabinet on their respective hooks.

- 1.3. Lock key cabinet and turn over key to Owner.
2. Maintenance Staff Briefing:
  - 2.1. Brief maintenance staff regarding:
    - 2.1.1. Proper care, cleaning, and general maintenance of projects complete hardware.
    - 2.1.2. Description, use, handling, and storage of keys.
    - 2.1.3. 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.

**END OF SECTION**

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## **Section 08 80 00**

### **Glazing**

#### **Part 1 General**

##### **1.1 Reference standards**

1. ASTM International
  - 1.1. ASTM C542-05, Standard Specification for Lock-Strip Gaskets.
  - 1.2. ASTM D790-07e1, Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
  - 1.3. ASTM D1003-07e1, Standard Test Method for Haze and Luminous Transmittance of Plastics.
  - 1.4. ASTM D1929-96 (R2001)e1, Standard Test Method for Determining Ignition Temperature of Plastics.
  - 1.5. ASTM D2240-05, Standard Test Method for Rubber Property - Durometer Hardness.
  - 1.6. ASTM E84-10, Standard Test Method for Surface Burning Characteristics of Building Materials.
  - 1.7. ASTM E330-02, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
  - 1.8. ASTM F1233-08, Standard Test Method for Security Glazing Materials and Systems.
2. Canadian General Standards Board (CGSB)
  - 2.1. CAN/CGSB-12.1-M90, Tempered or Laminated Safety Glass.
  - 2.2. CAN/CGSB-12.2-M91, Flat, Clear Sheet Glass.
  - 2.3. CAN/CGSB-12.3-M91, Flat, Clear Float Glass.
  - 2.4. CAN/CGSB-12.4-M91, Heat Absorbing Glass.
  - 2.5. CAN/CGSB-12.6-M91, Transparent (One-Way) Mirrors.
  - 2.6. CAN/CGSB-12.8-97, Insulating Glass Units.
  - 2.7. CAN/CGSB-12.8-97 (Amendment), Insulating Glass Units.
  - 2.8. CAN/CGSB-12.9-M91, Spandrel Glass.
  - 2.9. CAN/CGSB-12.10-M76, Glass, Light and Heat Reflecting.
  - 2.10. CAN/CGSB-12.11-M90, Wired Safety Glass.
  - 2.11. CAN/CGSB-12.12-M90, Plastic Safety Glazing Sheets.
  - 2.12. CAN/CGSB-12.13-M91, Patterned Glass.
3. Environmental Choice Program (ECP)
  - 3.1. CCD-045-95 (R2005), Sealants and Caulking Compounds.
4. Glass Association of North American (GANA)
  - 4.1. GANA Glazing Manual - 2008.
  - 4.2. GANA Laminated Glazing Reference Manual - 2009.

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## **1.2 Action and informational submittals**

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
  - 2.1. 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. Shop Drawings:
  - 3.1. Submit drawings stamped and signed by professional engineer registered or licensed in Ontario, Canada.
4. Samples:
  - 4.1. Submit for review and acceptance of each unit.
  - 4.2. Samples will be returned for inclusion into work.
  - 4.3. Submit duplicate 300x300 mm size samples of all glazing types.
5. Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
6. Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
  - 6.1. Submit testing and analysis of glass under provisions of Section 01 45 00 - Quality Control.

## **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 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 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:
  - 3.1. Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - 3.2. Store and protect glazing and frames from nicks, scratches, and blemishes.
  - 3.3. Protect prefinished aluminum surfaces with wrapping.
  - 3.4. Replace defective or damaged materials with new.
4. Packaging Waste Management: remove for reuse and return of packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 19 - Waste Management and Disposal.

## **1.6 Ambient conditions**

1. Ambient Requirements:
  - 1.1. Install glazing when ambient temperature is 10 degrees C minimum. Maintain ventilated environment for 24 hours after application.
  - 1.2. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

## **1.7 Design Requirements**

1. Glass Design:
  - 1.1. Design glass using a probability of breakage of 8 lites per 1000 at the first application of design load.
  - 1.2. Design glass to CAN/CGSB-12.20-M. Perform stress analysis. Design units to accommodate live, dead, lateral, wind, seismic, handling, transportation, and erection loads.
2. Structural Glazing:
  - 2.1. Carry out design of structural silicone joints by rational analysis including all movements specified herein. Maximum stress shall not exceed 138 kPa (20 psi) in tension or shear for short term loading. Maximum stress in shear for long term loading due to the dead load of glass shall not exceed 7 kPa (1 psi) or the limit imposed by sealant manufacturer, whichever is less.
  - 2.2. The joint shall be essentially rectangular in shape and shall include no internal corners which could precipitate tearing or create high local stresses.
  - 2.3. Single Source Responsibility for Sealants, Gaskets and Other Glazing Accessories: In order to ensure consistent quality of performance, provide all glazing sealants and seals from a single manufacturer.
  - 2.4. Preconstruction Compatibility and Adhesion Testing: Submit to sealant manufacturer, samples of each glass, gasket, glazing accessory and glass- framing member that will contact or affect glazing sealants for compatibility and adhesion testing. Schedule submission of test samples to provide sufficient time for testing and analysis of results to prevent delay in the progress of work.
3. Limit glass deflection to flexural limit of glass with full recovery of glazing materials.

## **Part 2 Products**

### **2.1 Materials**

1. Design Criteria:
  - 1.1. Size glass to withstand wind loads, dead loads and positive and negative live loads to ASTM E330.
  - 1.2. Limit glass deflection to flexural limit of glass with full recovery of glazing materials.
2. Flat Glass:
  - 2.1. Safety glass: to CAN/CGSB-12.1, transparent, 6 mm thick.
    - 2.1.1. Type tempered.
    - 2.1.2. Class B-float.
    - 2.1.3. Category 11.
    - 2.1.4. Edge treatment: Polished.

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- 2.2. Safety glass: to CAN/CGSB-12.1, transparent, 10 mm thick.
    - 2.2.1. Type Tempered.
    - 2.2.2. Class B-float.
    - 2.2.3. Category 11.
    - 2.2.4. Edge treatment: Polished.
  - 2.3. Safety glass: to CAN/CGSB-12.1, transparent, 12 mm thick.
    - 2.3.1. Type laminated.
    - 2.3.2. Class B-float.
    - 2.3.3. Category 11.
    - 2.3.4. Edge treatment: Polished.
  - 2.4. Safety glass: to CAN/CGSB-12.1, transparent, 19 mm thick.
    - 2.4.1. Type laminated.
    - 2.4.2. Class B-float.
    - 2.4.3. Category 11.
    - 2.4.4. Edge treatment: Polished.
  3. Plastic Film: in accordance with Section 08 87 23 - Surface Films.
  4. Sealant: in accordance with Section 07 92 00 - Joint Sealants.
    - 4.1. VOC limit 250 g/L maximum to SCAQMD Rule 1168.
      - 4.1.1. VOC limit: 5 % maximum by weight to CCD-045.
      - 4.1.2. Ensure sealant does not contain chemical restrictions to CCD-045.

## **2.2 Accessories**

1. Setting blocks (regular): EPDM, 80- 90 Shore A durometer hardness to ASTM D2240, to suit glazing method, glass light weight and area.
2. Setting blocks (structural): Silicone setting blocks with Shore, Type A durometer hardness of 85, plus or minus 5 to ASTM D2240, sized to suit glazing method, glass unit weight and area.
3. Edge blocks: EPDM, 60-70 Shore A Durometer hardness, sized with 3 mm clearance from glass edge and spanning glass thickness(es). Capable of withstanding weight of glass unit, self adhesive on face.
4. Spacer shims: EPDM, 50-60 Shore A durometer hardness to ASTM D2240, 75 mm long x one half height of glazing stop x thickness to suit application. Self adhesive on one face.
5. Glazing and rebate primers, sealants, sealers, and cleaners: Compatible with each other. Type as recommended by glass manufacturer.
6. Glazing Sealant (regular): Silicone sealant as recommended by glazing manufacturer. Verify compatibility with insulating glass unit secondary sealant.
7. Glazing Sealant (structural):
  - 7.1. Silicone, One Part in accordance with ASTM C920, Type S or M, Grade NS, Class 25.
  - 7.2. Structural glazing tensile bead: 'Spectrem 2 Sealant' by Tremco or 'Dow 795' by Dow Corning.
  - 7.3. Structural glazing weather bead:'Spectrem 2 Sealant' by Tremco or 'Dow 795' by Dow Corning.

- 7.4. Structural glazing (factory glazed): Two-part, neutral cure silicone sealant, 'Proglaze II' by Tremco or 'Dow 983' by Dow Corning.
- 7.5. Colour to be selected by Consultant.
8. Glazing gasket: 'Visionstrip' by Tremvo Ltd., extruded composite glazing seal, size as recommended by manufacturer.
9. Heel & toe bead: Silicone sealant as recommended by glazing manufacturer.
10. Glazing tape:
  - 10.1. 'Polyshim II' glazing tape EPDM shim.
11. Glazing splines: resilient EPDM or neoprene, extruded shape to suit glazing channel retaining slot, black colour as selected by consultant.
12. Glazing clips: manufacturer's standard type.
13. Lock-strip gaskets: to ASTM C542.
14. Glass presence markers: Easily removable, non-residue depositing.
15. Screws, bolts and fasteners: Type 304 stainless steel.

## **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.
  - 1.1. Verify that openings for glazing are correctly sized and within tolerance.
  - 1.2. Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.
  - 1.3. Visually inspect substrate in presence of Consultant.
  - 1.4. Inform Consultant of unacceptable conditions immediately upon discovery.
  - 1.5. Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

### **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: interior - dry method (tape and tape)**

1. Perform work in accordance with GANA Glazing Manual for glazing installation methods.
2. Cut glazing tape to length and set against permanent stops, projecting 1.6 mm above sight line.
3. Place setting blocks at 1/4 points, with edge block maximum 150 mm from corners.
4. Rest glazing on setting blocks and push against tape for full contact at perimeter of light or unit.
5. Place glazing tape on free perimeter of glazing in same manner described.
6. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
7. Knife trim protruding tape.

### **3.4 Cleaning**

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
  - 1.1. Leave Work area clean at end of each day.
    - 1.1.1. Remove traces of primer, caulking.
    - 1.1.2. Remove glazing materials from finish surfaces.
    - 1.1.3. Remove labels.
    - 1.1.4. Clean glass and mirrors using approved non-abrasive cleaner in accordance with manufacturer's instructions.
  - 1.2. Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning and Waste Management.
2. Waste Management: separate waste materials for reuse or recycling in accordance with Section 01 74 00 - Cleaning and Waste Management.
  - 2.1. Remove recycling containers and bins from site and dispose of materials at appropriate facility.

### **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.
  - 2.1. Do not mark heat absorbing or reflective glass units.
3. Repair damage to adjacent materials caused by glazing installation.

**END OF SECTION**

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## **Section 08 87 23**

### **Surface films**

#### **Part 1 General**

##### **1.1 Summary**

1. Section Includes:
  - 1.1. Glazing film for interior screens
  - 1.2. Opaque glazing film for existing exterior windows in Radio Studio A and TV Studio A
  - 1.3. Custom Graphic Wall Paper Lenticular wall Paneling.
  - 1.4. Lenticular wall Paneling. **Refer to Alternate Price 1**

##### **1.2 Reference standards**

1. International Window Film Association (IWFA)
  - 1.1. IWFA Visual Quality Standard for Applied Window Film 1999.

##### **1.3 Action and informational submittals**

1. Submittals in accordance with Section 01 33 00 - Submittal Procedures.
2. Shop Drawings
  - 2.1. Indicate dimension, seams, colours and film type
3. Samples
  - 3.1. For non-custom films, provide 300mm x300mm sample for reach film type.
  - 3.2. For custom printed films, Provide test print of a representative area of the graphic for each film type/unique graphic.

##### **1.4 Quality assurance**

1. Perform work in accordance with manufacturer's instructions.
2. Film to be installed by a Certified Applicator in order for a full manufacturer's warranty to apply.

##### **1.5 Mock-ups**

1. Provide a 1:10 scale model for the entire lenticular wall including graphics for review by the Consultant.
2. Prepare a +/- 5 foot wide, full size mock-up of a section of the lenticular wall complete with applied graphic for Review by the consultant. If Mock-up is accepted it may be incorporated into the Work.

##### **1.6 Warranty**

1. Contractor hereby warrants that Films will stay in place without delaminating, peeling or blistering in accordance with CCDC 2 GC24, but for 2 years.
2. Ensure warranty includes items as follows:
  - 2.1. Maintaining adhesion properties without blistering, bubbling or delaminating from glass surface.

- 2.2. Maintaining appearance without discolouration.
- 2.3. Removing, replace and reapply defective materials.
- 2.4. In event of product failure under warranty terms, remove and re-apply film without glass replacement at no cost to Owner.

## **Part 2 Products**

### **2.1 Materials**

1. Approved supplier: Lenticular wall Paneling TI Group/BGM Imaging. Contact: Jasmin Chandler 416-271-9716 or approved equivalent
2. Custom printed film (FLM): Allow for full colour custom printed transparent graphic glazing film where indicated on the drawings
  - 2.1. Artwork to be provided by Architect
3. Exterior grade Opaque Glazing film (FLM1):
  - 3.1. Location: Install on the exterior face of the block-ed off windows in TV Studio A and Radio Studio B
  - 3.2. Single solid colour to be selected from suppliers standard range
4. Graphic Wall Paper
  - 4.1. Locations: Ground Floor Corridor Feature Wall and Computer Labs L2-14 and L2-16
  - 4.2. Graphic film product: Type II Commercial Wall Covering
  - 4.3. Artwork to be provided by Architect
5. Lenticular wall Paneling (**Refer to Alternate Price 1**)
  - 5.1. Location: Ground Floor Corridor Feature Wall
  - 5.2. Custom Printed Graphic Wall Paper and angled wall paneling as shown on drawings.
  - 5.3. Graphic film product: Type II Commercial Wall Covering
  - 5.4. Artwork to be provided by Architect
  - 5.5. Where wood material is used for wall finishes construction, the Flame Spread rating must be 150 or less on any exposed surface, or any surface that would be exposed by cutting through the material in any direction. Use fire retardant treatment material or applied spray to meet flame spread ratings required.

## **Part 3 Execution**

### **3.1 Preparation**

1. Examine glass surfaces to receive a new film and verify that they are free from defects and imperfections.
2. The window and window framing will be cleaned thoroughly with a neutral cleaning solution. The surface of the window glass where the film is to be applied shall be bladed with industrial razors to ensure safe removal of any foreign contaminants.
3. Toweling or other absorbent material shall be placed in the window will or sash to absorb moisture generated by the installation of the film

### **3.2 Installation**

1. The film must be applied as to the specifications of the Manufacturer by a Certified Dealer/Applicator.
2. Materials will be delivered to the job site with the manufacturer's labels intact and legible.
3. To minimize waste, the film will be cut to specification. Film edges shall be cut neatly and squarely at a uniform distance of 1/8" to 1/16" from the window sealing device.
4. Clear, clean water with a small amount of slip solution will be used to activate the pressure sensitive adhesive and facilitate the proper positioning of the film on the glass.
5. To ensure efficient removal of excess water from the underside of the film and to maximize the bonding of the pressure sensitive adhesive, polyplastic bladed squeegees will be utilized.
6. Upon completion, the film may have a dimpled appearance from residual moisture. Said moisture, shall dry flat with no moisture dimples within a period of 30 days under reasonable weather conditions.
7. After application, any leftover material will be removed and work area will be returned to at least the original condition. All necessary means will be used to protect the film before, during and after installation.

### **3.3 Final cleaning**

1. The film can be washed using common window cleaning solutions, including ammonia based cleaners. Abrasive type cleaning agents and bristle brushes that could scratch the film must not be used. Synthetic sponges or soft cloths are recommended.

**END OF SECTION**

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## **Section 09 21 16**

# **Gypsum Board Assemblies**

### **Part 1 General**

#### **1.1 Related requirements**

1. Cyclorama walls:  
Locations: TV Studio A and TV Studio B  
Trade must have a minimum of 5 years experience building Cyclorama walls and provide a list of previous projects for reference.  
Prefabricated curved plywood "ribs" are recommended for corner transitions.  
Supplier: Archways & Ceilings Cyc wall kit or equivalent

#### **1.2 Reference standards**

1. Aluminum Association (AA)
  - 1.1. AA DAF 45-03 (R2009), Designation System for Aluminum Finishes.
2. American Society for Testing and Materials (ASTM)
  - 2.1. ASTM C475-02 (2015), Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
  - 2.2. ASTM C514-04 (2014), Standard Specification for Nails for the Application of Gypsum Board.
  - 2.3. ASTM C557-03 (2009)e1, Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.
  - 2.4. ASTM C840-16, Standard Specification for Application and Finishing of Gypsum Board.
  - 2.5. ASTM C954-15, Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
  - 2.6. ASTM C1002-14, 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.
  - 2.7. ASTM C1047-14a, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
  - 2.8. ASTM C1177/C1177M-13, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
  - 2.9. ASTM C1178/C1178M-13, Standard Specification for Glass Mat Water-Resistant Gypsum Backing Board.
  - 2.10. ASTM C1280-13a, Standard Specification for Application of Gypsum Sheathing.
  - 2.11. ASTM C1396/C1396M-14a, Standard Specification for Gypsum board.
3. Association of the Wall and Ceilings Industries International (AWCI)
  - 3.1. AWCI Levels of Gypsum Board Finish-GA-214-2015.
4. Canadian General Standards Board (CGSB)
  - 4.1. CAN/CGSB-51.34-M86 (R1988), Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

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- 4.2. CAN/CGSB-71.25-M88, Adhesive, for Bonding Drywall to Wood Framing and Metal Studs.
  5. Green Seal Environmental Standards (GS)
    - 5.1. GS-11-2008, 2nd Edition, Paints and Coatings.
  6. South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
    - 6.1. SCAQMD Rule 1113-A2007, Architectural Coatings.
    - 6.2. SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.
  7. Underwriters' Laboratories of Canada (ULC)
    - 7.1. CAN/ULC-S102-10, Standard Method of Test of Surface Burning Characteristics of Building Materials and Assemblies.

### **1.3 Action and informational submittals**

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
  - 2.1. Submit manufacturer's instructions, printed product literature and data sheets for gypsum board assemblies and include product characteristics, performance criteria, physical size, finish and limitations.
3. Shop Drawings:
  - 3.1. Submit gypsum board/steel stud assembly drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
  - 3.2. All metal stud work shall be designed in accordance with the most recent "Lightweight Steel Framing Design Manual" by CSSBI 58-2024 and CSA-S136
  - 3.3. Indicate design loads, member sizes, materials, design thickness exclusive of coatings, coating specifications, connection and bracing details, screw sizes and spacing, and anchors.
  - 3.4. Indicate member and connection locations, dimensions, openings, and connections related work.

### **1.4 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 and applicable standard designation.
3. Exercise care in unloading gypsum board materials shipment to prevent damage.
4. Storage and Handling Requirements in accordance with ASTM C 840-16:
  - 4.1. Store gypsum board assemblies materials level flat indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - 4.2. Store and protect gypsum board assemblies from nicks, scratches, and blemishes.
  - 4.3. Protect gypsum board from direct exposure to rain, snow, sunlight, or other excessive weather conditions.
  - 4.4. Protect ready mix joint compounds from freezing, exposure to extreme heat and direct sunlight.
  - 4.5. Protect from weather, elements and damage from construction operations.

- 4.6. Handle gypsum boards to prevent damage to edges, ends or surfaces.
- 4.7. Protect prefinished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather.
- 4.8. Replace defective or damaged materials with new.

## **1.5 Ambient conditions**

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

## **Part 2 Products**

### **2.1 Materials**

1. Standard board: to ASTM C1396/C1396M-14 Type X, 15.9mm thick, 1200 mm wide x maximum practical length, ends square cut, edges squared.
2. Gypsum sheathing board: to ASTM C1396/C1396M-14, regular, 12mm thick, 1200 mm wide x maximum practical length.
3. Steel for steel STUDS and TRACK shall meet the requirements of ASTM A653/A653M, "Standard specification for sheet steel, zinc coated (galvanized) by the hot-dip process" AND ASTM A729/A729M, "Specification for sheet steel, aluminum-zinc alloy-coated by hot-dip process".
  - 3.1. GRADE 230, (33ksi) for 1.28MM (0.048", 18ga.) Material and Thinner
  - 3.2. GRADE 340, (50ksi) for 1.53MM (0.060", 16ga.) Material and Thicker
4. Furring Channels: Commercial steel sheet in accordance with ASTM A653, Z180, hot dipped zinc-coated (galvanized), as follows:
  - 4.1. Hat Shaped, Rigid Furring Channels: ASTM C645, 0.75 mm thickness x 22 mm deep.
  - 4.2. Resilient Furring Channels: 0.46 mm thickness x 13 mm deep members designed to reduce sound transmission having asymmetrical face attached to single flange by a slotted leg (web).
5. Resilient Channel Sound Isolation Clips: RSIC-1 or approved equal
6. Nails: to ASTM C514-14.
7. Steel drill screws: to ASTM C1002-14.
8. Stud adhesive: to CAN/CGSB-71.25.
9. Laminating compound: as recommended by manufacturer, asbestos-free.
10. Casing beads, corner beads, control joints and edge trim: to ASTM C1047, ABS, 0.5 mm base thickness, perforated flanges, one piece length per location.
11. Shadow gap: Bailey D300 Metal trim, CGC Dur-a-bead or Nicolson Rollforming No 114, fillable edge trim, 0.55mm (0.022") base thickness commercial grade sheet steel with zinc wiped coating to ASTM A 525-93; perforated flanges; one piece length per location. To be used at the junction of all dissimilar materials.
12. Sealants: in accordance with Section 07 92 00 - Joint Sealants.
  - 12.1. VOC limit 250 g/L maximum to SCAQMD Rule 1168.

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- 12.2. Acoustic sealant: in accordance with Section 07 92 00 - Joint Sealants.
  13. Insulating strip: rubberized, moisture resistant, 3 mm thick cork strip, 12 mm wide, with self-sticking permanent adhesive on one face, lengths as required.
  14. Joint compound: to ASTM C475, asbestos-free.
  15. GWB Access Panels to serve ceiling installations: Bauco Plus II. Sized as required by M&E trades. locations to be confirmed on site. Contractor to allow for 6 - 12"x12" panels
  16. Metal Access Panels to serve existing radiant heating controls on the ground floor: Bauco Softline. Locations as shown on the drawings. Exact size to be determined on site.
  17. Perimeter edge trim for floating ceilings: Gordon Contura or approved equivalent with mud-in flange, height as indicated, colour to match ceiling.

## **2.2 Finishes**

1. Texture finish: asbestos-free standard white texture coating and primer-sealer, recommended by gypsum board manufacturer.
  - 1.1. Primer: VOC limit 50 g/L maximum to SCAQMD Rule 1113.

## **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 board assemblies installation in accordance with manufacturer's written instructions.
  - 1.1. Visually inspect substrate in presence of Consultant.
  - 1.2. Inform Consultant of unacceptable conditions immediately upon discovery.
  - 1.3. Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from consultant.

### **3.2 Erection**

1. Do application and finishing of gypsum board to ASTM C840-16 except where specified otherwise.
2. Do application of gypsum sheathing to ASTM C1280-13a.
3. Erect hangers and runner channels for suspended gypsum board ceilings to ASTM C840-16 except where specified otherwise.
4. Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
5. Install work level to tolerance of 1:1200.
6. Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles, etc.
7. Install 19 x 64 mm furring channels parallel to, and at exact locations of steel stud partition header track.
8. Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.
9. Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
10. Install wall furring for gypsum board wall finishes to ASTM C840-16, except where specified otherwise.

11. Furr openings and around built-in equipment, cabinets, access panels, etc, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.
12. Furr duct shafts, beams, columns, pipes and exposed services where indicated.
13. Erect drywall resilient furring transversely across studs, spaced maximum 600 mm on centre and not more than 150 mm from ceiling/wall juncture. Secure to each support with 25mm drywall screw.
14. Install 150 mm continuous strip of 12.7 mm gypsum board along base of partitions where resilient furring installed.

### **3.3 Application**

1. Apply gypsum board after bucks, anchors, blocking, sound attenuation, electrical and mechanical work have been approved.
2. Apply double layer gypsum board to metal furring or framing using stud adhesive screw fasteners for the first layer, and laminating adhesive for second layer. Maximum spacing of screws 300 mm on centre.
  - 2.1. Single-Layer Application:
    - 2.1.1. Apply gypsum board on ceilings prior to application of walls to ASTM C840-16.
    - 2.1.2. Apply gypsum board on walls vertically or horizontally, providing sheet lengths that will minimize number of board edges or end joints.
  - 2.2. Double-Layer Application:
    - 2.2.1. Install gypsum board for base layer and exposed gypsum board for face layer.
    - 2.2.2. Apply base layer to ceilings prior to base layer application on walls; apply face layers in same sequence. Offset joints between layers at least 250 mm.
    - 2.2.3. Apply base layers at right angles to supports unless otherwise indicated.
    - 2.2.4. Apply base layer on walls and face layers vertically with joints of base layer over supports and face layer joints offset at least 250 mm with base layer joints.
3. Apply single layer gypsum board to concrete concrete block surfaces, where indicated, using laminating adhesive.
  - 3.1. Comply with gypsum board manufacturer's recommendations.
  - 3.2. Brace or fasten gypsum board until fastening adhesive has set.
  - 3.3. Mechanically fasten gypsum board at top and bottom of each sheet.
4. Exterior Soffits and Ceilings: install exterior gypsum board perpendicular to supports; stagger end joints over supports. Install with 6 mm gap where boards abut other work.
5. Apply water-resistant gypsum board where wall tiles to be applied. Apply water-resistant sealant to edges, ends, cut-outs which expose gypsum core and to fastener heads. Do not apply joint treatment on areas to receive tile finish.
6. Apply 12 mm diameter bead of acoustic sealant continuously around periphery of each face of partitioning to seal gypsum board/structure junction where partitions abut fixed building components. Seal full perimeter of cut-outs around electrical boxes, ducts, and penetrations, in partitions where perimeter sealed with acoustic sealant.
7. Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.
8. Install gypsum board on walls vertically to avoid end-butt joints. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs, except where local codes or fire-rated assemblies require vertical application.

9. Install gypsum board with face side out.
10. Do not install damaged or damp boards.
11. Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

### **3.4 Installation**

1. Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure using contact adhesive for full length.
2. Install casing beads around perimeter of suspended ceilings.
3. Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.
4. Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.
5. Install shadow mould at gypsum board/ceiling juncture as indicated. Minimize joints; use corner pieces and splicers.
6. Construct control joints of two back-to-back casing beads set in gypsum board facing and supported independently on both sides of joint.
7. Provide continuous polyethylene dust barrier behind and across control joints.
8. Locate control joints at changes in substrate construction.
9. Install control joints straight and true.
10. Ensure that screws or nails are properly applied in process of attaching gypsum board to framing without damaging of gypsum board edges and ends.
11. Construct expansion joints as detailed, at building expansion and construction joints. Provide continuous dust barrier.
12. Install expansion joint straight and true.
13. Install cornice cap where gypsum board partitions do not extend to ceiling.
14. Fit cornice cap over partition, secure to partition track with two rows of sheet metal screws staggered at 300 mm on centre.
15. Splice corners and intersections together and secure to each member with 3 screws.
16. Install access doors to electrical and mechanical fixtures specified in respective sections.
  - 16.1. Rigidly secure frames to furring or framing systems.
17. 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.
18. Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with AWCI Levels of Gypsum Board Finish:
  - 18.1. Levels of finish:
    - 18.1.1. Level 5: embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; apply a thin skim coat of joint compound to entire surface; surfaces smooth and free of tool marks and ridges.
19. 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.

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20. Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board, invisible after surface finish is completed.
  21. Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.
  22. Completed installation smooth, level or plumb, free from waves and other defects and ready for surface finish.
  23. Apply one coat of white primer sealer over surface to be textured. When dry apply textured finish in accordance with manufacturer's instructions.
  24. Mix joint compound slightly thinner than for joint taping.
  25. Apply thin coat to entire surface using trowel or drywall broad knife to fill surface texture differences, variations or tool marks.
  26. Allow skim coat to dry completely.
  27. Remove ridges by light sanding or wiping with damp cloth.

### **3.5 Cleaning**

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
  - 1.1. Leave Work area clean at end of each day.
  - 1.2. Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
2. Waste Management: separate waste materials for reuse or recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
  - 2.1. Remove recycling containers and bins from site and dispose of materials at appropriate facility.

### **3.6 Protection**

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

**END OF SECTION**

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## **Section 09 51 13**

### **Acoustical Panel Ceilings**

#### **Part 1 General**

##### **1.1 Related requirements**

1. Section 23 30 00HVAC Air Distribution: Air inlets and outlets to be coordinated with ceiling work.

##### **1.2 Reference standards**

1. ASTM International
  - 1.1. ASTM C423-09, Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
  - 1.2. ASTM E580/E580M-14 Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions.
  - 1.3. ASTM C635/C635M-13a, Standard Specifications for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
  - 1.4. ASTM C636/C636M-08, Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
  - 1.5. ASTM E1264-14, Standard Classification for Acoustical Ceiling Products.
  - 1.6. ASTM E1414/E1414M 11ae1 Standard Test Method for Sound Attenuation between Rooms Sharing a Common Ceiling Plenum.
  - 1.7. ASTM E1477-98a(2013), Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.
  - 1.8. ASTM F1667-15 Standard Specification for Driven Fasteners: Nails, Spikes and Staples.
2. Canadian General Standards Board (CGSB)
  - 2.1. CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet, for Use in Building Construction and Amendment No. 1 1988.
3. Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - 3.1. Material Safety Data Sheets (SDS).
4. Underwriter's Laboratories of Canada (ULC)
  - 4.1. CAN/ULC-S102-2003, Surface Burning Characteristics of Building Materials and Assemblies.

##### **1.3 Coordination**

1. Do not begin erection of ceiling suspension system until work above ceiling has been inspected by Consultant.

##### **1.4 Action and informational submittals**

1. Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
  - 2.1. Submit manufacturer's instructions, printed product literature and data sheets for acoustical suspension, acoustic panels, acoustic tiles, and system accessories. Include product characteristics, performance criteria, physical size, finish and limitations.

3. Shop Drawings:
  - 3.1. Submit reflected ceiling plans for special grid patterns in the Active Classrooms.
  - 3.2. Indicate lay-out, insert and hanger spacing and fastening details, splicing method for main and cross runners, change in level details.
4. Samples:
  - 4.1. Submit duplicate 150 mm x 100 mm samples of each type of acoustical unit.

### **1.5 Closeout submittals**

1. Submit in accordance with Section 01 78 00 - Closeout Submittals.
2. Submit operation and maintenance data for acoustical suspension for incorporation into manual.

### **1.6 Maintenance materials**

1. Provide extra acoustical units in accordance with Section 01 78 00 - Closeout Submittals.
2. Provide acoustical units amounting to 2 % of gross ceiling area for each pattern and type of acoustical panel or tile, suspension system and trim required for project, minimum 1 complete factory-sealed package of each.
3. Ensure extra materials are from same production run as installed materials.
4. Deliver extra materials for each type of acoustical unit in original unopened packages clearly identified, including colour and texture.
5. Deliver to Owner, upon completion of the work of this section.

### **1.7 Certifications**

1. Fire-resistance rated suspension system: certified by a Canadian Certification Organization accredited by Standards Council of Canada.

### **1.8 Delivery, storage and handling**

1. Deliver, store and handle materials in accordance with manufacturers recommendations.
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:
  - 3.1. Store materials flat, indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - 3.2. Store and protect acoustical ceiling tiles suspension grid components from nicks, scratches, and blemishes.
  - 3.3. Replace defective or damaged materials with new.
  - 3.4. Store extra materials required for maintenance, where directed by Owner.

### **1.9 Environmental requirements**

1. Permit wet work to dry before beginning to install.
2. Maintain uniform minimum temperature of 15 degrees C and humidity of 20 % before and during installation.<sup>40</sup>
3. Store materials in work area 48 hours prior to installation.

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## Part 2 Products

### 2.1 Materials

1. Acoustic Ceiling tile (ACT)  
Exposed edge trims: Axiom by Armstrong, 2" unless noted otherwise.  
Perimeter abutting vertical surfaces: shadow molding
2. ACT-1:  
Location: Everywhere except Production Control Room L1-08  
Manufacturer: Armstrong – 'Optima', Tegular  
Size: 24"x48"  
Colour: White  
NRC: 1.0  
Suspension Grid: Prelude XL 15/16  
Grid Colour: White
3. ACT-2: (High CAC)  
Location: Production Control Room L1-08  
Armstrong – 'Ultima', Tegular  
ACT-2 (High CAC)  
Location: Production Control Room L1-08  
Manufacturer: Armstrong – 'Ultima', Tegular  
Size: 24"x 48"  
Colour: White  
NRC: 0.9  
Suspension Grid: Prelude XL 15/16  
Grid Colour: White
4. Acoustic Ceiling Panels
5. ACP-1:  
Location: TV studios as indicated on the RCP  
Manufacturer: Avanti or equivalent  
System: Fabric wrapped fiberglass acoustic panels  
Thickness: 1"  
Fabric Colour: Black  
Mounting: suspended, refer to ceiling details for angled installation
6. Radio Studio Acoustic Ceiling Feature:  
Location: Radio Studio A  
Manufacturer: Turf  
Product: Plate Ceiling cloud (Custom configuration)  
Installation: Cable Suspension  
Colour: to be selected from manufacturer's standard range of felt colours

## Part 3 Execution

### 3.1 Examination

1. Verify conditions of substrates previously installed under other Sections or Contracts are acceptable for acoustical ceiling tile and track installation in accordance with manufacturer's written instructions.
  - 1.1. Inform Consultant of unacceptable conditions immediately upon discovery.
  - 1.2. Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from the Architect.

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### **3.2 Interface with other work**

1. Co-ordinate ceiling work to accommodate components of other sections, such as light fixtures, diffusers, speakers, sprinkler heads, to be built into acoustical ceiling components.

### **3.3 Suspension system installation**

1. Comply with manufacturer's written installation instructions and recommendations, including product technical bulletins, product carton installation instructions, and data sheets.
2. Install suspension system in accordance with accepted shop drawings, Certification Organizations tested design requirements and ASTM C636/C636M except where specified otherwise.
3. Lay out system according to reflected ceiling plan.
4. Finished ceiling system to be square with adjoining walls and level within 1:1000.
5. Secure hangers to overhead structure as per manufacturer's directions
6. Install hangers spaced at maximum 1200 mm centres and within 150 mm from ends of main tees.
7. Ensure suspension system is coordinated with location of related components. Provide carrying channels as necessary to bridge at unavoidable interference between suspension system and other work above ceiling.
8. Install wall moulding to provide correct ceiling height.
9. Completed suspension system to support super-imposed loads, such as lighting fixtures ,grilles, diffusers and speakers.
10. Support at diffusers and light fixtures with additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
11. Attach cross member to main runner to provide rigid assembly.
12. Frame at openings for light fixtures, air diffusers, speakers and at changes in ceiling heights.
13. Install perimeter trim at floating installations securely anchored to suspension system, in accurate alignment with adjacent assemblies. Install curved trim members in smooth curves to radius indicated.

### **3.4 Acoustical ceiling panel installation**

1. Install lay-in acoustical panels in ceiling suspension system in accordance with manufacturer's instructions and as indicated.
2. Install fibrous acoustical media and spacers over entire area above suspended metal panels.

### **3.5 Site quality control**

1. Arrange for periodic site visits by design professional responsible for delegated ceiling design work to review installed work for conformity to design.
2. Arrange for periodic site visits by manufacturer's representative to review installed work for conformity to manufacturer's installation instructions and recommendations.
3. Submit written site reports by designer to Consultant within 3 days of visit.

### **3.6 Cleaning**

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
  - 1.1. 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 00 - Cleaning.
  - 2.1. Touch up scratches, abrasions, voids and other defects in painted surfaces.
3. Waste Management: separate waste materials for reuse or recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

### **3.7 Protection**

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

**END OF SECTION**

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## **Section 09 65 16**

### **Resilient Sheet Flooring**

#### **Part 1 General**

##### **1.1 Reference standards**

1. ASTM International
  - 1.1. ASTM F1303-04 (2014), Standard Specification for Sheet Vinyl Floor Covering with Backing.
2. South Coast Air Quality Management District (SCAQMD)
  - 2.1. SCAQMD Rule 1113-13, Architectural Coatings.
  - 2.2. SCAQMD Rule 1168-A2011, Adhesive and Sealant Applications.

##### **1.2 Action and informational submittals**

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
  - 2.1. Submit manufacturer's instructions, printed product literature and data sheets for resilient sheet flooring and include product characteristics, performance criteria, physical size, finish and limitations.
3. Samples:
  - 3.1. Submit duplicate 300 x 300 mm sample pieces of sheet material for each style in the project

##### **1.3 Maintenance material submittals**

1. Extra Materials:
  - 1.1. Provide extra materials of resilient sheet flooring and adhesives in accordance with Section 01 78 00 - Closeout Submittals.
  - 1.2. Provide 10 m<sup>2</sup> of each colour, pattern and type flooring material required for project for maintenance use.
  - 1.3. Extra materials one piece and from same production run as installed materials.
  - 1.4. Identify each roll of sheet flooring and each container of adhesive.
  - 1.5. Deliver to Owner, upon completion of the work of this section.
  - 1.6. Store where directed by Owner.

##### **1.4 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:
  - 3.1. Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

- 3.2. Store and protect specified materials from nicks, scratches, and blemishes.
- 3.3. Replace defective or damaged materials with new.

## 1.5 Site conditions

1. Ambient Conditions:
  - 1.1. Maintain air temperature and structural base temperature at flooring installation area above 20 degrees for 48 hours before, during and 48 hours after installation.

## Part 2 Products

### 2.1 Materials

1. Linoleum Sheet Flooring.
  - 1.1. RES-01  
Forbo Marmoleum  
Collection: Fresco (Moonstone 3883)  
Dimension: 2m x25m roll  
Contact: Christine White, christine.white@forbo.com, 416-520-2127
  - 1.2. RES-02  
Forbo Marmoleum  
Collection: Fresco (Eternity 3866)  
Dimension: 2m x25m roll  
Contact: Christine White, christine.white@forbo.com, 416-520-2127
  - 1.3. RES-03  
Forbo Marmoleum  
Collection: Fresco (Volcanic Ash 3872)  
Dimension: 2m x25m roll  
Contact: Christine White, christine.white@forbo.com, 416-520-2127
  - 1.4. RES-04  
Forbo Marmoleum  
Collection: Real (Green Wellness 3881)  
Dimension: 2m x25m roll  
Contact: Christine White, christine.white@forbo.com, 416-520-2127
  - 1.5. Dissipative Rubber Flooring (DRB)  
Location: Server room L1-08A  
Manufacturer: Artigo  
Style: Granito ANT 48  
Colour: G308  
Adhesive: Polyurethane two component conductive adhesive  
Grounding: Copper foil strip (10 x 0.08 mm)
2. Resilient base: continuous, top set, complete with premoulded end stops and external corners
  - 2.1. RB-1  
Manufacturer: Johnsonite  
Profile: Tightlock  
Height: 111mm for resilient  
Lengths: cut lengths minimum 2400mm  
Allow for 2 colours to be selected.
3. Primers and adhesives: of types recommended by resilient flooring manufacturer for specific material on applicable substrate, above, on or below grade.

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- 3.1. Rubber floor adhesives:
    - 3.1.1. Adhesive: maximum VOC limit 60 g/L to SCAQMD Rule 1168.
    - 3.1.2. Use conductive Adhesive for dissipative rubber flooring
  - 3.2. Cove base adhesives:
    - 3.2.1. Adhesive: maximum VOC limit 50 g/L to SCAQMD Rule 1168.
  4. Sub-floor levelling and patching compound: Cementitious based, polymer modified, fine aggregate, single component, rapid curing, early strength floor patching compounds having high adhesion with manufacturer's recommended primer and surface profile for application in thicknesses from 4 mm to 25 mm, and for feathering up to 6mm.
  5. Sub-floor filler and leveller for skim coat: white premix latex requiring water only to produce cementitious paste as recommended by flooring manufacturer for use with their product.
  6. Metal edge strips:
    - 6.1. Aluminum extruded, smooth, with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.
    - 6.2. Schluter Schiene or approved equivalent
  7. Sealer and wax: type recommended by resilient flooring material manufacturer for material type and location.
    - 7.1. Sealer: maximum VOC limit 100 g/L to SCAQMD Rule 1113.

### **Part 3 Execution**

#### **3.1 Manufacturer's instructions**

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

#### **3.2 Examination**

1. Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for resilient sheet flooring installation in accordance with manufacturer's written instructions.
  - 1.1. Visually inspect substrate and inform consultant of unacceptable conditions
  - 1.2. Verify floor for levelness and provide leveling if required.
  - 1.3. Proceed with installation only after unacceptable conditions have been remedied

#### **3.3 Site verification of conditions**

1. Ensure concrete floors are clean and dry by using test methods recommended by flooring manufacturer.

#### **3.4 Preparation**

1. Remove or treat old adhesives to prevent residual, old flooring adhesives from bleeding through to new flooring and/or interfering with the bonding of new adhesives.
2. Provide floor leveling if required. Allow for leveling to 100% of the floor area where new RES flooring is installed and 50% of the floor area where new carpet is to be installed to a thickness of up to 10mm thick
3. Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.

4. Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.
5. Prime to resilient flooring manufacturer's printed instructions.

### **3.5 Application: flooring**

1. Provide high ventilation rate, with maximum outside air, during installation, and for 48 to 72 hours after installation. If possible, vent directly to outside. Do not let contaminated air recirculate through district or whole building air distribution system. Maintain extra ventilation for at least 1 month following building occupation.
2. Apply adhesive uniformly using recommended trowel. Do not spread more adhesive than can be covered by flooring before initial set takes place.
3. Lay flooring with seams parallel to building lines to produce a minimum number of seams. Border widths minimum 1/3 width of full material.
4. Run sheets in direction of traffic, and continuously seal according to manufacturer's printed instructions.
5. Heat weld seams of sheet flooring in accordance with manufacturer's printed instructions.
6. As installation progresses, and after installation roll flooring with 75 kg minimum roller to ensure full adhesion.
7. Cut flooring around fixed objects.
8. Install feature strips and floor markings where indicated. Fit joints tightly.
9. Install flooring in pan type floor access covers. Maintain floor pattern.
10. Continue flooring over areas which will be under built-in furniture.
11. Continue flooring through areas to receive movable type partitions without interrupting floor pattern.
12. Terminate flooring at centreline of door in openings where adjacent floor finish or colour is dissimilar.
13. Install metal edge strips at unprotected or exposed edges where flooring terminates.

### **3.6 Application: dissipative flooring**

1. Install and connect grounding in accordance with manufacturers recommendations
2. Copper foil strip (10 x 0.08 mm) should be laid in each room/area with a maximum grid size of 10 x 10 m either in case rolls or tiles are used. The copper strips should at least follow the perimeter of the room at a distance of about 20 cm from the walls. For large areas, lay extra strips at 12 m intervals running throughout the area
3. One end of the foil strip must be brought out and connected in an earth connection box at least every 30-40 m<sup>2</sup> of area covered, to ensure a good drainage of the electrostatic charges
4. Once the substrate is ready to receive the flooring (swept and free from loose dust), draw the lines to be followed by the grid of copper strips and start installing by removing the protection to the adhesive backing, pressing the foil firmly in place and smoothing it with foot or cloth.
5. Spread the chosen conductive adhesive with a trowel as advised by the manufacturer. Install the floor covering following the same techniques described in previous points for standard flooring.

### **3.7 Application: base**

1. Lay out base to keep number of joints at minimum.
2. Clean substrate and prime with one coat of adhesive.

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3. Apply adhesive to back of base.
  4. Set base against wall and floor surfaces tightly by using 3 kg hand roller.
  5. Install straight and level to variation of 1:1000.
  6. Scribe and fit to door frames and other obstructions. Use premoulded end pieces at flush door frames.
  7. Cope internal corners. Use premoulded corner units for right angle external corners. Use formed straight base material for external corners of other angles.
  8. Install toeless type base before installation of carpet on floors.

### **3.8 Cleaning**

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
  - 1.1. 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 00 - Cleaning.
  - 2.1. Clean flooring base surfaces to flooring manufacturer's printed instructions.

### **3.9 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. Use only water-based coating for linoleum.

**END OF SECTION**

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## **Section 09 68 13**

### **Tile Carpeting**

#### **Part 1 General**

##### **1.1 Reference standards**

1. American Association of Textile Chemists and Colorists (AATCC)
  - 1.1. AATCC Test Method 16.1-2012 (R2014), Colorfastness to Light: Outdoor.
  - 1.2. AATCC Test Method 16.2-2012 (R2014), Colorfastness to Light: Carbon-Arc.
  - 1.3. AATCC Test Method 16.3-2012 (R2014), Colorfastness to Light: Xenon-Arc
  - 1.4. AATCC Test Method 23-2010 (R2015), Colorfastness to Burn Gas Fumes.
  - 1.5. AATCC Test Method 129-2010 (R20156), Colorfastness to Ozone in the Atmosphere Under High Humidities.
  - 1.6. AATCC Test Method 134-2013 (2016), Electrostatic Propensity of Carpets.
  - 1.7. AATCC Test Method 171-2014, Carpets: Cleaning of; Hot Water Extraction Method.
  - 1.8. AATCC Test Method 175-2013, Stain Resistance: Pile Floor Coverings.
  - 1.9. AATCC Test Method 189-2012, Fluorine Content of Carpet Fibers.
2. ASTM International (ASTM)
  - 2.1. ASTM D297-15, Standard Test Methods for Rubber Products-Chemical Analysis.
  - 2.2. ASTM D1335-12, Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings.
  - 2.3. ASTM D 1667-05 (R2011), Standard Specification for Flexible Cellular Materials-Poly (Vinyl Chloride) Foam (Closed-Cell).
  - 2.4. ASTM D2661-14, Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe and Fittings.
  - 2.5. ASTM D3574-11, Standard Test Methods for Flexible Cellular Materials - Slab, Bonded, and Molded Urethane Foams.
  - 2.6. ASTM D3936-12, Standard Test Method for Resistance to Delamination of the Secondary Backing of Pile Yarn Floor Covering.
  - 2.7. ASTM D 5116-10 ,, Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions From Indoor Materials/Products.
3. Canadian General Standards Board (CGSB)
  - 3.1. CAN/CGSB-4.2 No. 22-2004(2013), Textile Test Methods - Colourfastness to Rubbing (Crocking).
  - 3.2. CAN/CGSB-4.2 No.27.6-M91-(R2013), Textile Test Methods - Flame Resistance - Methemine Tablet Test for Textile Floor Coverings.
  - 3.3. CAN/CGSB-4.2 No. 76-94/ISO 2551: 1981 IDT (R2013), Textile Test Methods - Machine-Made Textile Floor Coverings - Determination of Dimensional Changes Due to the Effects of Varied Water and Heat Conditions.
  - 3.4. CAN/CGSB-4.2 No.77.1-94/ISO 4919: 1978 (R2012), Textile Test Methods - Carpets - Determination of Tuft Withdrawal Force.
4. Carpet and Rug Institute (CRI)
  - 4.1. CRI 104 Standard for Installation of Commercial Carpet 2015.

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- 4.2. CRI Green Label Plus Indoor Air Quality Testing Program.
  5. Environmental Choice Program (ECP)
    - 5.1. CCD-152- 2009, Flooring Products, Commercial Non-modular Textile Flooring.
  6. Health Canada
    - 6.1. C.R.C., c.923-10, Hazardous Products Act - Carpet Regulations, Part II of Schedule 1.
  7. National Floor Covering Association (NFCA)
    - 7.1. National Floor Covering Specification Manual 2007.
  8. South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
    - 8.1. SCAQMD Rule 1113-A2016, Architectural Coatings.
    - 8.2. SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.
  9. ULC Standards(ULC)
    - 9.1. CAN/ULC-S102-11, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
    - 9.2. CAN/ULC-S102.2-88, Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings and Miscellaneous Materials and Assemblies.

## **1.2 Administrative requirements**

1. Pre-Installation Meetings:
  - 1.1. Convene pre-installation meeting 1 week prior to beginning on-site installation, with Consultant in accordance with Section 01 31 19 - Project Meetings to:
    - 1.1.1. Verify project requirements.
    - 1.1.2. Review installation and substrate conditions.

## **1.3 Action and informational submittals**

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
  - 2.1. Submit manufacturer's instructions, printed product literature and data sheets for each carpet tile and adhesive and include product characteristics, performance criteria, physical size, finish and limitations.
3. Samples:
  - 3.1. Submit samples for review and acceptance of each type and colour of carpet tile specified.

## **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 installed products for incorporation into manual.
3. Warranty Documentation: submit warranty documents specified.

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## **1.5 Maintenance material submittals**

1. Extra stock materials in accordance with Section: 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.
  - 1.1. Quantity: provide minimum of:
    - 1.1.1. Carpet tile: 10%
    - 1.1.2. Wall base: 10%
  - 1.2. Delivery, storage and protection: comply with Owner's requirements for delivery and storage of extra materials. Protect as follows:

## **1.6 Quality assurance**

1. Qualifications:
  - 1.1. Manufacturer: capable of providing field service representation during construction and approving application method.
  - 1.2. Flooring Contractor :
    - 1.2.1. Experienced in performing work of this Section who has specialized in installation of work similar to that required for this project.
    - 1.2.2. Certified by carpet manufacturer prior to bid submission.
    - 1.2.3. Responsible for proper product installation, including floor testing and preparation as specified and in accordance with carpet manufacturer's written instructions.

## **1.7 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:
  - 3.1. Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - 3.2. Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
  - 3.3. Store and protect carpet tile in original containers or wrapping with manufacturer's seals and labels intact.
  - 3.4. Store carpet and adhesive at minimum temperature of 18 degrees C and relative humidity of maximum 65% for minimum of 48 hours before installation.
  - 3.5. Prevent damage to materials during handling and storage. Keep materials under cover and free from dampness.
  - 3.6. Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.
  - 3.7. Replace defective or damaged materials with new.

## **1.8 Site conditions**

1. Moisture: substrate within moisture limits and alkalinity limits recommended by manufacturer. Prepare moisture testing and provide report to Consultant.

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2. Temperature: maintain ambient temperature of minimum 18 degrees C from 48 hours before installation to minimum 48 hours after completion of work.
  3. Relative humidity: maintain between 10% and 65% for 48 hours before, during and 48 hours after installation.
  4. Ventilation:
    - 4.1. Ventilate area of work by use of approved portable supply and exhaust fans.
    - 4.2. Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities. Provide fans with HEPA filters.
    - 4.3. 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.
  5. Install carpet after:
    - 5.1. Space enclosed and weatherproof.
    - 5.2. Wet-work in space completed and nominally dry.
    - 5.3. Work above ceilings complete.

## **1.9 Warranty**

1. Manufacturer's warranty: submit, for Consultant's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty in addition to and not limit other rights Owner may have under Contract Documents.
2. Warranty period: 1 year, commencing on date of substantial performance of work
3. Warranty covers repair or replacement of defective components

## **Part 2 Products**

### **2.1 Materials**

1. CPT-01  
Manufacturer: Interface  
Style: Interface Open Road Free Reign  
Size: 50cm x 50cm  
Colour: Iron 108396  
Installation: Monolithic
2. CPT-02  
Manufacturer: Interface  
Style: Interface Open Road Free Reign  
Size: 50cm x 50cm  
Colour: Charcoal 108397  
Installation: Monolithic
3. CPT-03  
Manufacturer: Interface  
Style: Interface Open Road Free Reign  
Size: 50cm x 50cm  
Colour: Mist 108398  
Installation: Monolithic
4. CPT-04A  
Manufacturer: Interface  
Style: Interface Woven Gradience

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- Size: 50cm x 50cm  
Colour: Onyx 108051  
Installation: Monolithic
5. CPT-04B  
Manufacturer: Interface  
Style: Interface Woven Gradience  
Size: 50cm x 50cm  
Colour: Onyx/Pine 107672  
Installation: Monolithic
6. CPT-04C  
Manufacturer: Interface  
Style: Interface Woven Gradience  
Size: 50cm x 50cm  
Colour: Pine 108058  
Installation: Monolithic
7. CPT-05  
Manufacturer: StaticWorx ESD Carpet Line  
Style: ShadowFX Vermont Fields & Stone Collection  
Size: 50cm x 50cm  
Colour: Stone Anthracite  
Electrically grounded installation with conductive adhesive

## **2.2 Accessories**

1. Base: Rubber base (RB).
- 1.1. RB-1  
Manufacturer: Johnsonite  
Profile: Tightlock  
Height: 114mm for carpet  
Lengths: cut lengths minimum 2400mm  
Allow for 2 colours to be selected
2. Acoustic Underlayment: Tred-MOR Floorliner Series dBarrier
3. Edge Strips:
- 3.1. Aluminum extruded, smooth, with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.
- 3.2. Schluter Schiene or approved equivalent
4. Adhesive:
- 4.1. Multi-purpose Adhesive Type: recommended by carpet tile manufacturer for direct glue down installation.
- 4.2. Pressure Sensitive Type: recommended by carpet tile manufacturer for direct glue down installation of speciality backed carpet tiles.
- 4.3. Mill-applied Adhesive Type: fully cured. Combination of pre-applied adhesive and tile to meet carpet only VOC emissions criteria of Carpet and Rug Institute Green Label Plus Indoor Air Quality Certification Program.
- 4.4. Pre-applied Adhesive: non-transferable.
- 4.5. On site application VOC limit: 150 g/L maximum to SCAQMD Rule 1168.
- 4.6. Adhesive in compliance with CCD-152.
5. Carpet protection: non-staining heavy duty kraft paper.

6. Sub-floor levelling and patching compound: Cementitious based, polymer modified, fine aggregate, single component, rapid curing, early strength floor patching compounds having high adhesion with manufacturer's recommended primer and surface profile for application in thicknesses from 4 mm to 25 mm, and for feathering up to 6mm.

## **Part 3 Execution**

### **3.1 Installers**

1. Experienced and qualified technicians to carry out assembly and installation of tile carpet.

### **3.2 Examination**

1. Examine conditions, substrates and work to receive work of this Section, co-ordinate with Section 01 71 00 - Examination and Preparation.
2. Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts acceptable for carpet tile installation in accordance with manufacturer's written instructions.
  - 2.1. Inform Consultant of unacceptable conditions immediately upon discovery.
  - 2.2. Proceed with installation only after unacceptable conditions remedied .

### **3.3 Preparation**

1. Subfloor Preparation:
  - 1.1. Inspect concrete and determine special care required to make it a suitable for carpet installation.
  - 1.2. Fill and level cracks 3 mm wide or protrusions over 0.8 mm with appropriate and compatible polymer fortified patching compound.
  - 1.3. Comply with manufacturer's written recommendations for maximum patch thickness.
  - 1.4. Prime large patch areas with compatible primer.
  - 1.5. Ensure concrete substrates cured, clean and dry.
  - 1.6. Ensure concrete substrates free of paint, dirt, grease, oil, curing or parting agents, and other contaminates, including sealers, that interfere with bonding of adhesive.
  - 1.7. Where powdery or porous concrete surface encountered, apply primer compatible with adhesive to provide suitable surface for glue-down installation.
2. Surface Preparation: prepare surface in accordance with manufacturer's written recommendations and co-ordinate with Section 01 71 00 - Examination and Preparation.
  - 2.1. Prepare floor surfaces in accordance with CRI Carpet Installation Standard.
3. Tile Carpeting Preparation:
  - 3.1. Pre-condition carpeting following manufacturer's written instructions.

### **3.4 Installation**

1. Install carpet tiles in accordance with manufacturer's written instructions, and CRI Carpet Installation Standard and co-ordinate with Section 01 73 00 - Execution.
2. Co-ordinate tile carpeting work with work of other trades, for proper time and sequence to avoid construction delays.
3. Install carpet tile after finishing work is completed but before demountable office partitions and telephone and electrical pedestal outlets installed.

4. Install carpet tile in accordance with manufacturer's recommendation. This can include quarter-turn 90 degree format, monolithic, random, quarter turn ashlar, horizontal, herringbone or vertical ashlar.
5. Snugly join carpet tiles in completed installation.
  - 5.1. Measure distance covered by 11 carpet tiles (10 joints) and ensure distance is compliance with manufacturer specifications.
  - 5.2. Trapping yarn between carpet tiles is prohibited.
6. Apply thin film of pressure-sensitive adhesive according to manufacturer's recommendations.
7. Finished installation to present smooth wearing surface free from conspicuous seams, burring and other faults.
8. Use material from same dye lot.
  - 8.1. Colour, pattern and texture to match within visual areas.
  - 8.2. Maintain constant pile direction.
9. Fit around architectural, mechanical, electrical and telephone outlets, and furniture fitments, around perimeter of rooms into recesses, and around projections.
10. Install carpet tiles to underfloor duct system access covers.
11. Install carpeting in pan type floor access covers.
12. Extend carpet tiles into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
13. Install carpet tiles smooth and free from bubbles, puckers, and other defects.
14. Protect exposed carpet tile edges at transition to other flooring materials with suitable transition strips.

### **3.5 Cleaning**

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
  - 1.1. Leave Work area clean at end of each day.
  - 1.2. Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
    - 1.2.1. Vacuum carpets clean immediately after completion of installation.
2. Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
  - 2.1. Remove recycling containers and bins from site and dispose of materials at appropriate facility.

### **3.6 Protection**

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

**END OF SECTION**

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## **Section 09 80 00**

### **Acoustic treatment**

#### **Part 1 General**

##### **1.1 Reference standards**

1. American Society for Testing and Materials International (ASTM)
  - 1.1. ASTM C423-07, Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
2. Canadian General Standards Board (CGSB)
  - 2.1. CAN/CGSB-51.34-M86 (R1988), Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
  - 2.2. CAN/CGSB-92.1-M89, Sound Absorptive Prefabricated Acoustical Units.
3. CSA Group (CSA)
  - 3.1. CSA B111-1974 (R2003), Wire Nails, Spikes and Staples.
4. Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - 4.1. Material Safety Data Sheets (SDS).
5. Underwriter Laboratories of Canada (ULC)
  - 5.1. CAN/ULC-S702-97, Standard for Thermal Insulation, Mineral Fibre, for Buildings.

##### **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.
3. Provide samples in accordance with Section 01 33 00 - Submittal Procedures.
  - 3.1. Submit 1'x1' sample of each type of acoustical unit. and fabric samples for each colour

##### **1.3 Environmental requirements**

1. Commence installation after building enclosed and dust generating activities are completed.
2. Permit wet work to dry prior to commencement of installation.
3. Maintain uniform minimum temperature of 15 degrees C and relative humidity of 20- 40% prior to, during and after installation.

##### **1.4 Delivery, storage and handling**

1. Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
2. Waste Management and Disposal:
  - 2.1. Separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

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## **Part 2 Products**

### **2.1 Materials**

1. Acoustic Wall Panel (**AWP1 +AWP1A**).  
Locations: As shown on drawings.  
Manufacturer: Avanti  
Product: Hardface wall panels  
Thickness 25mm  
Straight edge  
Fabric: Knoll Textiles Crossroad, 013 Moon Light  
NRC: 0.80 min  
Installation: Concealed Z-clip  
AWP1A installed over 22m furring strips
2. Acoustic Wall Panel (**AWP2**).  
Locations: As shown on drawings  
Manufacturer: Akustus  
Product: Caret  
Colour: Chartreuse SP43  
NRC: .70  
Installation: Vertical orientation, construction adhesive
3. Acoustical construction products must:
  - 3.1. Not require being labelled as poisonous, corrosive, flammable or explosive under Consumer Chemical and Container Regulations of the Hazardous Products Act.
  - 3.2. Be accompanied by detailed instructions for proper handling and installation so as to minimize health concerns.
4. Adhesive: type recommended by acoustic unit manufacturer.
  - 4.1. Adhesives: As recommended by acoustic unit manufacturer.
  - 4.2. Adhesives: maximum VOC limit 50 g/L to SCAQMD Rule 1168.
5. Staples, nails and screws: to CSA B111, non-corrosive finish, type recommended by acoustic unit manufacturer.

## **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**

1. Ensure substrate surface is straight to tolerance of plus or minus 3 mm over 3000 mm.
2. Install acoustic units to clean, dry and firm substrate using concealed mounting clips.
3. Install acoustic units plumb and aligned. Arrange units according to drawings. ....
4. Scribe acoustic units to fit adjacent work. Butt joints tight, terminate edges with moulding.

### **3.3 Cleaning**

1. Proceed in accordance with Section 01 74 00 - Cleaning.
2. Keep acoustic installation and all components clean. Remove blemishes immediately.

### **3.4 Protection**

1. Use cardboard to protect finished acoustical wall treatment from damage.
2. Remove prior to substantial completion.

**END OF SECTION**

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## **Section 09 91 23**

### **Interior Painting**

#### **Part 1 General**

##### **1.1 Reference standards**

1. Environmental Protection Agency (EPA)
  - 1.1. Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, EPA Method 24 - Surface Coatings.
  - 1.2. SW-846, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods.
2. Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - 2.1. Material Safety Data Sheets (SDS).
3. Master Painters Institute (MPI)
  - 3.1. The Master Painters Institute (MPI)/Architectural Painting Specification Manual (ASM) - current edition.
  - 3.2. Standard GPS-1-12, MPI Green Performance Standard.
  - 3.3. Standard GPS-2-12, MPI Green Performance Standard.
4. National Research Council Canada (NRC)
  - 4.1. National Fire Code of Canada 2015 (NFC).
5. Society for Protective Coatings (SSPC)
  - 5.1. SSPC Painting Manual, Volume Two, 8th Edition, Systems and Specifications Manual.

##### **1.2 Action and informational submittals**

1. Provide in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
  - 2.1. Provide manufacturer's instructions, printed product literature and data sheets for paint and paint products and include product characteristics, performance criteria, physical size, finish and limitations.
3. Samples:
  - 3.1. Submit 200x300 mm sample panels of each coating with specified paint or coating in colours, gloss/sheen and textures required to MPI Architectural Painting Specification Manual standards submitted on a drawdown card.
  - 3.2. Retain reviewed samples on-site to demonstrate acceptable standard of quality for appropriate on-site surface.

##### **1.3 Closeout submittals**

1. Provide in accordance with Section 01 78 00 - Closeout Submittals.
2. Operation and Maintenance Data: Provide operation and maintenance data for painting materials for incorporation into manual.
3. Include:
  - 3.1. Product name, type and use.

- 3.2. Manufacturer's product number.
- 3.3. Colour numbers.
- 3.4. MPI Environmentally Friendly classification system rating.

#### **1.4 Maintenance material submittals**

1. Extra Stock Materials:
  - 1.1. Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
  - 1.2. Submit one 3.78 litre can of each type and colour of finish coating. Identify colour and paint type in relation to established colour schedule and finish system.

#### **1.5 Quality assurance**

1. Qualifications:
  - 1.1. Contractor: to have a minimum of 5 years proven satisfactory experience. When requested, provide list of last 3 comparable jobs including, job name and location, specifying authority, and project manager.
  - 1.2. Qualified journeypersons as defined by local jurisdiction to be engaged in painting work.
  - 1.3. Apprentices: may be employed provided they work under direct supervision of qualified journeyperson in accordance with trade regulations.
  - 1.4. Conform to latest MPI requirements for exterior painting work including preparation and priming.
  - 1.5. Materials: in accordance with MPI Painting Specification Manual "Approved Product" listing and from a single manufacturer for each system used.
  - 1.6. Retain purchase orders, invoices and documents to prove conformance with noted MPI requirements when requested by Consultant.
  - 1.7. Standard of Acceptance:
    - 1.7.1. Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.
    - 1.7.2. Soffits: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.
    - 1.7.3. Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

#### **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.
  - 2.1. Labels: to indicate:
    - 2.1.1. Type of paint or coating.
    - 2.1.2. Compliance with applicable standard.
    - 2.1.3. Colour number in accordance with established colour schedule.
3. Storage and Handling Requirements:
  - 3.1. Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

- 3.2. Observe manufacturer's recommendations for storage and handling.
- 3.3. Store materials and supplies away from heat generating devices.
- 3.4. Store materials and equipment in well ventilated area with temperature range 7 degrees C to 30 degrees C.
- 3.5. Keep areas used for storage, cleaning and preparation, clean and orderly. After completion of operations, return areas to clean condition.
- 3.6. Remove paint materials from storage only in quantities required for same day use.
- 3.7. Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.
- 3.8. Fire Safety Requirements:
  - 3.8.1. Provide 9 kg dry chemical fire extinguisher adjacent to storage area.
  - 3.8.2. 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.
  - 3.8.3. Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada (NFC).

## **1.7 Site conditions**

1. Ambient Conditions:
  - 1.1. Heating, Ventilation and Lighting:
    - 1.1.1. Provide heating facilities to maintain ambient air and substrate temperatures above 10 degrees C for 24 hours before, during and after paint application until paint has cured sufficiently.
    - 1.1.2. Provide continuous ventilation for 7 days after completion of application of paint.
    - 1.1.3. Co-ordinate use of existing ventilation system with Owner and ensure its operation during and after application of paint as required.
    - 1.1.4. Provide temporary ventilating and heating equipment where permanent facilities are not available or supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.
    - 1.1.5. Provide minimum lighting level of 323 Lux on surfaces to be painted.
    - 1.1.6. Temperature, Humidity and Substrate Moisture Content Levels:
      - 1.1.6.1. Unless pre-approved written approval by Paint Inspection Agency Authority and product manufacturer, perform no painting when:
        - 1.1.6.1.1. Ambient air and substrate temperatures are below 10 degrees C.
        - 1.1.6.1.2. Substrate temperature is above 32 degrees C unless paint is specifically formulated for application at high temperatures.
        - 1.1.6.1.3. Substrate and ambient air temperatures are not expected to fall within MPI or paint manufacturer's prescribed limits.
        - 1.1.6.1.4. The relative humidity is under 85 % or when the dew point is more than 3 degrees C variance between the air/surface temperature. Paint should not be applied if the dew point is less than 3 degrees C below the ambient or surface temperature. Use sling psychrometer to establish the relative humidity before beginning paint work.

- 1.1.6.1.5. Rain or snow are forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.
- 1.1.6.1.6. Ensure that conditions are within specified limits during drying or curing process, until newly applied coating can itself withstand 'normal' adverse environmental factors.
- 1.1.6.2. Perform painting work when maximum moisture content of the substrate is below:
  - 1.1.6.2.1. 12 % for concrete and masonry (clay and concrete brick/block). Allow new concrete and masonry to cure minimum of 28 days.
  - 1.1.6.2.2. 15 % for hard wood.
  - 1.1.6.2.3. 17 % for soft wood.
  - 1.1.6.2.4. 12 % for plaster and gypsum board.
- 1.1.6.3. Test for moisture using calibrated electronic Moisture Meter. Test concrete floors for moisture using "cover patch test".
- 1.1.6.4. Test concrete, masonry and plaster surfaces for alkalinity as required.
- 1.1.7. Surface and Environmental Conditions:
  - 1.1.7.1. 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.
  - 1.1.7.2. Apply paint to adequately prepared surfaces and to surfaces within moisture limits.
  - 1.1.7.3. Apply paint when previous coat of paint is dry or adequately cured.
- 1.1.8. Additional interior application requirements:
  - 1.1.8.1. Apply paint finishes when temperature at location of installation can be satisfactorily maintained within manufacturer's recommendations.
  - 1.1.8.2. Apply paint in occupied facilities during silent hours only. Schedule operations to approval of Owner such that painted surfaces will have dried and cured sufficiently before occupants are affected.

## **Part 2 Products**

### **2.1 Performance requirements**

- 1. Environmental Performance Requirements:
  - 1.1. Provide paint products meeting MPI "Environmentally Friendly" E2 ratings based on VOC (EPA Method 24) content levels.
  - 1.2. Green Performance in accordance with MPI Standard GPS-1.

### **2.2 Materials**

- 1. Only Paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.
- 2. Provide paint materials for paint systems from single manufacturer.

3. Only qualified products with E2 "Environmentally Friendly" rating are acceptable for use on this project.
4. Conform to latest MPI requirements for interior painting work including preparation and priming.
5. Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids to be:
  - 5.1. Water-clean-able.
  - 5.2. non-flamable.
  - 5.3. Be manufactured without compounds which contribute to ozone depletion in the upper atmosphere.
  - 5.4. Be manufactured without compounds which contribute to smog in the lower atmosphere.
  - 5.5. Do not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.
6. Ensure manufacture and process of both water-borne surface coatings and recycled water-borne surface coatings does not release:
  - 6.1. Matter in undiluted production plant effluent generating 'Biochemical Oxygen Demand' (BOD) in excess of 15 mg/L to natural watercourse or sewage treatment facility lacking secondary treatment.
  - 6.2. Total Suspended Solids (TSS) in undiluted production plant effluent in excess of 15 mg/L to natural watercourse or a sewage treatment facility lacking secondary treatment.
7. Water-borne paints and stains, recycled water-borne surface coatings and water borne varnishes to meet minimum "Environmentally Friendly" E2 rating.
8. Recycled water-borne surface coatings to contain 50 % post-consumer material by volume.
9. Recycled water-borne surface coatings must not contain:
  - 9.1. Lead in excess of 600.0 ppm weight/weight total solids.
  - 9.2. Mercury in excess of 50.0 ppm weight/weight total product.
  - 9.3. Cadmium in excess of 1.0 ppm weight/weight total product.
  - 9.4. Hexavalent chromium in excess of 3.0 ppm weight/weight total product.
  - 9.5. Organochlorines or polychlorinated biphenyls (PCBS) in excess of 1.0 ppm weight/weight total product.

### **2.3 Colours**

1. Walls to be premium quality eggshell latex, ceilings to be flat latex, doors and frames to be satin alkyd where indicated. Allow for a maximum of 5 colours including 2 dark tones. Allow for dryfall painting of all exposed ceiling areas including structure and M&E services.
2. Green screen paint:  
Ultra matte, chroma key green screen paint. Manufacturer: Smarter Surfaces or Rosco  
Location: Journalism Workroom L2-24: News Studio back wall
3. Cyclorama wall paint: Flat white paint Manufacturer: Rosco "TV white" or ProCyc "Cyclorama white"
4. Selection of colours will be from manufacturers full range of colours.
5. Consultant to provide Painting schedule clarifying selected paint colours and locations.
6. Where specific products are available in restricted range of colours, selection based on limited range.
7. For deep and ultra deep colours; 4 coats may be required.

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## **2.4 Mixing and tinting**

1. Perform colour tinting operations prior to delivery of paint to site. Obtain written approval from Consultant for tinting of painting materials.
2. Mix paste, powder or catalyzed paint mixes in accordance with manufacturer's written instructions.
3. Use and add thinner in accordance with paint manufacturer's recommendations. Do not use kerosene or similar organic solvents to thin water-based paints.
4. Thin paint for spraying in accordance with paint manufacturer's instructions.
5. 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. Strain as necessary.

## **2.5 Gloss/sheen ratings**

1. Paint gloss is defined as sheen rating of applied paint, in accordance with following values:
  - 1.1. Level 1 - Matte(Flat) Finish  
Gloss @ 60 degrees: Max. 5  
Gloss@ 85 degrees: Max 10
  - 1.2. Level 2 - Velvet Finish  
Gloss @ 60 degrees: Max. 10  
Gloss@ 85 degrees: 10-35
  - 1.3. Level 3 - Eggshell Finish  
Gloss @ 60 degrees: 10-25  
Gloss@ 85 degrees: 10-35
  - 1.4. Level 4 - Satin (Pearl) Finish  
Gloss @ 60 degrees: 20-35  
Gloss@ 85 degrees: min 35
  - 1.5. Level 5 - Semi-gloss Finish  
Gloss @ 60 degrees: 35-70
  - 1.6. Level 6 - Gloss Finish  
Gloss @ 60 degrees: 70-85
  - 1.7. Level 7 - High Gloss Finish  
Gloss @ 60 degrees: More than 85
2. Gloss level ratings of painted surfaces to be provided on colour schedule.

## **2.6 Interior painting systems**

1. Concrete masonry units: smooth and split face block and brick:
  - 1.1. INT 4.2D - High performance architectural latex (over latex block filler) Eggshell finish.
2. Structural steel and metal fabrications: columns, beams, joists:
  - 2.1. INT 5.1Q - Latex Eggshell finish (over Q.D. alkyd primer).
3. Galvanized metal: doors, frames, railings, misc. steel, pipes, overhead decking, and ducts.
  - 3.1. INT 5.3M - High performance architectural latex insert gloss level (over W.B. galvanized primer) finish.
4. Dressed lumber: including doors, door and window frames, casings, mouldings:
  - 4.1. INT 6.3Z - Polyurethane, Clear, 2 component finish.
5. Wood paneling and casework: partitions, panels, shelving, millwork:

- 5.1. INT 6.4J - Polyurethane varnish satin finish.
- 5.2. INT 6.4Q - Fire Retardant, Clear, S.B. Eggshell coating (ULC rated).
- 6. Plaster and gypsum board: gypsum wallboard, drywall, "sheet rock type material", and textured finishes:
  - 6.1. INT 9.2B - High performance architectural latex Eggshell (over latex primer/sealer) finish.

## **2.7 Source quality control**

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

## **Part 3 Execution**

### **3.1 Manufacturer's instructions**

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

### **3.2 General**

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

### **3.3 Examination**

- 1. Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable to be painted in accordance with manufacturer's written instructions.
  - 1.1. Visually inspect substrate in presence of Consultant.
  - 1.2. Inform Consultant of unacceptable conditions immediately upon discovery.
  - 1.3. Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.
- 2. Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test". Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.
- 3. Maximum moisture content as follows:
  - 3.1. Stucco, plaster and gypsum board: 12 %.
  - 3.2. Concrete: 12 %.
  - 3.3. Clay and Concrete Block/Brick: 12 %.
  - 3.4. Hard Wood: 15 %.
  - 3.5. Soft Wood: 17%.

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### **3.4 Preparation**

1. Protection (not applicable to new painting work):
  - 1.1. Protect existing building surfaces and adjacent structures from paint splatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore surfaces as directed by Consultant.
  - 1.2. Protect items that are permanently attached such as Fire Labels on doors and frames.
  - 1.3. Protect factory finished products and equipment.
  - 1.4. Protect passing pedestrians, building occupants in and about the building.
2. Surface Preparation (not applicable to new painting work):
  - 2.1. 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.
  - 2.2. Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
  - 2.3. Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Consultant.
3. Clean and prepare surfaces in accordance with MPI Architectural Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:
  - 3.1. Remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths or compressed air.
  - 3.2. Wash surfaces with a biodegradable detergent and bleach where applicable and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.
  - 3.3. Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
  - 3.4. Allow surfaces to drain completely and allow to dry thoroughly.
  - 3.5. Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.
  - 3.6. Use trigger operated spray nozzles for water hoses.
  - 3.7. Many water-based paints cannot be removed with water once dried. Minimize use of mineral spirits or organic solvents to clean up water-based paints.
4. Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.
5. Where possible, prime non-exposed surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.
  - 5.1. Apply sealer to MPI #36 over knots, pitch, sap and resinous areas.
  - 5.2. Apply wood filler to nail holes and cracks.
  - 5.3. Tint filler to match stains for stained woodwork.
6. Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.
7. Carried out during shop priming: clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI

requirements. Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes and vacuum cleaning.

8. Touch up of shop primers with primer as specified.
9. Do not apply paint until prepared surfaces have been accepted by Consultant

### **3.5 Existing conditions**

1. 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" and report findings to Consultant. Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.
2. Maximum moisture content as follows:
  - 2.1. Stucco: 12 %.
  - 2.2. Concrete: 12 %.
  - 2.3. Clay and Concrete Block/Brick: 12 %.
  - 2.4. Hard Wood: 15 %.
  - 2.5. Soft Wood: 17%.

### **3.6 Application**

1. Method of application to be as approved by Consultant. Apply paint by air sprayer, brush, airless sprayer and/or roller. Conform to manufacturer's application instructions unless specified otherwise.
2. Brush and Roller Application:
  - 2.1. Apply paint in uniform layer using brush and/or roller type suitable for application.
  - 2.2. Work paint into cracks, crevices and corners.
  - 2.3. Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.
  - 2.4. Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces free of roller tracking and heavy stipple.
  - 2.5. Remove runs, sags and brush marks from finished work and repaint.
3. Spray application:
  - 3.1. Provide and maintain equipment that is suitable for intended purpose, capable of atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.
  - 3.2. Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.
  - 3.3. Apply paint in uniform layer, with overlapping at edges of spray pattern. Back roll first coat application.
  - 3.4. Brush out immediately all runs and sags.
  - 3.5. Use brushes and rollers to work paint into cracks, crevices and places which are not adequately painted by spray.
4. Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access.

5. Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
6. Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
7. Sand and dust between coats to remove visible defects.
8. Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.
9. Finish inside of cupboards and cabinets as specified for outside surfaces.
10. Finish closets and alcoves as specified for adjoining rooms.
11. Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.
12. Wood, drywall, plaster, stucco, concrete, concrete masonry units and brick; if sprayed, must be back rolled.

### **3.7 Mechanical/electrical equipment**

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

### **3.8 Site tolerances**

1. Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.
2. Ceilings: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.
3. Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

### **3.9 Cleaning**

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
  - 1.1. 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 00 - Cleaning.

3. Waste Management: separate waste materials for reuse or recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

### **3.10 Restoration**

1. Clean and re-install hardware items removed before undertaken painting operations.
2. Remove protective coverings and warning signs as soon as practical after operations cease.
3. Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.
4. Protect freshly completed surfaces from paint droppings and dust to approval of Consultant. Avoid scuffing newly applied paint.
5. Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Consultant.

**END OF SECTION**