# Mackin Park Concession Renewal

Coquitlam, British Columbia

Project Code: MPCR

Issued for Bid
July 18, 2025

# PROJECT MANUAL

Issued by

ph5 architecture inc

**Division 01 - General Requirements**



**Division 02 - Existing Conditions**



**Division 06 - Wood, Plastics and Composites**



**Division 07 - Thermal and Moisture Protection**



**Division 08 - Openings**



**Division 09 – Finishes**



**Division 10 – Specialties**



**Appendix**



**END OF SECTION**

## SECTION INDEX



## 1.0 WORK SCHEDULE

.1 Reach Substantial Performance of the Work by February 27, 2026.

.2 Reach Ready for Takeover of the Work of this Project by March 13, 2026.

.3 Contractor shall propose their own schedule on the bid form for if earlier than above. Dates will be reviewed as part of the proposal evaluation as indicated.

## 1.1 SUMMARY OF WORK

.1 Work of this Project includes interior upgrades to Mackin Park concession stand building. Work as indicated in RFP and as specified in Specifications, divided into Divisions and Sections for reference purposes only. Except as may be otherwise specified in Bid Document, division of Work among Contractor, Subcontractors, Sub-Subcontractors and Suppliers is Bidders' responsibility.

## 1.2 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 prior to start of and during Work of this Contract, and which is specifically excluded from this Contract:

.1 Sitework: Work in baseball diamond, bleachers area and surfaces around building.

.2 Civil Upgrades: Civil work not shown on Civil RFP drawings

## 1.3 WORK RESTRICTIONS

.1 Access and Egress.

.1 Design, construct and maintain temporary "access to" and "egress from" Work areas, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.

.2 Use of Site and Facilities

.1 Execute Work with least possible interference or disturbance to normal use of premises. Make arrangements with Consultant to facilitate Work as stated.

.2 Maintain existing services to building and provide for personnel and vehicle access.

.3 Where security is reduced by Work provide temporary means to maintain security.

.4 Closures: protect Work temporarily until permanent enclosures are completed.

.3 Alterations, additions or repairs to existing building:

.1 Execute Work with least possible interference or disturbance to building operations, occupants, public and normal use of premises.

.4 Existing Services

.1 Notify, Consultant and utility companies of intended interruption of services and obtain required permission.

.2 Where Work involves breaking into or connecting to existing services, give Consultant 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of Work. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.

.3 Provide for personnel, pedestrian and vehicular traffic.

.4 Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.

.5 Special Requirements

.1 Noise generating Work is restricted to times in accordance with local noise bylaws.

.2 Keep within limits of Work and avenues of ingress and egress.

.6 Building Smoking Restrictions

.1 Smoking is not allowed anywhere on the property.

## 1.4 PAYMENT PROCEDURES FOR TESTING

.1 Related Requirements Specified Elsewhere:

.1 Particular requirements for inspection and testing to be carried out by testing laboratory designated by Consultant are specified under various Sections.

.2 Appointment and Payment:

.1 Contractor will appoint and pay for services of testing laboratory except follows:

.1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.

.2 Inspection and testing performed exclusively for Contractor's convenience.

.3 Testing, adjustment and balancing of mechanical and electrical equipment and systems.

.4 Mill tests and certificates of compliance.

.5 Tests specified to be carried out by Contractor under the supervision of Consultant.

.2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with Contract requirements, pay costs for additional tests or inspections as required by Consultant to verify acceptability of corrected Work.

.3 Contractor’s Responsibilities

.1 Provide labour, equipment and facilities to:

.1 Provide access to Work for inspection and testing.

.2 Facilitate inspections and tests.

.3 Make good Work disturbed by inspection and test.

.4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.

.2 Notify Consultant sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.

.3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.

.4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Consultant.

## 1.5 PROJECT MEETINGS

.1 Preconstruction Meeting:

.1 Within 14 days after award of Contract, hold a 1/2 day meeting to discuss construction strategies and procedure.

.2 Representatives of Owner, Consultant, Contractor, major Subcontractors, Suppliers listed in bid form, field inspectors and supervisors must be in attendance.

.3 Coordinate time and location of meeting and notify parties concerned minimum 5 days before meeting.

.4 Agenda to include:

.1 Appointment of official representative of participants in the Work.

.2 Schedule of Work: in accordance with CONSTRUCTION SCHEDULE.

.3 Schedule of submission of Shop Drawings, samples, colour chips.

.4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with CONSTRUCTION FACILITIES.

.5 Delivery schedule of specified equipment.

.6 Site security in accordance with TEMPORARY BARRIERS AND ENCLOSURES.

.7 Proposed changes, Change Orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.

.8 Owner provided Products and salvaged items as indicated on Drawings.

.9 Record Drawings.

.10 Maintenance manuals in accordance with CLOSEOUT SUBMITTALS.

.11 Take-over procedures, acceptance, warranties in accordance with CLOSEOUT SUBMITTALS.

.12 Monthly progress claims, administrative procedures, photographs, hold backs.

.13 Appointment of inspection and testing agencies or firms.

.14 Insurances, transcript of policies.

.2 Progress Meetings:

.1 During course of Work schedule progress meetings every two weeks and as required by Consultant and Owner.

.2 Contractor, major Subcontractors involved in Work and Consultant and Owner are to be in attendance.

.3 Notify parties minimum 5 days prior to meetings.

.4 Contractor to record minutes of meetings and circulate to attending parties and affected parties not in attendance within 3 days after meeting.

.5 Agenda to include the following:

.1 Review, approval of minutes of previous meeting.

.2 Review of Work progress since previous meeting.

.3 Field observations, problems, conflicts.

.4 Problems which impede construction schedule.

.5 Review of off-site fabrication delivery schedules.

.6 Corrective measures and procedures to regain projected schedule.

.7 Revision to construction schedule.

.8 Progress schedule, during succeeding Work period.

.9 Review submittal schedules: expedite as required.

.10 Maintenance of quality standards.

.11 Review proposed changes for affect on construction schedule and on completion date.

.12 Other business.

## 1.6 CONSTRUCTION SCHEDULE

.1 Definitions:

.1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.

.2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. 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.

.9 Project Planning, Monitoring and Control System: overall system operated by Consultant to enable monitoring of Project Work in relation to established milestones.

.2 Requirements:

.1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.

.2 Plan to complete Work in accordance with prescribed 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.

.3 Submittals:

.1 Provide submittals in accordance with SUBMITTAL PROCEDURES.

.2 Submit to Consultant within 15 Working Days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of Project progress.

.4 Project Schedule:

.1 Develop detailed Project Schedule derived from Master Plan.

.2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:

.1 Award.

.2 Shop Drawings, Samples.

.3 Permits.

.4 Mobilization.

.5 Removal of demolition Work.

.6 Excavation.

.7 Backfill.

.8 Interior Architecture (Walls, Floors and Ceiling).

.9 Exterior Painting.

.10 Plumbing.

.11 Lighting.

.12 Electrical.

.13 Piping.

.14 Controls.

.15 Millwork.

.5 Project Schedule Reporting:

.1 Update Project Schedule every two weeks reflecting activity changes and completions, as well as activities in progress.

.2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

.6 Project Meetings:

.1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.

.2 Weather related delays with their remedial measures will be discussed and negotiated.

## 1.7 SUBMITTAL PROCEDURES

.1 Administrative:

.1 Submit to Consultant submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Do not proceed with Work affected by submittal until review is complete.

.3 Present Shop Drawings, Product data, samples and mock-ups in metric units.

.4 Where items or information is not produced in metric units, converted values are acceptable.

.5 Review submittals prior to submission to Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific Project will be returned without being examined and considered rejected.

.6 Notify Consultant in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.7 Verify field measurements and affected adjacent Work are co-ordinated.

.8 Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review of submittals.

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant review.

.10 Keep one reviewed copy of each submission on site.

.2 Shop Drawings and Product Data:

.1 The term "Shop Drawings" means Drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

.2 Submit Shop Drawings bearing stamp and signature of qualified professional engineer registered or licensed in Province of the Work as required. The Professional Engineer shall be responsible for reviewing the method of seismic restraint and attachment to the structure with the Consultant prior to installation. The Professional Engineer shall also provide field and certification of installation at Sub-contractor’s cost.

.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 full Working Days for Consultant's review of each submission.

.5 Adjustments made on Shop Drawings by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.

.6 Make changes in Shop Drawings as Consultant may require, consistent with Contract Documents. When resubmitting, notify Consultant in writing of revisions other than those requested.

.7 Accompany submissions with transmittal letter, containing:

- .1 Date.
- .2 Project title and number.
- .3 Contractor's name and address.
- .4 Specification Sections and indication of partial or complete submittal for stated Section
- .5 Other pertinent data.

.8 Submissions include:

- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of:
  - .1 Subcontractor.
  - .2 Supplier.
  - .3 Manufacturer.
- .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
- .5 Details of appropriate portions of Work as applicable:
  - .1 Fabrication.
  - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
  - .3 Setting or erection details.
  - .4 Capacities.
  - .5 Performance characteristics.
  - .6 Standards.
  - .7 Operating weight.
  - .8 Wiring diagrams.
  - .9 Single line and schematic diagrams.
  - .10 Relationship to adjacent Work.

.9 After Consultant's review, distribute copies.

.10 Submit electronic copy of Shop Drawings for each requirement requested, except where hand drawn copies are produced or colours have to be chosen or confirmed, in specification Sections and as Consultant may reasonably request.

.11 Submit electronic copies of Product data sheets or brochures for requirements requested in specification Sections and as requested by Consultant where Shop Drawings will not be prepared due to standardized manufacture of Product.

.12 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Consultant.

.1 Report signed by authorized official of testing laboratory that material, Product or system identical to material, Product or system to be provided has been tested in accord with specified requirements.

.2 Testing must have been within 3 years of date of Contract award for Project.

.13 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Consultant.

.1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of Product, system or material attesting that Product, system or material meets specification requirements.

.2 Certificates must be dated after award of Project Contract complete with Project name.

.14 Submit electronic copies of manufacturer’s instructions for requirements requested in specification Sections and as requested by Consultant.

.1 Pre-printed material describing installation of Product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

.15 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Consultant.

.1 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.16 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Consultant.

.17 Delete information not applicable to Project.

.18 Supplement standard information to provide details applicable to Project.

.19 If upon review by Consultant, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If Shop Drawings are rejected, noted copy will be returned and resubmission of corrected Shop Drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

.20 The review of Shop Drawings is for sole purpose of ascertaining conformance with general concept.

.1 This review shall not mean that the Consultant approves detail design inherent in Shop Drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in Shop Drawings or of responsibility for meeting requirements of construction and Contract Documents.

.2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

.3 Samples/brochures for colour or texture:

.1 Submit for review samples in duplicate or as required in respective specification Sections. Label samples with origin and intended use.

.2 Deliver samples prepaid to Consultant's business address.

.3 Notify Consultant in writing, at time of submission of deviations in samples from requirements of Contract Documents.

.4 Where colour, pattern or texture is criterion, submit full range of samples.

.5 Adjustments made on samples by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.

.6 Make changes in samples which Consultant may require, consistent with Contract Documents.

.7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

.4 Photographs: Digital Format:

.1 Progress Photographs:

.1 Sizes: between 5 and 10 mega pixel image file size, jpeg image file.

.2 Format: USB flash drive (*.jpg) or e-mail.

.3 Viewpoints: A minimum of four (4) photographs from three (3) different viewpoints will be required. Locations determined by Consultant.

.4 Identification: referenced to photo file with name, location, purpose, and number of Project and date of exposure.

.5 Frequency: daily.

.5 Certificates and Transcripts:

.1 Immediately after award of Contract, submit Workers' Compensation Board status.

.2 Submit transcription of insurance immediately after award of Contract.

## 1.8 HEALTH AND SAFETY

.1 Responsibility for Work Site Safety - This Contractor Is "Prime Contractor":

.1 The Contractor shall, for the purposes of the Occupational Health and Safety Act (British Columbia), and for the duration of the Work of this Contract:

.1 Be the "Prime Contractor" for the "Work Site", and

.2 Meet all requirements of the Occupational Health and Safety Act and Regulations, Workers Compensation Board legislation, the Fire Code legislation and all other applicable laws that govern Work place safety.

.2 The Contractor shall direct all Subcontractors, sub-Subcontractors, Other Contractors, employees, Suppliers, workers and any other persons at the "Work Site" on safety related matters, to the extent required to fulfill its "Prime Contractor" responsibilities pursuant to the Act, regardless of:

.1 Whether or not any Contractual relationship exists between the Contractor and any of these entities, and

.2 Whether or not such entities have been specifically identified in this Contract.

.3 Safety Certification: Safety certification is a condition of Contract award; Contractor is required to maintain a valid Certificate of Recognition (COR) for the duration of the Work of this Contract.

.2 References:

.1 British Columbia Construction Safety Alliance (BCCSA).

.2 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations

.3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.4 Province of British Columbia

.1 Workers Compensation Act.

.2 British Columbia Electrical Safety Branch Regulations.

.5 WorkSafeBC

.1 Occupational Health and Safety Regulation (WorkSafeBC).

.3 Submittals:

.1 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:

.1 Results of site specific safety hazard assessment.

.2 Results of safety and health risk or hazard analysis for site tasks and operation found in Work plan.

.2 Submit 2 copies of Contractor's authorized representative's Work site health and safety inspection reports to Consultant and authority having jurisdiction, weekly.

.3 Submit copies of reports or directions issued by Federal and Provincial health and safety inspectors.

.4 Submit copies of incident and accident reports.

.5 Submit WHMIS MSDS - Material Safety Data Sheets.

.4 Filing of Notice:

.1 File Notice of Project with Provincial authorities prior to beginning of Work.

.5 Safety Assessment:

.1 Perform site specific safety hazard assessment related to Project.

.6 Meetings:

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

.7 Regulatory Requirements:

.1 Do Work in accordance with REGULATORY REQUIREMENTS.

.8 General Requirements:

.1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address Project Specifications.

.2 Consultant may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

.9 Responsibility:

.1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

.2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

.10 Unforeseen Hazards:

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

.11 Health and Safety Coordinator:

.1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:

.1 Have site-related working experience specific to activities.

.2 Have working knowledge of occupational safety and health regulations.

.3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.

.4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.

.5 Be on site during execution of Work and report directly to and be under direction of site supervisor.

.12 Posting of Documents:

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

.13 Correction of Non-Compliance:

.1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Consultant.

.2 Provide Consultant with written report of action taken to correct non-compliance of health and safety issues identified.

.3 Owner may stop Work if non-compliance of health and safety regulations is not corrected.

.14 Blasting:

.1 Blasting or other use of explosives is not permitted without prior receipt of written instruction by Authority Having Jurisdiction.

.15 Powder Actuated Devices:

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

.16 Work Stoppage:

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

## 1.9 ENVIRONMENTAL PROCEDURES

.1 Definitions:

.1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.

.2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

.2 Submittals:

.1 Submittals: in accordance with SUBMITTAL PROCEDURES.

.2 Prior to commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Consultant Environmental Protection Plan is to present comprehensive overview of known or potential environmental issues which must be addressed during construction.

.3 Address topics at level of detail commensurate with environmental issue and required construction tasks.

.4 Environmental protection plan, include:

.1 Names of persons responsible for ensuring adherence to Environmental Protection Plan.

.2 Names and qualifications of persons responsible for manifesting hazardous waste to be removed from site.

.3 Names and qualifications of persons responsible for training site personnel.

.4 Drawings showing locations of proposed material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.

.5 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use. Plan to include measures for marking limits of use areas including methods for protection of features to be preserved within authorized Work areas.

.6 Spill Control Plan: including procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.

.7 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.

.8 Air pollution control plan detailing provisions to ensure that dust, debris, materials, and trash, do not become air borne and travel off Project site.

.9 Contaminant prevention plan that: identifies potentially hazardous substances to be used on job site; identifies intended actions to prevent introduction of such materials into air, water, or ground; and details provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.

.10 Waste water management plan that identifies methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, disinfection water, hydrostatic test water, and water used in flushing of lines.

.11 Pesticide treatment plan: to be included and updated, as required.

.3 Fires:

.1 Fires and burning of rubbish on site not permitted.

.4 Drainage:

.1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.

.2 Do not dump water containing suspended materials into drainage systems.

.3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

.5 Pollution Control:

.1 Maintain temporary erosion and pollution control features installed under this Contract.

.2 Control emissions from equipment and plant to local authorities' emission requirements.

.3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area, by providing temporary enclosures.

.4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.

.6 Notification:

.1 Consultant will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.

.2 Contractor: after receipt of such notice, inform Consultant of proposed corrective action and take such action for approval by Consultant.

.3 Consultant will issue stop order of Work until satisfactory corrective action has been taken.

.4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

## 1.10 REGULATORY REQUIREMENTS

.1 References and Codes:

.1 Perform Work in accordance with British Columbia Building Code (BCBC) 2024, ASHRAE 90.1, 2016, and CSA B651-23 including amendments up to bid closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.

.2 Meet or exceed requirements of:

.1 Contract Documents.

.2 Specified standards, codes and referenced documents.

.2 Municipalities:

.1 Perform Work in accordance with the by-laws and ordinances of the Municipality in the jurisdiction of the Work and to the direction of the Authorities Having Jurisdiction.

## 1.11 QUALITY CONTROL

.1 Inspection:

.1 Allow Consultant access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Consultant instructions, or law of Place of Work.

.3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

.4 Consultant will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such Work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Consultant shall pay cost of examination and replacement.

.2 Independent Inspection Agencies:

.1 Independent Inspection/Testing Agencies will be engaged by Contractor for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Contractor.

.2 Contractor shall provide inspections, tests and other quality control services, unless otherwise indicated as the responsibility of the Owner, specified in the Contract Documents and required by the authorities having jurisdiction. Employ and pay for a qualified independent inspection/testing agency to perform quality control services. Costs for these services are to be included in the Contract Sum.

.3 Access to Work:

.1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.

.2 Co-operate to provide reasonable facilities for such access.

.4 Procedures:

.1 Notify appropriate agency in advance of requirement for tests, in order that attendance arrangements can be made.

.2 Submit samples or materials required for testing, as specifically requested in Specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.

.3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

.5 Rejected Work:

.1 Remove defective Work, whether result of poor workmanship, use of defective Products or damage and whether incorporated in Work or not, which has been rejected by Consultant as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

.2 Make good Other Contractor's Work damaged by such removals or replacements promptly.

.3 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 by Consultant.

.6 Reports:

.1 Submit electronic copies of inspection and test reports to Consultant.

.2 Provide copies to Subcontractor of Work being inspected or tested and manufacturer or fabricator of material being inspected or tested.

.7 Tests and Mix Designs:

.1 Furnish test results and mix designs as requested.

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

.8 Mill Tests:

.1 Submit mill test certificates as requested or required of specification Sections

.9 Equipment and Systems:

.1 Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.

## 1.12 TEMPORARY UTILITIES

.1 References:

.1 U.S. Environmental Protection Agency (EPA) / National Pollutant Discharge Elimination System (NPDES):

.1 2022 Construction General Permit (CGP).

.2 Installation and Removal:

.1 Provide temporary utilities controls in order to execute Work expeditiously.

.2 Remove from site all such Work after use.

.3 Dewatering:

.1 Provide temporary drainage and pumping facilities to keep site free from standing water.

.4 Water Supply:

.1 Owner will allow use of existing water supply at no cost to the Contractor for renovation Projects.

.2 Arrange for connection with appropriate utility company and pay costs for installation, maintenance and removal.

.5 Temporary Heating and Ventilation (Renovations):

.1 Owner will allow use of existing heating system for temporary heating required for the Project.

.2 Owner will pay utility charges when temporary heat source is existing building equipment.

.3 Provide temporary facilities for heating supply such as ducts, diffusers, copper pipe, valves and fans to approval of the Owner.

.4 Be responsible for properly maintaining the temporary heating system and replace any worn out or broken items.

.5 On completion of Work for which permanent heating system is used, replace filters and replace bearing. Thoroughly clean permanent equipment used during construction.

.6 Maintain temperatures of minimum 10 degrees C in areas where construction is in progress.

.7 Ventilating:

.1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.

.2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.

.3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.

.4 Ventilate storage spaces containing hazardous or volatile materials.

.5 Ventilate temporary sanitary facilities.

.6 Continue operation of ventilation and exhaust system for time after cessation of Work process to ensure removal of harmful contaminants.

.8 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

.6 Temporary Power and Light:

.1 Owner will supply power at no cost to the Contractor for renovation Projects to a maximum supply of 230 volts 30 amps. Contractor shall pay for all changes and supply all materials required by use of existing system.

.2 Electrical power and lighting systems installed under this Contract may be used for construction requirements only with prior approval of Owner provided that guarantees are not affected. Make good damage to electrical system caused by use under this Contract. Replace lamps which have been used for more than 3 months.

.7 Temporary Communication Facilities:

.1 Provide and pay for temporary telephone, fax, and data hook up lines and equipment as required.

.8 Fire Protection:

.1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.

## 1.13 CONSTRUCTION FACILITIES

.1 Installation and Removal:

.1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.

.2 Identify areas which have to be gravelled to prevent tracking of mud.

.3 Indicate use of supplemental or other staging area.

.4 Provide construction facilities in order to execute Work expeditiously.

.5 Remove from site all such Work after use.

.2 Hoisting:

.1 Provide, operate and maintain hoists and cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.

.2 Hoists and cranes to be operated by qualified operator.

.3 Site Storage/Loading:

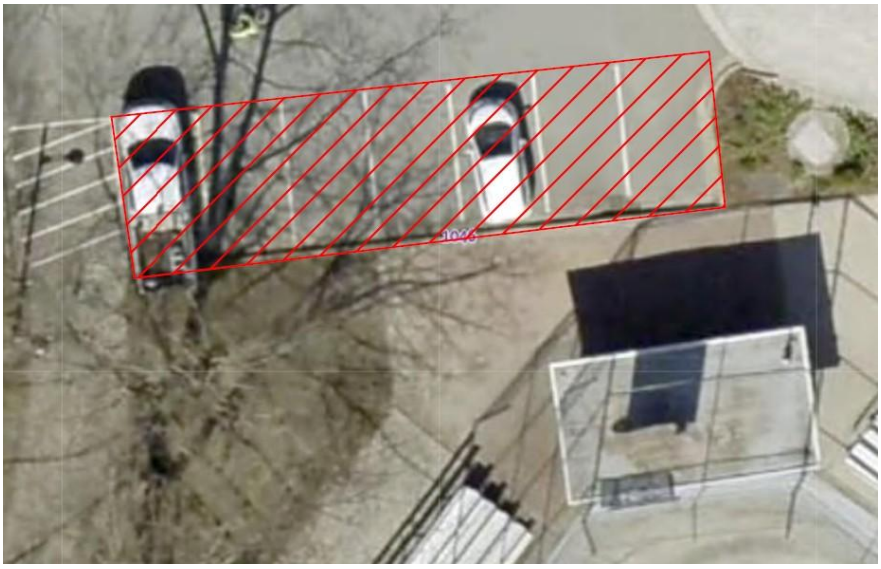
.1 Confine Work and operations of employees by Contract Documents. Do not unreasonably encumber premises with Products.

.2 Provide 20’ trailer to store site equipment in designated area indicated in the photo below. Contractor is responsible for monitoring and protection of the area and their supplies/products.

.3 Do not load or permit to load any part of Work with weight or force that will endanger Work.

.4 Construction Parking:

.1 Parking will be permitted on site as indicated below (this area is for storage as well as indicated above):



.2 Provide and maintain adequate access to Project site.

.5 Security:

.1 Provide fencing and additional security as deemed necessary.

.6 Equipment, Tool and Materials Storage:

.1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.

.2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with Work activities.

.7 Sanitary Facilities:

.1 Provide Sanitary facilities on site.

.2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

.8 Construction Signage:

.1 Submit Shop Drawing of sign for approval prior to ordering.

.2 Provide and erect Project sign, within three weeks of signing Contract, in a location designated by Consultant.

.3 Indicate on sign, name of Consultant and Contractor and Subcontractor of design style established by Consultant.

.4 No other signs or advertisements, other than warning signs, are permitted on site.

.9 Clean-up:

.1 Remove construction debris, waste materials, packaging material from Work site daily.

.2 Clean dirt or mud tracked onto paved or surfaced roadways.

.3 Store materials resulting from demolition activities that are salvageable.

.4 Stack stored new or salvaged material not in construction facilities.

.10 Temporary Erosion and Sedimentation Control:

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

## 1.14 TEMPORARY BARRIERS AND ENCLOSURES

.1 Installation and Removal:

.1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such Work after use.

.2 Hoarding:

.1 Erect temporary site enclosure using purpose made, prefabricated interlocking metal fence panels 2.1 m high.

.2 Provide one lockable truck entrance gate and at least one pedestrian door as directed and conforming to applicable traffic restrictions on adjacent streets. Equip gates with locks and keys.

.3 Erect and maintain pedestrian walkways complete with signs and electrical lighting as required by law.

.4 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

.3 Guard Rails and Barricades:

.1 Provide secure, rigid guard rails and barricades around deep excavations and open shafts..

.2 Provide as required by governing authorities.

.4 Weather Enclosures:

.1 Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.

.2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior Work for temporary heat.

.3 Design enclosures to withstand wind pressure.

.5 Dust Tight Screens:

.1 Provide dust tight screens or partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.

.2 Maintain and relocate protection until such Work is complete.

.6 Access to Site:

.1 Provide and maintain access roads, and sidewalk crossings, as may be required for access to Work.

.7 Fire Routes and Exits:

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

.8 Protection of Off-Site and Public Property:

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage incurred.

.9 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 Be responsible for damage incurred due to lack of or improper protection.

## 1.15 COMMON PRODUCT REQUIREMENTS

.1 References:

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2008, Stipulated Price Contract.

.2 Within text of each Specifications Section, reference may be made to reference standards.

.3 Conform to these reference standards, in whole or in part as specifically requested in Specifications.

.4 If there is question as to whether Products or systems are in conformance with applicable standards, Consultant reserves right to have such Products or systems tested or to receive test data.

.5 Cost for such testing will be born by Owner in event of conformance with Contract Documents or by Contractor in event of non-conformance.

.2 Quality:

.1 Refer to CCDC 2.

.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.

.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 reviewed for possible authorization 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.

.4 Storage, Handling and Protection:

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

.2 Store packaged or bundled Products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.

.3 Store Products subject to damage from weather in weatherproof enclosures.

.4 Store cementitious Products clear of earth or concrete floors, and away from walls.

.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.6 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.

.7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.

.8 Remove and replace damaged Products at own expense and to satisfaction of Consultant.

.9 Touch-up damaged factory finished surfaces to Consultant's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

.5 Transportation:

.1 Pay costs of transportation of Products required in performance of Work.

.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.

.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.

.8 Coordination:

.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.

.9 Concealment:

.1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.

.2 Before installation inform Consultant if there is interference. Install as directed by Consultant.

.10 Remedial Work:

.1 Refer to CCDC 2 and EXECUTION.

.2 Perform remedial Work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.

.3 Perform remedial Work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

.11 Location of Fixtures:

.1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.

.2 Inform Consultant of conflicting installation. Install as directed.

.12 Fastenings:

.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior Work, unless stainless steel or other material is specifically requested in affected specification Section.

.4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.

.5 Keep exposed fastenings to a minimum, space evenly and install neatly.

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

.13 Fastenings – Equipment:

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.

.3 Bolts may not Project more than one diameter beyond nuts.

.4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

.14 Protection of Work in Progress:

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

.15 Existing Utilities:

.1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work.

.2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

## 1.16 PRODUCT OPTIONS AND SUBSTITUTIONS

.1 Definitions:

.1 Acceptable Materials: The term Acceptable Materials is used to specify Products by trade name, manufacturer, catalogue number, model number, or similar reference, and is used within the Project Manual as follows:

.1 Acceptable Materials listings are based on Consultant's determination that materials meet specified requirements and opinion of applicability to the Project requirements.

.2 Acceptable Materials listings are deemed to establish the standard of acceptance that Consultant will consider appropriate for the Work.

.3 Any Product listed in the Acceptable Materials listing may be used to establish the Bid Price.

.2 Basis-of-Design Materials: The term Basis-of-Design Materials is used to specify a specific material name, manufacturer, catalogue number, model number or similar reference and is used as follows:

.1 Basis-of-Design Materials are used to establish Consultant's preference for a single source Product listing based on performance, appearance or configuration.

.2 Use the Basis-of-Design Material to establish the Bid Price, unless an Addendum is issued adding additional Acceptable Materials.

.3 Basis-of-Design Materials designation does not limit the Contractor's ability to submit Proposed Substitutions in accordance with Substitutions requirements of this Section and specific performance requirements listed in Technical Specification Sections.

.3 Non-proprietary specification means a specification which includes descriptive, reference standard or performance requirements, or any combination thereof, but does not include proprietary names of Products or manufacturers.

.4 Substitution means a proposal from a Contractor to provide a Product, material, or item of equipment not specified in the Contract Documents but functionally equivalent and readily exchangeable to a specified item; for consideration by Consultant and Owner.

.2 Submittals:

.1 When requested by Consultant, submit complete data substantiating compliance of a Product with requirements of Contract Documents. Include the following:

.1 Product identification, including manufacturer's name and address.

.2 Written verification that the substitute Products can be obtained, meet the performance required for the Project, and meet requirements of the current Building Code.

.3 Manufacturer's literature providing Product description, applicable reference standards, and performance and test data.

.4 Samples, as applicable.

.5 Name and address of Projects on which Product has been used and date of each installation.

.6 For substitutions and requests for changes to accepted Products, include in addition to the above, the following:

.1 Itemized comparison of substitution with named Product(s). List significant variations.

.2 Designation of availability of maintenance services and sources of replacement materials.

.3 Product Options:

.1 For Products specified by non-proprietary specification:

.1 Select any Product, assembly or material that meets or exceeds the specified standards for Products specified only by referenced standards and performance criteria.

.2 Acceptable Materials: Select any named Product, assembly or material contained in the listing of Acceptable Materials.

.3 Basis-of-Design Materials: Use the named Product contained in the Basis-of-Design Material listing, unless an addendum is issued indicating acceptance of additional Acceptable Materials.

.4 Substitutions:

.1 Contractor will assemble requests for substitutions requested by Subcontractors and submit to Consultant for review.

.2 Consultant will review proposed substitute Products for acceptability only when submitted by Contractor; Consultant will not review requests submitted independently by Subcontractors.

.3 No substitutions will be permitted without Consultant's written acceptance; Contractor will be required to remove Products and replace with specified materials or provide a credit to the value of the Contract at Consultant's discretion where substitutions are found in the Work that have not been formally accepted by Consultant and Owner.

.4 Consultant is not obliged to accept any Proposed Substitution offered by Contractor, and reserves the right to dismiss any item with no further explanation.

.5 Substitute Products: Where substitute Products are permitted, unnamed Products may be accepted by Consultant, subject to the following:

.1 Substitute Products shall be the same type as, be capable of performing the same functions as, and meet or exceed the standards of quality and performance of the named Product(s). Substitutions shall not require revisions to Contract Documents nor to Work of Other Contractors.

.6 Substitute Manufacturers: Where substitute manufacturers are permitted, unnamed manufacturers may be accepted by Consultant, subject to the following:

.1 Substitute manufacturers shall have capabilities comparable to those of the named manufacturer(s). Substitutions shall not require revisions to Contract Documents nor to Work of Other Contractors.

.7 In making a proposal for substitution the Contractor represents:

.1 That they have personally investigated the proposal and (unless the proposal explicitly states otherwise) determined that it performs in a similar way or is superior to the Product or method specified.

.2 That the same guaranty will be furnished as for the originally specified Product or construction method.

.3 That they will coordinate installation of the accepted substitute into the Work, making such changes in the Work as may be required to accommodate the change.

.4 That they will bear costs and waives claims for additional compensation for costs and time that subsequently become apparent arising out of the substitution.

## 1.17 EXECUTION

.1 Submittals:

.1 Submit written request in advance of cutting or alteration which affects:

.1 Structural integrity of elements of Project.

.2 Integrity of weather-exposed or moisture-resistant elements.

.3 Efficiency, maintenance, or safety of operational elements.

.4 Visual qualities of sight-exposed elements.

.5 Work of Owner or separate Contractor.

.2 Include in request:

.1 Identification of Project.

.2 Location and description of affected Work.

.3 Statement on necessity for cutting or alteration.

.4 Description of proposed Work, and Products to be used.

.5 Alternatives to cutting and patching.

.6 Effect on Work of Owner or separate Contractor or tenants.

.7 Written permission of affected separate Contractor.

.8 Date and time Work will be executed.

.2 Materials:

.1 Required for original installation.

.2 Change in Materials: Submit request for substitution in accordance with PRODUCT OPTIONS AND SUBSTITUTIONS.

.3 Preparation:

.1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

.2 After uncovering, inspect conditions affecting performance of Work.

.3 Beginning of cutting or patching means acceptance of existing conditions.

.4 Provide supports to ensure structural integrity of surroundings; provide devices and methods to protect other portions of Project from damage.

.5 Provide protection from elements for areas which are to be exposed by uncovering Work; maintain excavations free of water.

.4 Execution:

.1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.

.2 Fit several parts together, to integrate with other Work.

.3 Uncover Work to install ill-timed Work.

.4 Remove and replace defective and non-conforming Work.

.5 Remove samples of installed Work for testing.

.6 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.

.7 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

.8 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.

.9 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry Work without prior approval.

.10 Restore Work with new Products in accordance with requirements of Contract Documents.

.11 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

.12 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

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

## 1.18 CLEANING

.1 References:

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2 - 2008, Stipulated Price Contract.

.2 Project Cleanliness:

.1 Maintain Work in tidy condition, free from accumulation of waste Products and debris, including that caused by Owner or Other Contractors.

.2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site.

.3 Clear snow and ice from access to building, bank/pile snow in designated areas only.

.4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.5 Provide on-site containers for collection of waste materials and debris.

.6 Provide and use marked separate bins for recycling. Refer to WASTE MANAGEMENT AND DISPOSAL.

.7 Dispose of waste materials and debris off site.

.8 Clean interior areas prior to start of finishing Work, and maintain areas free of dust and other contaminants during finishing operations.

.9 Store volatile waste in covered metal containers, and remove from premises at end of each Working Day.

.10 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

.11 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

.12 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

.3 Final Cleaning:

.1 Clean Work prior to final review by Consultant.

.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 other than that caused by others, 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 Remove waste materials from site in accordance with WASTE MANAGEMENT AND DISPOSAL.

.7 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.8 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.

.9 Remove stains, spots, marks and dirt from decorative Work, electrical and mechanical fixtures, furniture fitments, walls, and horizontal hard surfaces.

.10 Clean lighting reflectors, lenses, and other lighting surfaces.

.11 Vacuum clean and dust building interiors, behind grilles, louvres and screens.

.12 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.

.13 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

.14 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.

.15 Remove dirt and other disfiguration from exterior surfaces.

.16 Clean and sweep roofs, gutters, areaways, and sunken wells.

.17 Sweep and wash clean paved areas.

.18 Clean equipment and fixtures to sanitary condition.

.19 Clean mechanical equipment including replacement of filters.

.20 Clean roofs, downspouts, and drainage systems.

.21 Remove debris and surplus materials from accessible concealed spaces.

.22 Remove snow and ice from access to building.

## 1.19 WASTE MANAGEMENT AND DISPOSAL

.1 Waste Management Goals:

.1 Prior to start of Work conduct meeting with Consultant to review and discuss Waste Management Plan and Goals.

.2 Waste Management Goal is to divert construction and demolition materials considered recyclable from landfill sites.

.3 Accomplish maximum control of solid construction and demolition waste.

.4 Preserve environment and prevent pollution and environment damage.

.2 Definitions:

.1 Recyclable: ability of Product or material to be recovered at end of its life cycle and re-manufactured into new Product for reuse.

.2 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new Products.

.3 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

.4 Reuse: repeated use of Product in same form but not necessarily for same purpose. Reuse includes:

.1 Salvaging reusable materials from re-modelling Projects, before demolition stage, for resale, reuse on current Project or for storage for use on future Projects.

.2 Returning reusable items including pallets or unused Products to vendors.

.5 Salvage: removal of structural and non-structural materials from deconstruction/disassembly Projects for purpose of reuse or recycling.

.6 Separate Condition: refers to waste sorted into individual types.

.7 Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste.

.3 Storage, Handling and Protection:

.1 Store, materials to be reused, recycled and salvaged in locations as directed by Consultant.

.2 Unless specified otherwise, materials for removal become Contractor's property.

.3 Protect, stockpile, store and catalogue salvaged items.

.4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.

.5 Protect structural components not removed for demolition from movement or damage.

.6 Support affected structures. If safety of building is endangered, cease operations and immediately notify Consultant.

.7 Protect surface drainage, mechanical and electrical from damage and blockage.

.8 Separate and store materials produced during dismantling of structures in designated areas.

.9 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.

.1 On-site source separation is recommended.

.2 Remove co-mingled materials to off-site processing facility for separation.

.4 Disposal of Waste:

.1 Do not bury rubbish or waste materials.

.2 Burning rubbish and construction waste materials is not permitted on site.

.3 Do not dispose of waste, volatile materials, mineral spirits, oil, and paint thinner into waterways, storm, or sanitary sewers.

.4 Keep records of construction waste including:

.1 Number and size of bins.

.2 Waste type of each bin.

.3 Reused or recycled waste destination.

.5 Remove materials from deconstruction as deconstruction/disassembly Work progresses.

## 1.20 STARTING AND ADJUSTING

.1 A facility start-up process shall be used to bring the facility to a fully operational state, free of deficiencies, in the most efficient and timely manner achievable.

.2 Contractor shall be responsible for testing, adjusting and balancing of all:

.1 Piped, ducted, wired and wireless services and systems, including all components and equipment forming part thereof, and

.2 Manually and mechanically operated systems including all components and equipment forming part thereof.

.3 Perform starting of each system and each item of equipment in accordance with the general requirements specified in this section and is specific to facility start-up and commissioning of the facility.

.4 This section specifies additional requirements to those required for normal Contractor’s start-up of equipment and systems as contained in the General Requirements of the Contract, and as follows:

.1 Perform and record tests to confirm proper performance and compliance with requirements of Contract Documents; take corrective action as necessary.

.2 Perform adjustments to ensure proper, efficient and safe operation.

.3 Perform balancing to ensure that the various parts of system are in a proper state of equilibrium.

.5 Performance Testing will begin two weeks prior to declaration of Substantial Performance as described in CLOSEOUT PROCEDURES and will lead to Fine Tuning of equipment and systems.

.6 Fine Tuning will occur prior to declaration of Substantial Performance as described in CLOSEOUT PROCEDURES and will lead to Final Acceptance of the Work.

.7 Quality Assurance

.1 Contractor shall perform testing, adjusting and balancing with Contractor's qualified personnel, or employ and pay for a qualified organization to perform such services.

.2 Perform testing, adjusting and balancing after starting of equipment and systems.

.3 Provide personnel, operate systems at designated times, and under conditions required for proper testing, adjusting, and balancing.

.4 Report to Consultant any deficiencies or defects noted during testing, adjusting and balancing, which cannot be promptly corrected.

.8 Manufacturer’s Site Services

.1 Provide manufacturers authorized representative when specified, or when requested by the Owner at site to do the following:

.1 Inspect, check and approve equipment and systems installation before starting.

.2 Supervise placing equipment and systems in operation.

.2 Manufacturers’ authorized representative shall provide a written report verifying that equipment:

.1 Is properly installed and lubricated;

.2 Is in accurate alignment;

.3 Is free from any undue stress imposed by connecting lines or anchor bolts; and,

.4 Is being satisfactorily operated under load conditions.

.9 Preparation

.1 Have Contract Documents, Shop Drawings, Product data, and operation and maintenance data at hand during starting process.

.2 Coordinate sequence for starting of various equipment and systems.

.3 Prepare each system and item of equipment for testing, adjusting and balancing.

.4 Verify that each systems and equipment installation is complete and in continuous operation.

.5 Verify ambient conditions.

.10 Field Quality Control

.1 Testing, Adjusting and Balancing

.1 Testing: Perform tests to confirm compliance with requirements of Contract Documents. Take corrective action as necessary.

.2 Adjusting: Perform adjustments to ensure proper, efficient and safe operation.

.3 Balancing: Perform balancing to ensure that the various parts of system are in a proper state of equilibrium.

.4 Provide testing, adjusting and balancing of all:

.1 Piped, ducted, wired and wireless services and systems, including all components and equipment forming part thereof as identified in technical sections, and

.2 Manually and mechanically operated systems including all components and equipment forming part thereof.

.3 Comply with the requirements of all CSA, ASTM, ASHRAE, IEEE and other standards affecting their portion of the Work to ensure that systems installed will meet the Owner's testing criteria.

.5 Perform testing, adjusting and balancing after starting of equipment and systems.

.2 Fine Tuning

.1 Fine tuning shall include, but not be limited to, the following:

.1 Air Balancing: final balancing.

.2 Water Balancing: final balancing.

.3 Electrical Equipment and Systems: Testing of safety systems and devices.

.4 Other systems and equipment as identified in the technical sections.

.2 Fine tuning shall commence upon Owner's acceptance of Performance Testing results.

.3 Contractor shall do the following during Fine Tuning:

.1 Correct all Contract Deficiencies previously outstanding and those identified during Fine Tuning.

.2 Execute Change Orders issued by Owner.

.3 Perform all other Work and activities required for fulfillment of prerequisites to Final Acceptance of the Work as specified in CLOSEOUT PROCEDURES.

.11 Facility Start-Up

.1 Contractor shall do the following during Facility Start-Up, not necessarily in order listed:

.1 Start equipment and systems as specified below.

.2 Test, adjust and balance equipment and systems as specified below.

.3 Demonstrate equipment and systems as specified in DEMONSTRATION AND TRAINING.

.4 Complete and submit Facility Start-Up report forms including:

.1 Contractor's system and equipment start-up reports.

.2 Testing, adjusting and balancing reports.

.3 Manufacturers' equipment start-up reports.

.5 Review Contract Documents and inspect the Work to ensure completeness of the Work and compliance with requirements of Contract Documents.

.6 Correct Contract Deficiencies identified as a result of the foregoing and as may be identified by the Owner.

.7 Execute Change Orders issued by the Owner.

.8 Perform all other Work and activities required for fulfillment of prerequisites to Substantial Performance of the Work as specified in CLOSEOUT PROCEDURES.

.12 Starting

.1 Verify that each item of equipment has been checked for proper lubrication; drive rotation, belt tension, control sequence, and other conditions affecting starting and operation; take corrective action as necessary.

.2 Execute starting under supervision of Contractor’s personnel and, when specified or requested by Owner, manufacturer's authorized representative.

.3 Place equipment and systems in operation in proper sequence and in accordance with approved Contractor’s Start-Up sub-schedule.

.4 Take corrective action as necessary.

.13 Seasonal Constraints

.1 Notwithstanding all-inclusive requirements specified in this Section, additional separate cycles of Facility Start-Up, Performance Testing and Fine Tuning may be necessitated at a later time on equipment and systems whose full operation is dependent on seasonal conditions.

.2 Contractor’s responsibilities with respect to such later Facility Start-Up activities shall be as specified in this Section.

.14 Partial Utilization of Work

.1 Applicable requirements specified in this Section shall apply to the parts of the Work being utilized when partial utilization of the Work is required.

## 1.21 CLOSEOUT PROCEDURES

.1 References:

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2 - 2008, Stipulated Price Contract.

.2 Inspection and Declaration:

.1 Contractor's Inspection: Contractor and Subcontractors: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.1 Notify Consultant in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.

.2 Request Consultant's Field Review.

.3 Consultant's Field Review: Consultant and Contractor will perform review of Work to identify obvious defects or deficiencies. Contractor to correct Work accordingly.

.2 Completion: submit written certificate that following have been performed:

.1 Work has been completed and inspected for compliance with Contract Documents.

.2 Defects have been corrected and deficiencies have been completed.

.3 Equipment and systems have been tested, adjusted and balanced and are fully operational.

.4 Certificates required by Boiler Inspection Branch, Fire Commissioner, and Utility companies have been submitted.

.5 Verification letter required to confirm integrated systems testing for fire protection and life safety systems has been successfully completed in accordance with CAN/ULC-S1001.

.6 Operation of systems have been demonstrated to Owner's personnel.

.7 Work is complete and ready for final inspection.

.3 Final Review: when items noted above are completed, request final review of Work by Owner, Consultant, and Contractor. If Work is deemed incomplete by Owner and Consultant complete outstanding items and request review.

.4 Declaration of Substantial Performance: when Owner and Consultant consider deficiencies and defects have been corrected and it appears requirements of Contract have been substantially performed, make application for certificate of Substantial Performance. Refer to CCDC 2, General Conditions Article for specifics to application.

.5 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance shall be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.

.6 Final Payment: when Owner and Consultant consider final deficiencies and defects have been corrected and it appears requirements of Contract have been totally performed, make application for final payment. Refer to CCDC 2. If Work is deemed incomplete by Owner and Consultant, complete outstanding items and request reinspection.

.7 Payment of Holdback: after issuance of certificate of Substantial Performance of Work, submit an application for payment of holdback amount in accordance with CCDC 2.

.3 Exiting Signage:

.1 Provide computer generated signage for emergency passage exiting of building. Provide minimum 305 x 305 mm size signs to include at locations as required by Authority having Jurisdiction for building exiting.

.4 Cleaning:

.1 In accordance with CLEANING.

.2 Remove waste and surplus materials, rubbish and construction facilities from the site in accordance with WASTE MANAGEMENT AND DISPOSAL.

## 1.22 CLOSEOUT SUBMITTALS

.1 Submittals in accordance with SUBMITTAL PROCEDURES:

.1 Prepare instructions and data using personnel experienced in maintenance and operation of described Products.

.2 Copy will be returned after final inspection, with Consultant's comments.

.3 Revise content of documents as required prior to final submittal.

.4 Two weeks prior to Substantial Performance of the Work, submit to the Consultant, two final copies and one digital version of Operating and Maintenance manuals in English.

.5 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as Products provided in Work.

.6 Furnish evidence, if requested, for type, source and quality of Products provided.

.7 Defective Products will be rejected, regardless of previous inspections. Replace Products at own expense.

.8 Pay costs of transportation.

.9 Submit `redline` marked up construction Drawings to the Consultant within 30 days of Substantial Performance and prior to Ready for Takeover.

.10 Prepare fire safety plan in accordance with Fire Code and local fire bylaw unless specified otherwise by the Owner. Locate in Fire Safety Plan Box. Provide fire key cylinder at location on exterior of building for entrance by Fire Station Personnel. Provide and coordinate type of storage and location with local Fire Station and authority having jurisdiction.

.2 Operations and Maintenance Manual Format:

.1 Organize data as instructional manual.

.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.

.3 When multiple binders are used correlate data into related consistent groupings. Identify contents of each binder on spine.

.4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of Project and identify subject matter of contents.

.5 Arrange content by systems, process flow, under Section numbers and sequence of Table of Contents.

.6 Provide tabbed fly leaf for each separate Product and system, with typed description of Product and major component parts of equipment.

.7 Text: manufacturer's printed data, or typewritten data.

.8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger Drawings to size of text pages.

.9 Provide 1:1 scaled CAD files in dwg format on USB flash drive.

.10 Provide 2 hard copies and one digital copy of manuals.

.3 Contents – Each Volume:

.1 Table of Contents: provide title of Project;

.1 Date of submission; names.

.2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.

.3 Schedule of Products and systems, indexed to content of volume.

.2 For each Product or system:

.1 List names, addresses and telephone numbers of Subcontractors and Suppliers, including local source of supplies and replacement parts.

.3 Inventory List: provide list of equipment that has been installed on the project.

.4 Product Data: mark each sheet to identify specific Products and component parts, and data applicable to installation; delete inapplicable information.

.5 Drawings: supplement Product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

.6 Typewritten Text: as required to supplement Product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

.7 Training: refer to DEMONSTRATION AND TRAINING.

.4 As-Built Drawings and Samples:

.1 Maintain, in addition to requirements in General Conditions, at site for Consultant one record copy of:

.1 Contract Drawings.

.2 Specifications.

.3 Addenda.

.4 Change Orders and other modifications to Contract.

.5 Reviewed Shop Drawings, Product data, and samples.

.6 Field test records.

.7 Inspection certificates.

.8 Manufacturer's certificates.

.2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by Consultant.

.5 Recording Actual Site Conditions:

.1 Record information on set of Drawings, and in copy of Project Manual, provided by Consultant.

.2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.

.3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.

.4 Contract Drawings and Shop Drawings: mark each item to record actual construction, including:

.1 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

.2 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.

.3 Field changes of dimension and detail.

.4 Changes made by Change Orders.

.5 Details not on original Contract Drawings.

.6 References to related Shop Drawings and modifications.

.5 Specifications: mark each item to record actual construction, including:

.1 Manufacturer, trade name, and catalogue number of each Product actually installed, particularly optional items and substitute items.

.2 Changes made by Addenda and Change Orders.

.6 Other Documents: maintain manufacturer's certifications, inspection certifications, and field test records, required by individual Specifications Sections.

.6 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 Contractors co-ordination Drawings, with installed colour coded piping diagrams.

.12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

.13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

.14 Include tests as specified in QUALITY CONTROL.

.15 Additional requirements: as specified in individual specification Sections.

.7 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.

.8 Spare Parts:

.1 Provide spare parts, in quantities specified in individual specification Sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to site, location as directed; place and store.

.4 Receive and catalogue items. Submit inventory listing to Consultant. Include approved listings in Maintenance Manual.

.5 Obtain receipt for delivered Products and submit prior to final payment.

.9 Maintenance Materials:

.1 Provide maintenance and extra materials, in quantities specified in individual specification Sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to site, location as directed; place and store.

.4 Receive and catalogue items. Submit inventory listing to Consultant. Include approved listings in Operating and Maintenance Manual.

.5 Obtain receipt for delivered Products and submit prior to final payment.

.10 Special Tools:

.1 Provide special tools, in quantities specified in individual specification Section.

.2 Provide items with tags identifying their associated function and equipment.

.3 Deliver to site, location as directed; place and store.

.4 Receive and catalogue items. Submit inventory listing to Consultant. Include approved listings in Operating and Maintenance Manual.

.11 Storage, Handling and Protection:

.1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.

.2 Store in original and undamaged condition with manufacturer's seal and labels intact.

.3 Store components subject to damage from weather in weatherproof enclosures.

.4 Store paints and freezable materials in a heated and ventilated room.

.5 Remove and replace damaged Products at own expense and to satisfaction of Consultant.

.12 Warranties and Bonds:

.1 Develop warranty management plan to contain information relevant to Warranties.

.2 Submit warranty management plan, 30 days before planned pre-warranty conference, to Consultant approval.

.3 Warranty management plan to include required actions and documents to ensure that Owner receives warranties to which it is entitled.

.4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.

.5 Submit, warranty information made available during construction phase, to Consultant for approval prior to each monthly pay estimate.

.6 Assemble approved information in binder and submit upon acceptance of Work. Organize binder as follows:

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

.2 List Subcontractor, Supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Obtain warranties and bonds, executed in duplicate by Subcontractors, Suppliers, and manufacturers, within ten days after completion of applicable item of Work.

.4 Verify that documents are in proper form, contain full information, and are notarized.

.5 Co-execute submittals when required.

.6 Retain warranties and bonds until time specified for submittal.

.7 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.

.8 Conduct joint 9 month warranty inspection, measured from time of acceptance, by Consultant.

.9 Include information contained in warranty management plan as follows:

.1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, Subcontractors, manufacturers or Suppliers involved.

.2 Listing and status of delivery of Certificates of Warranty for extended warranty items, to include roofs, pumps, motors, transformers.

.3 Provide list for each warranted equipment, item, feature of construction or system indicating:

.1 Name of item.

.2 Model and serial numbers.

.3 Location where installed.

.4 Name and phone numbers of manufacturers or Suppliers.

.5 Names, addresses and telephone numbers of sources of spare parts.

.6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.

.7 Cross-reference to warranty certificates as applicable.

.8 Starting point and duration of warranty period.

.9 Summary of maintenance procedures required to continue warranty in force.

.10 Cross-Reference to specific pertinent Operation and Maintenance manuals.

.11 Organization, names and phone numbers of persons to call for warranty service.

.12 Typical response time and repair time expected for various warranted equipment.

.4 Contractor's plans for attendance at 9 month post-construction warranty inspection.

.5 Procedure and status of tagging of equipment covered by extended warranties.

.6 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

.10 Respond in a timely manner to oral or written notification of required construction warranty repair Work.

.11 Written verification will follow oral instructions. Failure to respond will be cause for the Consultant to proceed with action against Contractor.

.13 Pre-Warranty Conference:

.1 Meet with Consultant, to develop understanding of requirements of this Section. Schedule meeting prior to Contract completion, and at time designated by Consultant.

.2 Consultant will establish communication procedures for:

.1 Notification of construction warranty defects.

.2 Determine priorities for type of defect.

.3 Determine reasonable time for response.

.3 Provide name, telephone number and address of licensed and bonded company that is authorized to initiate and pursue construction warranty Work action.

.4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty Work action.

.14 Warranty Tags:

.1 Tag, at time of installation, each warranted item. Provide durable, oil and water resistant tag approved by Consultant.

.2 Attach tags with copper wire and spray with waterproof silicone coating.

.3 Leave date of acceptance until Project is accepted for occupancy.

.4 Indicate following information on tag:

.1 Type of Product/material.

.2 Model number.

.3 Serial number.

.4 Contract number.

.5 Warranty period.

.6 Inspector's signature.

.7 Construction Contractor.

## 1.23 DEMONSTRATION AND TRAINING

.1 Description:

.1 Demonstrate scheduled operation and maintenance of equipment and systems to Owner's personnel two weeks prior to date of Substantial Performance.

.2 Owner will provide list of personnel to receive instructions, and will co-ordinate their attendance at agreed-upon times.

.2 Quality Control:

.1 When specified in individual Sections require manufacturer to provide authorized representative to demonstrate operation of equipment and systems, instruct Owner's personnel, and provide written report that demonstration and instructions have been completed.

.3 Submittals in accordance with SUBMITTAL PROCEDURES:

.1 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.

.2 Submit reports within one week after completion of demonstration, that demonstration and instructions have been satisfactorily completed.

.3 Give time and date of each demonstration, with list of persons present.

.4 Conditions for Demonstrations:

.1 Testing, adjusting, and balancing has been performed in accordance with Mechanical and Electrical conditions of the Work and equipment and systems are fully operational.

.2 Provide copies of completed Operation and Maintenance manuals for use in demonstrations and instructions.

.5 Preparation:

.1 Verify that conditions for demonstration and instructions comply with requirements.

.2 Verify that designated personnel are present.

.6 Demonstration and Instructions:

.1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each item of equipment at agreed upon times, at the designated location.

.2 Instruct personnel in phases of operation and maintenance using operation and maintenance manuals as basis of instruction.

.3 Review contents of manual in detail to explain aspects of operation and maintenance.

.4 Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instructions.

.7 Time Allocated for Instructions:

.1 Ensure amount of time required for instruction of each item of equipment or system.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 Section Includes:

.1 Removal of existing construction necessary to permit installation or performance of other Work and fitting and repairing work required to restore surfaces to original conditions after installation of other Work.

.2 Related Requirements:

.1 Section 02 41 20 – Selective Interior Demolition

.2 Section 09 21 16 – Gypsum Board Assemblies

### 1.2 REFERENCES

.1 Definitions:

.1 Cutting: Removal of existing construction necessary to permit installation or performance of other Work.

.2 Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

### 1.3 ACTION SUBMITTALS / INFORMATIONAL SUBMITTALS

.1 Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:

.1 Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.

.2 Changes to Existing Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.

.3 Products: List products to be used and firms or entities that will perform the Work.

.4 Dates: Indicate when cutting and patching will be performed.

.5 Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.

.6 Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure to the Consultant prior to making cuts or modifications.

.7 Consultant's Acceptance: Obtain acceptance of cutting and patching proposal before cutting and patching. Review and acceptance of cutting and patching proposal does not waive right to later require removal and replacement of unsatisfactory work.

### 1.4 QUALITY ASSURANCE

.1 Structural Elements: Do not cut and patch structural elements in a manner that could change their load carrying capacity or load deflection ratio.

.2 Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety, including but not limited to the following:

.1 Primary operational systems and equipment.

.2 Control systems.

.3 Communication systems.

.4 Electrical wiring systems.

.3 Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety, including but not limited to the following:

.1 Water, moisture, or vapour barriers.

.2 Membranes and flashings.

.3 Equipment supports.

.4 Piping, ductwork, vessels, and equipment.

.5 Noise and vibration control elements and systems.

.4 Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Consultant's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner. If possible, retain original Installer or fabricator to cut and patch exposed Work listed below. If it is impossible to engage original Installer or fabricator, engage another recognized, experienced, and specialized firm, including but not limited to the following:

.1 Processed concrete finishes.

.2 Masonry.

.3 Finished flooring.

.4 Finished coatings.

.5 Wall covering.

.6 HVAC enclosures, cabinets, or covers.

.5 Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

.6 Should material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous as defined in the Hazardous Product Act be encountered, stop work, take preventative measures, and notify Consultant and Owner immediately.

## 1.5 WARRANTY

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

## Part 2 Products

### 2.1 MATERIALS

.1 General: Comply with requirements specified in other Sections of these Specifications.

.2 Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible:

.1 If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

## Part 3 Execution

### 3.1 EXAMINATION

.1 Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed:

.1 Provide X-ray or other approved methods to determine locations of existing services and reinforcing in existing concrete slabs and block walls before cutting and renovations. Advise Consultant of findings before proceeding with the Work and revise penetration locations as required and directed by Consultant. Existing concrete slab thickness is to be confirmed by Contractor.

.2 Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

.3 Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

.1 Temporary Support: Provide temporary support of Work to be cut.

.2 Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

.3 Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

.4 Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to minimize interruption of services to occupied areas.

### 3.3 PERFORMANCE

.1 General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay:

.1 Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

.2 Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations:

.1 In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

.2 Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.

.3 Concrete or Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond core drill.

.4 Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.

.5 Proceed with patching after construction operations requiring cutting are complete.

.3 Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications:

.1 Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

.2 Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

.3 Floors and Walls: Where walls or partitions that are removed extend from one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, colour, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform colour and appearance.

.4 Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

.5 Ceilings: Patch, repair, or re-hang existing ceilings as necessary to provide an even plane surface of uniform appearance.

.6 Maintain existing fire ratings as required.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 This Section includes, but not limited to, the following:

.1 Demolition, removal completely from site, and disposal of all identified components, materials, equipment and debris.

.2 Selective demolition to allow new walls, bulkheads, ceilings and other materials to meet existing construction as indicated.

.3 Repair procedures for selective demolition operations.

.2 This Section does not include the following:

.1 Removal of hazardous materials or asbestos abatement.

.2 Demolition of exterior building components or structural elements.

.3 Mechanical or electrical equipment, except as required to make minor modifications to allow the work to be completed.

.3 Related Requirements:

.1 Section 01 11 00 - General Requirements, Waste Management and Disposal

.2 Section 09 21 16 – Gypsum Board Assemblies

.3 Division 20 – Mechanical

.4 Division 26 – Electrical

### 1.2 REFERENCES

.1 Definitions:

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

.2 Remove and Salvage: Detach items from existing construction and deliver them to Owner.

.3 Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

.4 Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

.2 Reference Standards:

.1 American Society for Testing and Materials International (ASTM):

.1 ASTM C475/C475M-17(2022), Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.

.2 Department of Justice Canada (Jus):

.1 Motor Vehicle Safety Act (MVSA), 1993, c.16.

.2 Hazardous Products Act (R.S.C), 1985, c.H-3

.3 Hazardous Materials Information Review Act, 1985, c.24.

.3 Canadian Standards Association (CSA Group):

.1 CSA S350-M1980 (R2003), Code of Practice for Safety in Demolition of Structures.

.4 National Fire Protection Association (NFPA):

.1 NFPA (Fire) 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations, 2022 Edition.

.5 Provincial Legislation:

.1 Legislation specific to Authority Having Jurisdiction for work governed by this Section.

## 1.3 ADMINISTRATIVE REQUIREMENTS

.1 Pre-Demolition Meeting: Conduct a pre-demolition meeting at Project site in accordance with requirements listed in Section 01 11 00 - General Requirements, Project Meetings, to confirm extent of salvaged and demolished materials; and to review Contractor's demolition plan prepared by a professional engineer.

.2 Coordination:

.1 Coordinate selective demolition work so that work of this Section adheres to aesthetic criteria established by the Drawings and specified dimensions with all elements in planes as drawn, maintaining their relationships with all other building elements.

.2 Coordinate with Owner's ongoing site operations, and limit the number of interruptions during regular business hours.

.3 Coordination for shutoff, capping, and continuation of utility services.

## 1.4 ACTION SUBMITTALS / INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 11 00 – General Requirements, Submittal Procedures.

.2 Qualification Data: For firms and persons specified below to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses and other information specified.

.3 Proposed Dust-Control and Noise-Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Owner reserves the right to make modifications where proposed methods interfere with the Owner's ongoing operations.

.4 Inventory: Submit a list of items that have been removed and salvaged after selective demolition is complete.

.5 Pre-demolition Digital Photographs or Video: Submit photographs or video indicating existing conditions of adjoining construction and site improvements prior to starting Work. Include finish surfaces that may be misconstrued as damage caused by selective demolition operations.

## 1.5 QUALITY ASSURANCE

.1 Regulatory Requirements: Perform work as follows; use most restrictive requirements where differences occur between the municipal, provincial and federal jurisdictions:

.1 Provincial and Federal Requirements: Perform work in accordance with governing environmental notification requirements and regulations of the Authority Having Jurisdiction.

.2 Municipal Requirements: Perform hauling and disposal operations in accordance with regulations of Authority Having Jurisdiction.

.2 Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project:

.1 Conform to the Workers Compensation Act and the Occupational Health and Safety Regulations under the Act.

.2 Conform to City of Coquitlam bylaws and regulations governing this type of work.

## 1.6 DELIVERY, STORAGE, AND HANDLING

.1 Except where otherwise specified, all materials indicated or specified to be permanently removed from the Place of the Work shall become Contractor's property. Maximize to the fullest extent possible, salvage, and recycling of such materials, consistent with proper economy and expeditious performance of the Work.

.2 To reduce the quantity of material otherwise destined for disposal at a landfill, the Contractor is encouraged to consider utilizing the services of businesses and non-profit organizations that specialize in salvage and recycling of used building materials, but does so at his own option and risk.

.3 A current listing of recyclers specializing in specific categories of materials may be obtained during normal office hours from:

RCBC
Recycling Council of British Columbia
Recycling Hotline
Lower Mainland: 604-732-9253
British Columbia Toll Free: 1-800-667-4231
Email: hotline@rcbc.ca
Website: www.rcbc.ca

.4 Packaging Waste Management

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

## 1.7 SITE CONDITIONS

.1 Visit and examine the site and note all characteristics and irregularities affecting the work of this Section.

.2 Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities:

.1 Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from authorities having jurisdiction.

.3 Should material resembling designated substance listed as hazardous as defined in the Hazardous Product Act be encountered, stop work, take preventative measures, and notify Consultant and Owner immediately.

## Part 2 Products

### 2.1 TEMPORARY SUPPORT STRUCTURES

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

### 2.2 DEBRIS

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

### 2.3 EQUIPMENT

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

### 2.4 REPAIR MATERIALS

.1 Use repair materials identical to existing materials:

.1 If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

.2 Use material whose installed performance equals or surpasses that of existing materials.

.3 Comply with material and installation requirements specified in individual Specification Sections.

.2 Floor Patching and Levelling Compounds: Cement based, trowelable, self-levelling compounds compatible with specified floor finishes. Gypsum based products are not acceptable for work of this Section.

.3 Concrete Unit Masonry: Lightweight concrete masonry units and mortar, cut and trimmed to fit existing opening to be filled. Provide standard hollow core units, square end units and bond beam units as indicated on drawings.

.4 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 Assemblies.

.5 Hoarding and Dust Screens: Refer to Section 01 11 00 - General Requirements, Temporary Barriers and Enclosures for stud framing and gypsum board sheathing materials.

### 2.5 EXISTING MATERIALS

.1 Items to be retained for re-use in new construction include, but are not limited to the following:

.1 Metal shelving.

.2 Water cooler.

.3 Equipment as indicated on Kitchen Equipment Legend on Drawing A103.

.2 Provide storage to protect existing items to be reused in a temporary location on or off site.

.3 Confirm with Consultant any materials that appear to be in re-usable condition prior to disposal.

.4 Confirm with Consultant any materials scheduled for re-use that are not in re-usable condition prior to installation.

## Part 3 Execution

### 3.1 EXAMINATION

.1 Inspect building with Consultant and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.

.2 Locate and protect utilities. Verify that utilities have been disconnected and capped as required.

.3 Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

.4 Notify the Consultant where existing mechanical, electrical, or structural elements conflict with intended function or design:

.1 Investigate and measure the nature and extent of conflict and submit a written report to Consultant.

.2 Consultant will issue additional instructions or revise drawings as required to correct conflict.

.5 Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

### 3.2 PREPARATION

.1 Identify and mark all equipment and materials identified to be retained by Owner or to be re-used in subsequent construction. Separate and store items to be retained in an area away from area of demolition and protect from accidental disposal. Mark all materials required to be re-used, store in a safe place until ready for re-installation.

.2 Post warning signs on electrical lines and equipment that must remain energized to serve other areas during period of demolition.

.3 Confirm that all electrical and telephone service lines entering building are not disconnected.

.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 Adjust all junction boxes, receptacles and switch boxes flush with new wall construction where additional layers to existing construction are indicated.

.7 Protection of In-Place Conditions

.1 Take precautions to guard against damage to adjacent work. Be liable for any damage or injury caused.

.2 Cease operations and notify Consultant if safety or any adjacent work appears to be endangered. Do not resume operations until reviewed with Consultant.

.3 Ensure safe passage of building occupants around and through area of demolition.

.4 Keep noise, dust, and inconvenience to occupants to minimum.

.5 Protect building systems, services and equipment.

.6 Provide temporary dust screens, covers, railings, supports and other protection as required.

.7 Provide and maintain fire prevention equipment and alarms accessible during demolition.

.8 Do Work in accordance with 01 11 00 General Requirements, Health and Safety Requirements.

.8 Utility Services

.1 Coordinate existing services indicated to remain and protect them against damage during selective demolition operations.

.2 Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.

.1 Arrange to shut off affected utilities with utility companies.

.2 If utility services are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary utilities that bypass area of selective demolition and that maintain continuity of service to other parts of building.

.3 Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

.4 Cut off pipe or conduit to a minimum of 25 mm below slab, and remove concrete mound.

.3 Coordinate with mechanical and electrical sections for shutting off, disconnecting, removing, and sealing or capping utilities.

.4 Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

## 3.3 CONCRETE SLAB REINFORCING

.1 Locate location of reinforcing steel in concrete slabs prior to cutting or coring using non-destructive, 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.

## 3.4 SELECTIVE DEMOLITION

.1 Demolish and dismantle work in a neat and orderly manner and in strict accordance with all regulations.

.2 At end of each day's work, leave Work in safe condition so that no part is in danger of toppling or falling.

.3 Demolish in a manner to minimize dusting and to prevent migration of dust.

.4 Selling or burning of materials on the site is not permitted.

.5 Remove concrete bases by cutting and chipping, take precautions against slab cracking and degradation. Grind edges smooth, fill and make level with self levelling grout.

.6 Fill all openings in concrete block walls with concrete masonry units, coursing to match existing, prepare ready to receive new finishes to match existing.

.1 Provide bond beams in new openings cut into existing concrete masonry unit walls.

.2 Provide finished end masonry units to patch and repair for new jamb sections in existing concrete masonry unit walls.

.7 Fill all openings in gypsum board walls with gypsum board and steel framing to match existing, skim coat to make wall smooth and even.

.1 Floor substrate shall be smooth, free from ridges and depressions, and adhesive remnants that could telegraph through flooring materials.

.8 Demolish ceiling finishes as indicated on drawings.

.9 Patch and repair all walls, floor and ceilings damaged during demolition with material matching adjacent walls, prepare ready for new finishes.

.10 Patch and repair all mechanical equipment and electrical fixtures damaged or exposed during demolition to match adjacent finished surfaces.

## 3.5 CORING, DRILLING AND SAW-CUTTING CONCRETE

.1 Complete an ultrasound inspection of affected concrete area before coring. Employ the services of an experienced inspector. Confirm with Owner before coring or drilling, location of reinforcing steel and raceways that may be present.

.2 Perform coring and drilling after normal working hours, unless specified otherwise. Confirm coring and drilling times with Owner.

.3 Wet or dry core drilling and saw-cutting are acceptable. Reduce amount of cooling water used to minimum required and collect water used in suitable containers, or use a suitable vacuum system that will collect water.

.4 Do not core structural beams or cut conduits or reinforcing steel without written permission from Landlord.

## 3.6 PATCHING AND REPAIRING

.1 Floors and Walls:

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

.2 Provide a level and smooth surface having uniform finish colour, texture, and appearance.

.3 Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform colour and appearance.

.4 Patch with durable seams that are as invisible as possible.

.5 Provide materials and comply with installation requirements specified in other Sections of these Specifications.

.6 Where patching occurs in a painted surface, apply primer and intermediate paint coats over patch and apply final paint coat over entire unbroken surface containing patch. Provide additional coats until patch blends with adjacent surfaces.

.7 When requested, test and inspect patched areas after completion to demonstrate integrity of installation.

.8 Maintain fire rating of existing and new construction.

.2 Ceilings: Patch, repair, or re-hang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

## 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**

## Part 1 General

### 1.1 SUMMARY

.1 Section Includes:

.1 Low Risk Lead Abatement: If possible, remove lead painted component in one piece to avoid using lead paint removal procedures. This work can be done by the normal demolition subtrade, or by a Lead Abatement Contractor.

.2 Low Risk Lead Abatement: If one piece removal is not possible, remove lead paint to substrate using electric heat guns or chemical strippers. Do not use abrasive paint removal methods. This work is to be done by a Lead Abatement Contractor.

.3 Worker protection and decontamination area.

.4 HEPA vacuum or wet clean all dust resulting from lead paint removal.

.5 Disposal of all lead painted components and other waste resulting from this work as lead containing hazardous waste.

### 1.2 REFERENCES

.1 Definitions:

.1 Lead Paint Control Work: means lead paint removal procedures, and disposal of lead or materials containing lead, as specified.

.2 Lead Paint Control Area: means space in which lead paint control work is being performed and to which general access is prohibited.

.3 Lead Paint Waste: means removed contaminant and contaminated materials or products.

.4 Contaminant: means lead paint material.

.5 Contaminated: describes products, by-products, or material containing, or affected by, lead paint or removal thereof.

.6 HEPA Filter: high efficiency particulate air filter, removing not less than 99.97% of particles measuring 0.3 microns and larger, for powered air purifying respirators, vacuums, vacuum trucks and negative air units.

.7 P100 Filter: high efficiency, oil proof, particulate air filter, removing not less than 99.97% of particles measuring 0.3 microns and larger, for powered air purifying respirators.

.8 Lead Containing Paint: paint or other similar surface coating materials containing lead or lead compounds and in which the lead content (calculated as lead metal) is in excess of 0.06 percent by weight of the total non-volatile content of the paint or the weight of the dried paint film.

.2 Reference Standards:

.1 Canadian General Standards Board (GGSB):

.1 CAN/CGSB 1.205-03, Sealer for Application to Asbestos-Fibre Releasing Materials (Withdrawn).

.2 CAN/CGSB 43.150-97, Performance Packagings for Transportation of Dangerous Goods. (Withdrawn)

.2 Department of Justice Canada (Jus):

.1 Transportation of Dangerous Goods Act, 1992 (TDGA), c. 34.

.2 Environmental Protection Act, 1999 (S.C. 1999, c. 33)

.3 United States Military Standards:

.1 MIL-STD-282, - Filter Units, Protective Clothing, Gas-Mask Components and Related Products: Performance Test Methods, REV B ADMINISTRATIVE 1

## 1.3 ACTION SUBMITTALS / INFORMATIONAL SUBMITTALS

.1 Comply with requirements of this Section and Section 01 33 00 - Submittal Procedures. Provide submittals prior to start of lead paint control work.

.2 Submit copy of test results documenting Dioctylpthalate (DOP) testing of HEPA filtered vacuums.

.3 Submit certification that HEPA filtered vacuums required for this contract meet specified HEPA filter designation for component filter assemblies.

.4 Submit disposal procedure for contaminant and contaminated waste.

.5 Submit a copy of worker protection information which will be provided to employees.

.6 Submit plan for air monitoring to ensure use of proper respirators within work area and adjoining areas to ensure lead contamination does not occur.

.7 Submit proof that all persons involved in the handling, packing, loading, transportation, unloading, and disposal of lead paint waste are trained in accordance with the Dangerous Goods Transportation and Handling Act.

.8 Provide sub-schedule for lead paint control work.

.9 Prior to commencement of Work, submit a Lead Paint Control Plan. Include the following information:

.1 Locations of:

.1 Lead paint control areas.

.2 Change area.

.3 Barrier tape areas.

.4 Decontamination area.

.2 Sequencing of lead paint removal related work.

.10 Product Data:

.1 Provide one electronic copy of WHMIS SDS - Safety Data Sheets in accordance with WHMIS acceptable to Labour Canada, and Health and Welfare Canada) on all materials and chemicals to be used on the project. Provide WHMIS labels on all products and a work site binder containing SDS's for all chemicals used for this work.

## 1.4 QUALITY ASSURANCE

.1 Regulatory Requirements:

.1 Comply with the following legislation and regulations:

.1 Environmental Protection Act (Canada).

.2 Transportation of Dangerous Goods Act (Canada).

.3 Other legislation and regulations which apply to the performance of lead paint control work.

.2 Qualifications:

.1 Workers used for handling, removal, and packaging for disposal of lead paint waste, shall have completed a lead abatement training course acceptable to Workplace Health and Safety.

.2 At least one employee who will be performing the work shall have completed a first aid course as required by BC Occupational Health and Safety Act.

.3 Persons involved in loading, transportation, uploading, and disposal of lead paint waste shall have been trained in accordance with the Dangerous Goods Transportation and Handling Act.

## 1.5 SITE CONDITIONS

.1 Refer to Appendix - Hazardous Materials Report for locations of lead based paints.

.2 Airborne Lead Paint Dust Levels:

.1 In areas outside lead paint control area, airborne dust levels shall not exceed 0.05 milligrams per cubic meter of air (mg/m3).

.2 In areas inside lead paint control area, airborne dust levels shall not exceed acceptable limits for type of respirators being used.

## 1.6 QUALITY ASSURANCE

.1 Monitoring And Inspection by Owner:

.1 Owner will appoint and pay for services of an Environmental Consultant to perform the following:

.1 Measure lead paint dust levels inside and outside lead paint control area prior to commencement of lead paint control work.

.2 Inspect HEPA vacuums prior to commencement of lead paint control work.

.3 Monitor air outside lead paint control area. Monitor air prior to, during, and after lead paint control work.

.4 Monitor lead paint dust levels inside lead paint control area prior to acceptance of the work.

.2 Testing And Air Monitoring by Contractor:

.1 Appoint and pay for services of a testing agency to perform Dioctylpthalate (DOP) testing on HEPA vacuums in accordance with United States Military Standards MIL-STD-282.

# Part 2 Products

## 2.1 MATERIALS AND EQUIPMENT

.1 Heat Gun: Industrial grade, heavy duty type capable of producing temperatures up to 540 degrees centigrade.

.2 Chemical Paint Stripper: Industrial grade, low or no solvent type.

.3 Vacuums: HEPA filtered wet/dry type, with accessories adequate to perform removal and cleanup work.

.4 Hand Tools and Supplies: Scrappers, wire brushes, wiping rags, etc. of adequate quality to perform removal and cleanup work.

.5 Lead Paint Cleaning Agent: TSP cleaning powder or similar, diluted with water as per manufacturer's instructions.

.6 Lead Paint Sealer: to CAN/CGSB-1.205, Sealer for Application, Class A - water-based, for spray application, and as follows:

.1 Type two - Surface Film Forming. Acceptable products: American Coating "CC-2B", Certified Technologies "Overcoat 2000", Childers "Chil-Bridge CP-211", Fiberlock Technologies "ABC", Foster "32-32", International Protective Coatings "Serpiflex Shield".

.7 Sheet Polyethylene: minimum 150 micrometer thick.

.8 Sprayer: Garden reservoir type, low velocity, capable of producing a mist or fine spray.

.9 Duct Tape: Good quality, water resistant plastic type.

.10 Lead Paint Disposal Containers

.1 Plastic Bags: to CAN/CGSB-43.150, minimum 150 micrometer thick sheet polyethylene. Bag seams shall be sufficiently strong to resist pressure and shocks that occur under normal conditions of transport. Designed and manufactured to contain a maximum net mass of 50kg.

.2 Drums: to CAN/CGSB-43.150, sturdy non-reusable, steel (1A2), aluminum (1B2), or plastic (1H2), with tight fitting lids.

.3 Sheet Polyethylene: two separate layers, minimum 150 micrometer thick, each layer sealed with water-resistant plastic duct tape.

.4 Label containers with labels stating "CONTAINS LEAD PAINT, AVOID BREATHING DUST".

.11 Warning Signs

.1 Provide warning signs and banner tape which state that:

.1 Lead Paint Removal Area.

.2 Access to the area is prohibited, except to authorized personnel.

.3 Drinking, eating and smoking are prohibited in the area.

.2 Obtain Consultants approval of warning sign and banner tape wording, legibility and location.

## Part 3 Execution

### 3.1 PREPARATION

.1 Lead paint removal work may commence only after the following have been completed:

.1 Existing property, including non-removable equipment and furnishings, surfaces and finishes, have been protected from damage and contamination due to lead paint control work.

.2 HVAC system has been deactivated and sealed to prevent lead paint dust from entering the system.

.3 Decontamination area is set-up and operational.

.4 Warning signs and barrier tape has been placed around perimeter of lead paint control area and at each potential entrance to the area.

.5 Polyethylene sheeting has been placed on the floor below the lead paint material to be removed.

.6 A fire extinguisher has been provided in the lead paint control area.

.7 All required materials and equipment have been placed in the lead paint control area for use in lead paint removal, cleanup and disposal.

.8 Appoint and pay for services of a testing agency to perform Dioctylpthalate (DOP) testing on HEPA vacuums in accordance with United States Military Standards MIL-STD-282.

.1 Test prior to commencement of lead paint removal.

## 3.2 PROTECTION OF PERSONNEL

.1 Provide workers with respirators and hooded disposable coveralls conforming to Occupational Health and Safety Regulations for the airborne lead paint dust levels that are present during lead paint control work.

.2 Do not permit smoking, eating or drinking in work area.

.3 Provide the following to employees involved in lead paint control work:

.1 Written information describing potential health hazards related to exposure to lead paint dust.

.2 Written instructions describing safe work procedures.

.4 For all lead paint control work, do following:

.1 Comply with regulatory requirements.

.2 Provide workers with not less than a PAPR respirator equipped with a combination organic vapour /P100 (HEPA) filters, hooded disposable coveralls. Coveralls shall fit snugly around neck, wrists and ankles.

.3 Provide workers with two types of gloves. When removing lead paint use gloves made of two layers of impervious Rubber, Neoprene, or Nitrile (NBR). When performing any other work use gloves made of leather.

.4 Provide workers with CSA approved safety rubber boots when removing lead paint and CSA approved boots during all other activities.

.5 Allow no one in control area during lead paint removal work unless wearing disposable coveralls, two layers of Rubber, Neoprene or Nitrile (NBR) gloves, rubber safety boots, and PAPR respirator fit tested and equipped with combination organic vapour/HEPA filters.

.6 Provide WHMIS labels on all products and a work site binder containing SDS’s for all chemicals used for this work.

.5 Provide following safety equipment for Consultant, as required to permit ready and safe access to work:

.1 Disposable coveralls.

.2 CSA approved safety rubber boots.

.3 Gloves – Rubber, Neoprene or Nitrile (NBR) types.

.4 PAPR Respirator fit tested and equipped with combination organic vapour/P100 (HEPA) filters.

## 3.3 PROCESS

.1 Lead Paint Removal

.1 If possible, remove lead painted components in one piece to avoid using lead paint removal procedures.

.2 If one piece removal is not possible, remove lead paint to substrate using electric heat guns or chemical strippers. Do not use abrasive paint removal methods.

.3 HEPA vacuum, or wet wipe with lead paint cleaning agent, all dust and debris as lead paint is removed. Dispose of waste as lead paint contaminated waste.

.4 When all lead paint has been removed, re-clean all surfaces with a HEPA vacuum, and wet wipe with lead paint cleaning agent to OSHA HUD Guideline.

.5 Spray lead paint removal surfaces with lead paint sealer.

.6 Air monitoring in lead paint removal area and a visual inspection by the Owner's environmental consultant must be completed prior to acceptance of the work.

.2 Preparation for Disposal of Lead Paint

.1 Prepare contaminant and contaminated materials for disposal as follows:

.1 Place in double bagged plastic lead paint disposal bags or inside disposable drums with tight fitting lids.

.2 Wrap bulk materials that do not lend themselves to disposal in plastic bags or drums, in sheet polyethylene. (2 separately sealed layers)

.3 The resulting package must be constructed, filled and closed so that, under normal conditions of handling and transport, there will be no discharge, emission or escape of the dangerous goods form the package or small container that could constitute a danger to public safety.

.2 Treat contaminated water as lead paint waste.

.3 Transportation and Permanent Disposal of Lead Paint Waste

.1 Transport lead paint waste in accordance with British Columbia and Federal legislation and regulations.

.2 Ensure that all materials are properly packaged and labeled prior to transportation. Each container must be marked in accordance with the Dangerous Goods Transportation and Handling Act showing the appropriate shipping name and product identification number.

.3 Transport hazardous waste materials in properly placarded vehicles.

.4 Transport lead paint waste in a manner which will prevent lead paint dust from becoming airborne.

.5 Each load shall be accompanied by a properly completed manifest satisfactory to the authority having jurisdiction.

.6 Dispose of lead paint waste in a supervised, approved sanitary landfill site.

.7 Make arrangements with operator of landfill site in advance to receive lead paint waste material.

.8 In event of leakage or spillage enroute, repackage material before continuing transport to landfill.

.9 If spill, emission or discharge of waste lead is in excess of 50 kg from the transport unit, immediately report the incident to the local police.

.10 Place lead paint waste containers intact in excavated area. Do not dump or throw containers from truck. Repackage contents of containers that have broken open.

.11 Arrange for lead paint waste to be covered with soil.

.12 Provide Consultant with a copy of each waste manifest once lead paint waste has been disposed of at a supervised, approved landfill site.

## 3.4 SITE QUALITY CONTROL

.1 Monitoring And Inspection By Owner

.1 Environmental Consultant engaged by the Owner is authorized to identify deficiencies in the lead paint control work and provide site instructions to ensure compliance with Contract requirements.

.2 In the event that airborne lead dust exceeds acceptable levels, Owner may stop work until corrective actions have been taken and airborne dust returns to acceptable levels.

.3 Owner may stop work where he has reasonable cause to believe that:

.1 Dust levels inside lead paint control area are unacceptable, or

.2 Work conditions and practice may lead to:

.1 Contamination of building with lead dust.

.2 Lead dust exposure to building occupants.

.3 Release of lead dust into the environment.

.2 Testing And Air Monitoring By Contractor

.1 Appoint and pay for services of a testing agency to perform Dioctylpthalate (DOP) testing on HEPA vacuums in accordance with United States Military Standards MIL-STD-282.

.2 Use only HEPA vacuums tested and inspected on site as specified.

.3 Monitor air inside lead paint control area with personal worker monitors to ensure that lead paint dust levels are within acceptable limits required by BC Occupational Health and Safety Act Regulation and Code for type of respirators being used.

## 3.5 WORKER DECONTAMINATION

.1 Prior to leaving area where lead paint has been removed by heat gun or chemical stripper methods, HEPA filtered vacuum or wet wipe coveralls. Dispose of coveralls and wiping rags into polyethylene bags as lead paint waste.

.2 Immediately upon leaving area where lead paint has been removed by heat gun or chemical stripper methods, perform the following:

.1 Proceed to nearest shower outside work area and, with respirator in place, shower head and face prior to removal of respirator. If a shower is not available, wash head thoroughly, including exterior of respirator, prior to removing respirator.

.2 Dispose of respirator filters as lead paint waste.

## 3.6 CLEANING

.1 Disposal of Normal Construction Waste

.1 This article applies to materials not readily prepared for lead paint disposal as specified, and being capable of thorough cleaning, for example, bulky mechanical equipment.

.2 Clean materials until free of visible lead paint dust, wash, and dip in or spray with lead paint sealer.

.3 Dispose of as normal construction waste.

.2 Daily Cleaning

.1 Progressively containerize contaminant and contaminated material as removal work progresses. Do not permit lead paint waste to accumulate.

.2 Keep contaminant and contaminated material damp to minimize generation of airborne lead paint dust.

.3 Remove lead paint waste from lead paint control area at least once per day.

.4 Regularly check, clean and replace filters as necessary.

.3 Final Cleaning

.1 Upon completion of lead paint control work, perform the following:

.1 Remove lead paint waste from site.

.2 Vacuum and wash contaminated tools and equipment.

.3 Dispose of non-reusable materials and contaminated materials as lead paint waste.

.4 Clean site to original condition.

.5 Make good any damage resulting from the lead paint control work, to the satisfaction of the Consultant.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 This Section includes requirements for:

.1 identification;

.2 removal;

.3 preparation for disposal;

.4 transportation;

.5 temporary storage; and

.6 permanent disposal.

.7 of electrical capacitors and ballasts containing polychlorinated biphenyl liquids (PCBs).

.2 Related Work Not Provided Under This Contract:

.1 Province will contract separately for transportation and permanent disposal of PCB capacitors and ballasts.

.3 Related Requirements:

.1 Section 00 30 00 – Information Documents

.2 Section 02 84 25 - Removal and Disposal of PCB Transformers.

.3 Division 26 - Replacement of ballasts and capacitors.

### 1.2 REFERENCES

.1 Definitions:

.1 **Removal** means detachment of PCB-containing capacitors and ballasts from applicable fixtures and includes preparation for disposal as described in this Section.

.2 **Disposal** means transportation to specified disposal facility for permanent disposal, or to an approved site for temporary storage and subsequent transportation to the specified permanent disposal facility.

.2 Reference Standards:

.1 Environment Canada:

.1 Handbook on PCBs in Electrical Equipment.

.2 Identification of Fluorescent Lamp Ballasts Containing PCBs, EPS 2/CG/2, April 1986

.2 Department of Justice Canada (Jus):

.1 Environmental Protection Act, 1999 (S.C. 1999, c. 33)

.2 Chlorobiphenyls Regulations (SOR/91-152)

.3 Transportation of Dangerous Goods Act, 1992 (S.C. 1992, c. 34)

.4 Transportation of Dangerous Goods Regulations (SOR/2001-286)

.3 Transport Canada:

.1 TP 14850- 2010, Small Containers for Transport of Dangerous Goods, Classes 3, 4, 5, 6.1, 8, and 9, a Transport Canada Standard.

## 1.3 ADMINISTRATIVE REQUIREMENTS

.1 Coordination:

.1 Coordinate work of this Section with installation of replacement capacitors and ballasts specified in Division 26.

## 1.4 QUALITY ASSURANCE

.1 Regulatory Requirements:

.1 Comply with the following:

.1 Environmental Protection Act, 1999 (S.C. 1999, c. 33) (Canada)

.2 Chlorobiphenyls Regulations (SOR/91-152(Canada)

.3 Transportation of Dangerous Goods Regulations (SOR/2001-286); (Canada)

.4 Dangerous Goods Transportation and Handling Act and regulations.

.5 Other legislation and regulations which apply to the performance of the work of this section.

.2 Removal Contractor Qualifications:

.1 Persons employed for the removal of capacitors and other energized electrical equipment shall be qualified electricians.

.2 Where contact with liquid PCB is possible, personnel shall be instructed in handling procedures, safety precautions, use of safety equipment and applicable Alberta and Federal legislation and regulation.

.3 Disposal Contractor Qualifications:

.1 Handling and transportation of hazardous wastes shall be performed by a hazardous waste company registered as a carrier with BC Environment and Parks.

.2 Submit proof that all persons involved in handling, packing, loading, transportation, unloading, unpacking and disposal of PCB waste are trained in accordance with the Dangerous Goods Transportation and Handling Act.

.4 Delivery, Storage and Handling

.1 Handling And Worker Protection:

.1 Require workers to wear PCB resistant gloves in addition to normal work clothing where exposure risk is low.

.2 Provide workers with additional protective clothing and equipment where contact with liquid PCBs may occur. Provide clothing and equipment appropriate for the potential level of exposure.

# Part 2 Products

## 2.1 MATERIALS

.1 Absorbent Material: PCB absorbent material which will create a quasi-solid product which can be swept or shoveled. Acceptable materials include:

.1 Sawdust.
.2 Vermiculite.
.3 Activated Charcoal.
.4 Oclansorb.
.5 Inbiber Beads.
.6 Hy-Dry.
.7 Diasorb.
.8 Stay-Dry.
.9 Oil-Dry.
.10 Conwed.
.11 3-M matting.
.12 Graboil.

.2 Disposal Drums: to TP14850, steel drum (1A2), 205 litre capacity, minimum 1.2 mm thick sheet steel, fitted with removable steel lids, with lid gaskets made of PCB resistant materials and meeting Transportation of Dangerous Goods Regulations and applicable Provincial requirements.

.3 Plastic Bags: to TP14850, minimum 150 micrometer thick sheet polyethylene. Bag seams shall be sufficiently strong to resist pressure and shocks that occur under normal conditions of transport. Designed and manufactured to contain a maximum net mass of 50kg.

.4 Solvent: following solvents are acceptable:

.1 Varsol.
.2 Kerosene.
.3 Turpentine.
.4 Number 1 fuel oil.
.5 1,1,1-trichloroethane.

## Part 3 Execution

### 3.1 EXAMINATION AND IDENTIFICATION

.1 Equipment and Luminaires containing PCBs have been identified and are listed in Hazardous Materials Report.

### 3.2 REMOVAL OF LUMINAIRE CAPACITORS AND BALLASTS

.1 Remove all PCB-containing capacitors and ballasts as follows:

.1 Fluorescent Luminaires and HID Luminaires with Potted Ballasts: Remove entire ballast, including capacitor:

.2 HID luminaires with Non-potted Ballasts: Remove capacitor only. If capacitor is leaking also dispose of ballast.

.2 Clean any black residue from luminaires using rags and solvent. Black residue may contain PCBs. Dispose of rags as PCB waste.

.3 Dispose of non-PCB containing ballasts as construction waste.

## 3.3 REMOVAL OF EQUIPMENT CAPACITORS

.1 Remove PCB containing capacitors from equipment.

.2 Notify Province in writing of equipment which may be contaminated with PCB.

.3 Remove and dispose of contaminated equipment as PCB waste if directed by Province in writing. This work will be considered a change in the work and valued in accordance with the General Conditions of Contract.

## 3.4 PREPARATION FOR DISPOSAL

.1 Place contaminated materials into plastic bags. Close bags securely using specified ties. Handle bags containing material to prevent bag puncture.

.2 Place minimum 75 mm of absorbent material in bottom of drum.

.3 Place plastic bags containing contaminated material into disposal drum.

.4 Place capacitors into drum with terminals facing up.

.5 Package PCB contaminated gloves, work clothes and rags in plastic bags and place in drums.

.6 Seal drums and store in a designated storage area pending transportation and disposal.

.7 Label drums containing liquid PCB, contaminated material and equipment, with a Number 4 - Severe Hazard Label.

.8 Each container must be marked in accordance with the Dangerous Goods Transportation and Handling Act, showing the shipping name (polychlorinated biphenyl), the product identification number (UN2315) and a Class 9 label.

## 3.5 TRANSPORTATION AND PERMANENT DISPOSAL

.1 Transport waste PCBs in accordance with the British Columbia and Federal legislation and regulations.

.2 Ensure that all materials are properly packaged and labeled prior to transportation.

.3 Transport hazardous waste materials in properly placarded vehicles equipped with a rain and windproof box.

.4 Each load shall be accompanied by a properly completed Transportation of Dangerous Goods Regulation (TDGR) Waste Manifest. Provide the Province with a copy of each waste manifest.

.5 Arrange and pay for permanent disposal of PCBs and PCB-contaminated material in an environmentally safe manner at the Alberta Special Waste Treatment Centre in accordance with British Columbia legislation and regulations.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 This project includes the disturbance, removal, cleaning and decontamination of existing bird, bat, and rodent droppings and disposal of removed materials.

.1 The high nutrient content of accumulated bird, bat, and rodent excrement provides an excellent growth medium for organisms of potential human health concern.

.2 Humans may become infected by inhaling dusts containing dried feces, urine, or respiratory secretions of infected birds, bats, and rodents.

.3 Other sources of potential exposures include a bite from an infected bird, bat, or rodent, and handling the plumage, fur and tissues of infected animals.

.4 The main disease organisms found in bird, bat, and rodent droppings are Cryptococcus, Histoplasmosis and Psittacosis.

.2 This Section specifies the procedures for the disturbance and removal of existing bird, bat, and rodent droppings and remains in a structure and the cleaning and decontamination of affected surfaces. The project scope includes the removal and cleaning of bird, bat, and rodent droppings from Building.

.3 Type of Remediation Project:

.1 Small Remediation Project: Less than 10 square feet of surface or air conveyance system contamination.

.2 Medium Remediation Project: Less than 100 square feet but greater than 10 square feet of surface contamination.

.3 Large Remediation Project: Greater than 100 square feet of surface contamination or greater than 10 square feet of air conveyance system contamination.

### 1.2 RELATED WORK SPECIFIED ELSEWHERE

.1 Section 02 07 50 – Cutting and Patching

### 1.3 REFERENCES

.1 New York State Department of Environmental Conservation (DEC): 6NYCRR Part 364.

.2 New York City Department of Health, Bureau of Environmental & Occupational Disease Epidemiology: Guidelines on Assessment and Remediation of Fungi in indoor environments.

.3 Occupational Safety and Health Administration (OSHA):

.1 Respiratory Protection, Title 29, Part 1910, Section 134 of the Code of Federal Regulations.

.2 Construction Industry, Title 29, Part 1926, of the Code of Federal Regulations.

.3 Hazard Communication, Title 29, Part 1910, Section 1200 of the Code of Federal Regulations.

.4 Specifications for Accident Prevention Signs and Tags, Title 29, Part 1910, Section 145 of the Code of Federal Regulations.

.4 Center for Disease Control (CDC): Air Pollution and Respiratory Health -Prevention and remediation strategies for the Control and Prevention of Fungal Growth.

.5 Center for Disease Control (CDC): Histplasmosis – Protecting Workers at Risk.

.6 National Institute for Occupational Safety and Health (NIOSH): publication 2005-109: Histplasmosis-Protecting Workers at Risk.

.7 The Internet Center for Wildlife Damage Management: Bat Guano & Bat Feces cleanup.

## 1.4 DEFINITIONS

.1 Abatement/Remediation/Removal: The process or procedure for removing and controlling the biological release and/or dispersion of microbial agents.

.2 Adequately Wetted: Sufficiently wet, mixed, or coated with a detergent solution to prevent biological and dust dispersion during the movement of contaminated items and debris.

.3 Air Filtration Unit (AFU): Local exhaust HEPA equipped air filtration unit capable of maintaining a negative pressure inside the work area and a constant air flow from adjacent areas into the work area exhausting clean filtered air outside the work zone.

.4 Air Sampling: The process of measuring inside biological contamination and outside ambient conditions.

.5 Authorized Personnel: Facility or the Director’s Representative, and all other personnel who are authorized officials of any regulating agency, be it State, Local, Federal or Private entity who possess legal authority for enforcement or inspection of the remediation work.

.6 Isolation Barrier: Any surface which seals off the work area to inhibit the movement of biological agents and contamination.

.7 CIH: Certified Industrial Hygienist, certified by the American Board of Industrial Hygiene.

.8 Clearance Criteria: Shall be determined and established by an independent Industrial Hygienist hired by the Director’s Representative, conforming to all standards set forth by all authorities having jurisdiction, mentioned in the references, and issue the certification of cleaning.

.9 Containment: The negative-pressurized enclosure within the building which establishes a contaminated area and surrounds the location where remediation is taking place.

.10 Construction Barrier: Used for construction separation only.

.1 Does not prevent movement of infectious biological contaminants.

.2 Construction: 13 mm plywood and 38 x 89 studding spaced no greater then 610 mm o/c.

.3 Doorways (minimum): 915 mm x 2440 mm – 200 mm (min), installed where required for ingress and egress.

.4 Lock: Installed to secure the area when the Contractor is not on site.

.11 Remediation Contractor: Contractor or subcontractor who has demonstrated 3 years previous experience in the clean-up of regulated chemical or physical substances, proficient in environmental remediation and the clean-up of contaminated debris and/or infectious biological agents.

.12 Critical Barrier: Two layers of 6 mil, fire retardant, polyethylene sheeting adhered in such a fashion that each layer is individually visible, and completely seals off the work area to prevent the distribution of infectious biological agents into the surrounding areas that are not part of the work area.

.13 Decontamination Unit: A serial arrangement of rooms or spaces for the purpose of separating the work area from the building environment. This unit provides for entering the work site, returning to the clean environment, cleaning of persons, equipment, and movement of properly contained waste material.

.14 Disposal Bag: A minimum 6 mil thick, polyethylene leak tight plastic bag used for packaging and transporting debris and biological waste from the work area to a disposal site.

.15 Fixed Object: Mechanical equipment, electrical equipment, fire detection systems, alarms, and all other fixed equipment, furniture, fixtures or other items which cannot be removed from the work area.

.16 HEPA: High Efficiency Particulate Absolute filtration efficiency of 99.97% down to 0.3 microns. Filtration provided on specialized vacuums and air filtration devices to trap particles and infectious agents.

.17 Moveable Object: Equipment, furniture or other items in the work area which can be removed from the work area.

.18 Negative Pressure Ventilation System: A system established for the work zone utilizing Air filtration Unit(s) capable of maintaining a negative pressure inside the work area and which creates a constant air flow from adjacent areas into the work area and exhausts clean filtered air outside the work zone.

.1 Maintains minimum of one complete air change every 15 minutes and 0.02 inches of water column pressure differential from the surrounding area at a minimum.

.19 PPE: Personal Protective Equipment.

.20 Respirator: Device designed to protect the wearer from the inhalation of harmful respirable dust, fumes, mists and infectious biological agents.

.21 Visible Emissions: Emissions containing particulate materials that are visually detectable without the aid of instruments.

.22 Wet Cleaning: The process of eliminating biological contamination from building surfaces and objects by using cloths, mops, or other cleaning devices which have been dampened with detergent solution.

.23 Work Area: The area where the related work or biological decontamination operations are performed which is defined and/or isolated to prevent the spread of biological agents.

## 1.5 ABBREVIATIONS

.1 ASTM: American Society for Testing and Materials

1916 Race Street

Philadelphia, PA 19103

www.astm.org

.2 CFR: Code of Federal Regulations

Government Printing Office

Washington, DC 20402

www.gpoaccess.gov/cfr

.3 NIOSH: National Institute for Occupational Safety and Health

Building J.N.E. Room 3007

Atlanta, Georgia 30333

www.cdc.gov/niosh

.4 OSHA: Occupational Safety and Health Administration

200 Constitution Avenue

Washington, DC 20210

www.osha.gov

.5 USEPA: United States Environmental Protection Agency

401 M Street SW

Washington, DC 20460

www.epa.gov

## 1.6 SUBMITTALS

.1 Product Data: Catalog sheets, specifications and installation instructions for each detergent, disinfectant and/or biocide, and chemicals specified.

.2 Quality Control Submittals:

.1 Worker' Qualifications: The persons removing contaminated material and their Supervisors shall be personally experienced in this type of work and shall have been employed by a company with a minimum of one year experience in this type of work.

.2 Work Plan: Submit one copy of the work plan required under Quality Assurance Article.

.3 Waste Transporter Permit: One copy of transporter's current waste transporter permit from NYS DEC.

.4 MSDS sheets for detergents, disinfectants and/or biocides, and chemicals to be used during the project.

.3 Remediation Company Qualification Data:

.1 Name of Remediation Company, business address and telephone number.

.2 Number of years in business.

.3 Number of years performing bird, bat, and rodent dropping remediation.

.4 Names, addresses and contact phone numbers of five projects of similar size and complexity in which contractor has performed bird, bat, and rodent dropping remediation work in the last 3 years.

.4 Remediation Worker's Qualifications Data:

.1 Name of each person who will be performing the Work and their employer's name, business address and telephone number.

.2 Copy of recent pulmonary function testing (PFT) and respiratory fit testing.

.5 Operation and Maintenance Data: Submit air filtration unit operation and maintenance data and manufacturer's catalog sheets for the HEPA filter. Provide an affidavit stating that the HEPA filters to be used for this project are new and unused.

.6 Contract Closeout Submittals:

.1 Disposal Site Receipts: Copy of each receipt showing that the waste containing materials have been properly disposed.

.2 Copy of Daily Project Log.

.3 Assessment Report: Submit copy of report compiled by an experienced Industrial Hygienist.

.4 Air Monitoring Data: Submit copy of air test results and chain of custody if requested.

.5 Bulk Sampling Data: Submit copy of bulk sampling results and chain of custody if requested.

## 1.7 QUALITY ASSURANCE

.1 Regulatory Requirements: Comply with the referenced standards and all applicable Federal, State and Local regulatory requirements.

.2 Pre-Work Conference:

.1 Before the Work of this Section is scheduled to commence, a conference will be held by the Director's Representative at the Site for the purpose of reviewing the Contract Documents, discussing requirements for the Work, and reviewing the Work procedures.

.2 The conference shall be attended by the Contractor and any subcontractors.

.3 Other participants may be invited at the discretion of the Director.

.3 Work Plan: Prior to the pre-work conference and before the physical Work begins, prepare a detailed Work Plan. The Work Plan shall include, but not be limited to, work procedures, types of equipment, crew size, negative pressure containment and decontamination unit details, locations and emergency procedures for fire and medical emergencies and contingencies for the failure of containment. The work plan will be discussed at the pre-work conference.

.4 Remediation Contractor Qualifications: The firm performing the work of this section shall have been regularly engaged in bird, bat, and rodent dropping remediation work for a minimum of one year, and shall have completed 5 similar projects of size and complexity.

.5 Remediation Worker Qualifications: The person performing the work of this section and their supervisor shall be personally experience in this type of work for a minimum of one year, and have received recent pulmonary function testing (PFT) and respiratory fit testing.

.6 Testing Lab Qualifications: The proposed testing lab shall be New York State Department of Health Environmental Laboratory Approval Program (NYS ELAP) certified.

## 1.8 PROJECT CONDITIONS

.1 Post the following documents at the entrance to the abatement area:

.1 Copy of the printed Work Plan.

.2 Warning signs and/or tape.

.2 Shut-down of Air Handling System:

.1 Complete the Work of this Section within the time limitation allowed for shut-down of the air handling system serving the work area.

.2 The air handling system will not be restarted until approval of the cleanup project.

.3 Electric services to those portions of the building and facility shall be maintained at all times.

.4 Remove or encase all equipment in the work area with two layers of six mil fire retardant polyethylene sheeting.

.5 No aisle or passageway shall be obstructed so as to reduce its required width as an exit.

## 1.9 DELIVERY AND STORAGE

.1 Deliver cleaning and disinfection/biocidal materials in manufacturer’s original sealed and labeled containers.

.2 Do not deliver products which have exceeded their shelf life, are in open or damaged containers or cartons, or are not properly labeled as specified.

.3 Store cleaning and disinfection/biocidal materials in compliance with the manufacturer’s printed instructions.

## 1.10 HEALTH AND SAFETY

.1 Where in the performance of the work, workers, supervisory personnel or sub-contractors may encounter, disturb, or otherwise function in the immediate vicinity of contaminated items and materials, all personnel shall take appropriate continuous measures as necessary to protect all ancillary building occupants from the potential biological hazard of exposure to potential infectious agents.

.1 Such measures shall include the procedures and methods described herein and shall be in compliance with all applicable regulations of Federal, State and Local agencies.

### 1.11 FIRE PROTECTION AND EMERGENCY EGRESS

.1 Establish emergency and fire exits from the work area containment. Provide first aid kits and two full sets of protective clothing and respirators for use by qualified emergency personnel in the clean room of the decontamination facility.

.2 Maintain Daily Project Logbook throughout the entire term of the Project.

.1 All persons who enter the work area or containment shall sign the logbook.

.2 Document any intrusion or incident in the log book.

### 1.12 PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT

.1 Workers must wear protective suits, protective gloves, eye protection and a minimum of half-face respirator with HEPA filter cartridge for all small projects and full face respirator on all medium and larger projects.

.2 Respiratory Protection: As required by OSHA regulation 1910.134 and ANSI Z88.2.

.3 Workers must be trained, have medical clearance and must have recently received pulmonary function test (PFT) and respirator fit tested by a trained professional.

.4 Personal Air Sampling Program: As required by OSHA. Follow a complete respiratory protection program as specified by OSHA.

## Part 2 Products

### 2.1 AIR FILTRATION UNIT

.1 Air Filtration Units: Comply with ANSI Z9.2, Local Exhaust Ventilation.

.1 Final Filter: HEPA type.

.2 HEPA Filter Efficiency: Minimum efficiency of 99.97 percent when challenged with 0.3 micron particles.

.3 Filter Identification: Marked with the name of the manufacturer, model number, air flow rating, efficiency and resistance, and the direction of air flow.

.4 Dispose used filters as contaminated waste.

### 2.2 DISPOSAL BAGS

.1 Type: Clear, minimum 6 mil thick polyethylene, preprinted with a caution label. Properly drum/containerize bags for disposal.

### 2.3 EQUIPMENT

.1 Temporary lighting, heating, hot water heating units, ground fault interrupters, and all other equipment on site shall be UL listed and shall be safe, proper, and sufficient for the purpose intended.

.2 All electrical equipment shall be in compliance with the National Electric Code, Article 305 - Temporary Wiring.

**2.4 POLYETHYLENE SHEETS**

.1 Type: Fire retardant polyethylene, minimum 6 mil thick.

.2 Initial Floor Protective Layer: Reinforced polyethylene sheets, minimum 10 mil thick.

**2.5 PLYWOOD**

.1 Type: Fire-rated CDX plywood, with minimum thickness of 1/2 inch.

**2.6 SEALANTS**

.1 Type: Combination fire stop foam and fire stop sealant to critically seal small openings; Dow Corning Fire Stop Foam and Dow Corning Fire Stop Sealant.

**2.7 STUDS AND PARTITIONS**

.1 Type: 2" x 4" or metal studs with fire-rated CDX plywood.

**2.8 RESPIRATORS**

.1 Type: Approved by the Mine Safety and Health Administration (MSHA), Department of Labor, or the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services.

**2.9 VACUUM CLEANERS**

.1 Type: Vacuums equipped with new HEPA filters.

**2.10 CLEANING SOLUTIONS**

.1 Cleaners, Disinfectants and Solutions: Use of any of the following is acceptable:

.1 Disinfectants/Biocides and Cleaners: DuPont’s Virkon S Virucidal Disinfectant.

.2 Formalin Solution: Dilute commercially available formaldehyde (containing 37-40 percent by weight of formaldehyde gas in water, stabilized with 10-15 percent methanol) with water to create a 5-percent, by volume, formalin solution.

.3 Chlorine Solution: 10% Chlorine Bleach and 90% warm water mixture.

**Part 3 Execution**

**3.1 BIRD, BAT, AND RODENT DROPPING MATERIAL HANDLING AND REMOVAL PROCEDURES**

.1 Comply with the referenced standards in Part 1 of this Section, and all applicable Federal, State and Local regulatory requirements.

.2 Provide critical barrier on all openings (open doors, broken windows, etc.) in the work area. Use minimum 6 mil thick polyethylene sheeting on openings for the duration of the removal project.

.3 Provide a HEPA filtered negative pressure containment for any area to be worked in. Provide a minimum of 4 air changes per hour. Refer to OSHA Asbestos Standard for further information.

.4 Perform the work using HEPA vacuums and/or wet methods. Dust and spores shall be kept to a minimum. No visible emissions are allowed during the performance of the work.

.5 Pressure washing inside building is not acceptable.

.6 Humanely remove all remaining birds, bats, and rodents from the building. Prevent bird, bat, and rodent reentry by providing critical barriers.

## 3.2 PERSONAL PROTECTION

.1 Disease prevention is dependant on the protection of workers from contact with particulate matter/spores.

.2 Provide, and require all workers to use respiratory protection. Type: Minimum of a NIOSH approved half face respirator with P-100 filters. Use of dust and/or particle masks is not allowed.

.3 Provide, and require all workers to use protective clothing.

.1 Protective Clothing: Includes disposable Tyvek-type coveralls, safety glasses, and rubber gloves.

.2 Tape glove/sleeve interfaces.

.3 Rubber boots or Tyvek type booties shall be worn to prevent shoes from contamination.

.4 Remove protective clothing and place in a plastic bag for disposal as required.

.4 Decontamination Area: Complies with decontamination/shower units as described in the OSHA Asbestos Standard.

.1 Workers will be required to wash upon leaving work area.

.2 A soap/disinfection solution for workers, towels and a separate tool decontamination area are required.

## 3.3 CLEANING/DISINFECTION PROCEDURES

.1 Comply with the referenced standards in Part 1 of this Section and all applicable Federal, State and Local regulatory requirements.

.2 Historic Structures: Use only nonmetallic tools (i.e.: plastic spatulas and brushes) with natural fiber or nylon bristles to remove droppings.

.1 Do not use tools that can damage building surfaces, such as coarse wire brushes.

.3 Use of the Disinfectants/Biocides and Cleaner:

.1 Follow manufacturer’s written instructions for products use and applications.

.2 Do not perform final application ( if required by manufacturer), until final inspection and approval by the Director’s Representative.

.3 Upon written notification of completion of initial cleaning, apply approved biocide/disinfectant to all cleaned surfaces.

.4 Use of the Formalin Solution:

.1 Conduct decontamination when the temperature of the material being decontaminated is between 62F and 90F. Formalin solution is less effective at temperatures outside this range.

.2 Completely saturate infected areas and adjacent areas that may have little or no droppings visible.

.3 Follow manufacturer's printed instructions ( if available), or the following CDC procedures. Quantities may vary, however the proper amount of formalin to use is that which completely saturates the contaminated material.

.1 Vertical Surfaces: One gallon per 150 square feet.

.2 Horizontal Surfaces (except on soil): One gallon per 6 square feet.

.3 Soil Surface: One gallon per 1square foot.

.4 Exercise care to avoid formalin runoff.

.5 Where bird, bat, and rodent excrement is deep apply formalin solution on alternate days to enhance the probability of contact with all of the infected material.

.6 Disinfect contaminated equipment by soaking in 5 percent formalin solution for 15 minutes.

.5 Use of the Chlorine Solution:

.1 Use a light mist of the solution applied with pump action hand sprayer.

.2 Do not use high pressure or a direct stream as this will scatter waste.

.6 Hosing or pressure washing may be used for removing small amounts of recently deposited droppings from sidewalks and pavements.

.7 Work from top to bottom.

.1 Remove gross residue first so as to prevent spreading material to non contaminated areas.

.2 Gross removal of areas of accumulated waste can be performed with scrapers, etc. directly into bags. Keep material wet.

.8 Wet wipe/HEPA vacuum all surfaces where bird, bat, and rodent droppings are located. Cleaned surfaces must be free of all waste, dirt, debris and haze.

## 3.4 CLEARANCE CRITERIA

.1 Prior to the removal of any containment or critical barriers, schedule a walk-through inspection with the Director's Representative and obtain his written certification of the cleaning.

.1 The Directors Representative shall have final determination of an acceptable clearance level.

.2 The areas will be considered clean when all visible contamination on surfaces has been removed from the work area.

## 3.5 POST REMEDIATION CLEANING

.1 Perform post remediation cleaning upon notification from the Director's Representative that work area met all requirements of cleaning criteria or certification of cleaning.

.1 The contained area and decontamination room shall be HEPA vacuumed and cleaned prior to the removal of any critical or isolation barrier.

.2 Leave all areas dry and visibly free from contamination and debris.

.3 Clean ladders, scaffolds, and other equipment used during work.

.4 Clean the protective polyethylene enclosures, dispose of polyethylene sheeting, and wipe cloths, as contaminated waste. Place contaminated waste into 6 mil polyethylene waste bags for disposal.

.5 Similarly, clean plastic used to seal doors, windows, vents, or non-removable items. Remove and place into 6 mil polyethylene waste bags for disposal.

## 3.6 DISMANTLING AND REMOVAL OF CRITICAL/ISOLATION BARRIERS

.1 Removal of critical and isolation barriers are not be permitted in any area where requirements of certification of cleaning have not been met.

.2 Levels above the requirements of cleaning criteria or certification of cleaning shall require recleaning and further decontamination.

.3 Surfaces should show no visible dust or growth of micro organisms.

## 3.7 DISPOSAL OF BIRD, BAT, AND RODENT DROPPING MATERIAL AND RELATED DEBRIS

.1 Comply with the referenced standards in Part 1 of this Section.

.2 Double bag droppings and contaminated waste in 6 mil polyethylene bags.

.1 Goose-neck each bag with duct tape.

.2 Clean/disinfect outer bag prior to leaving the work area.

.3 Place bags in dumpster.

.3 Transport the bird, bat, and rodent dropping waste, related debris, and waste water to an approved disposal site/landfill.

.4 The waste hauler must possess a valid solid waste transporter registration issued by the New York State Department of Environmental Conservation.

.1 A licensed solid waste transporter shall be a commercial collector/hauler.

## 3.8 RESTORATION

.1 When directed in writing, remove temporary decontamination facilities and restore area designated for these facilities to its original condition or better.

.2 Where existing work is damaged or contaminated, restore work to its original condition.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 This Section includes:

.1 Wood blocking, cants, wall backing, and nailers.

.2 Wood furring and grounds.

.3 Plywood backing panels.

.2 Related Requirements:

.1 Section 06 40 00 – Architectural Woodwork

.2 Section 07 62 00 – Sheet Metal Flashing and Trim

.3 Section 07 92 00 – Sealants

.4 Section 09 91 90 – RePainting

### 1.2 REFERENCES

.1 Definitions:

.1 For the purpose of this project the following definitions shall apply:

.1 Stud Framing: Vertical framing members of non-load bearing wall systems may be considered as No. 3 or Stud Grade and may only be used where the consultant gives prior approval. Use of No. 3 and Stud Grade framing material will not be allowed for any horizontal applications.

.2 Reference Standards:

.1 American Society of Mechanical Engineers (ASME):

.1 ASME B18.2.1-2012 (R2021), Square, Hex, Heavy Hex, and Askew Head Bolts and Hex, Hea Hex, Lobed Head, and Lag Screws (Inch Series), Includes Errata (2013).

.2 ASME B18.6.1-1981 (R2016), Wood Screws (Inch Series).

.2 American Society for Testing and Materials International (ASTM):

.1 ASTM A153/A153M-23, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

.2 ASTM A307-21, Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.

.3 ASTM A563/A563M-23, Standard Specification for Carbon and Alloy Steel Nuts (Inch and Metric).

.4 ASTM A653/A653M-23, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanealled) by the Hot-Dip Process.

.5 ASTM B117-19, Standard Practice for Operating Salt Spray (Fog) Apparatus.

.6 ASTM C954-22, 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.

.7 ASTM D1761-20, Standard Test Methods for Mechanical Fasteners in Wood and Wood-Based Materials.

.8 ASTM E1333-22, Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates from Wood Products Using a Large Chamber.

.9 ASTM F1667/F1667M-21a, Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.

.3 American Wood Preservers Association (AWPA):

.1 AWPA Book of Standards, 2023.

.2 AWPA M2 Standard for the Care of Preservative-Treated Wood Products

.4 California Air Resources Board (CARB):

.1 Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products (2007).

.5 Canadian Standards Association (CSA Group):

.1 CAN/CSA A123.2-03 (R2023), Asphalt-Coated Roofing Sheets, Includes Update No. 1 (2006)

.2 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.

.3 CSA-G164-18 (R2023), Hot Dip Galvanizing of Irregularly Shaped Articles, Includes Update No 1 (2020).

.4 CSA O112 Series-M1977 (R2006), CSA Standards for Wood Adhesives (Withdrawn).

.5 CSA O121-17 (R2022), Douglas Fir Plywood.

.6 CSA O141:23, Canadian Standard Lumber.

.7 CSA O151-17 (R2022), Canadian Softwood Plywood.

.8 CSA O153:19, Poplar Plywood.

.9 CSA T530-99, Commercial Building Standard for Telecommunications Pathways and Spaces. (Adopted ANSI/TIA/EIA-569-A)

.6 National Lumber Grades Authority (NLGA):

.1 NLGA SPS 2-2019, Special Products Standards on Machine Graded Lumber.

.2 Standard Grading Rules for Canadian Lumber 2017.

.7 South Coast Air Quality Management District (SCAQMD):

.1 SCAQMD Rule 1113-16, Architectural Coatings.

.2 SCAQMD Rule 1168-22, Adhesive and Sealant Applications.

.8 Underwriters' Laboratories of Canada (ULC):

.1 ULC 102.2, Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies. (ULC S102.2)

## 1.3 ACTION SUBMITTALS / INFORMATIONAL SUBMITTALS

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

.1 Submit manufacturer's printed product literature, specifications and data sheets.

.2 Submit SDS sheets or official manufacturer literature stating no urea-formaldehyde was used in the manufacturing of composite wood.

.2 Product Data:

.1 Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.

.3 Material Certificates:

.1 For dimensional lumber specified to comply with minimum allowable unit stresses, indicate species, grade, and design values for each use.

.2 For exposed items, omit grade stamp and provide certificates as to species, grade, stress grade, seasoning, moisture content, and other evidence as required to show compliance with the specifications.

### 1.4 QUALITY ASSURANCE

.1 Lumber shall be graded and stamped by an agency certified by Canadian Lumber Standards Accreditation Board.

.2 Plywood, particleboard, OSB and wood based composite panels in accordance with CSA and ANSI standards.

### 1.5 DELIVERY, STORAGE, AND HANDLING

.1 Deliver wood products bundled or crated to provide adequate protection during transit. Inspect wood products for damage upon delivery and remove and replace damaged materials.

.2 Store materials a minimum of 150 mm off the ground on blocking. Keep materials under cover and dry. Provide for air circulation within and around stacks and under temporary coverings.

.3 Protect sheet materials to prevent breaking of corners and damage to surfaces.

.4 Packaging Waste Management

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

## Part 2 Products

### 2.1 LUMBER

.1 Lumber: Stud Grade to CSA-O141, softwood, S-P-F, S4S, graded and stamped in accordance with National Lumber Grading Association (NLGA) Standard Grading Rules for Canadian Lumber and as follows:

.1 Moisture Content: maximum 19% at time of installation.

.2 Maximum moisture content when used for attachment of drywall: 15%.

.3 Grade: [No. 2 or better.

.4 Meeting requirements of the Building Code.

## 2.2 PANEL MATERIALS

.1 Other sheathing:

.1 Plywood panels to CSA O325, thickness as indicated on drawings.

.2 Interior sheathing shall be ULC labelled fire resistant, provide grade stamp or certification as noted for fire retardant pressure treated lumber.

## 2.3 MISCELLANEOUS LUMBER

.1 Provide lumber for support or attachment of other construction, including furring, strapping, blocking, nailing strips, ground, rough bucks, cants, curbs, fascia, backing sleepers, and similar members.

.2 Select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work for blocking and nailers.

.3 Fabricate miscellaneous lumber from dimension lumber of sizes indicated, and into shapes shown on drawings.

.4 Moisture Content: 19% maximum for lumber items not specified to receive wood preservative treatment.

.5 Grade: for dimension lumber sizes provide No. 2 or Standard grade lumber per NLGA. For board-sized lumber, provide sheathing grade, S2S.

.6 Kiln dry lumber materials to 8% moisture content or less.

## 2.4 FACTORY WOOD TREATMENT

.1 Inside the Weather (Moisture) Barrier

.1 Wood Preservative (Pressure Treatment): CAN/CSA-O80 Series, using commodity standard "Advance Guard" borate-pressure treatment to obtain minimum net retention of 2.7 kg/m3 of wood and carrying the Canadian Wood Preserver’s Bureau Quality Mark ("Advance Guard" quality mark). Kiln-dry materials after treatment.

.2 Lumber and panel materials inside moisture barrier.

.3 Items in contact with concrete or masonry.

.2 Material to bear Canadian Wood Preserver's Bureau (CWPB) stamps.

.3 Bottom plates of frame walls with sill gaskets do not require pressure treating. Ensure appropriate protective fixings and hangers are used with ACQ treated lumber.

.4 Use Hem-Fir or Pine incised lumber for treatment.

.5 Treat cut surfaces with two (2) brush coats of alkaline copper quaternary preservative or liquid Borate as applicable.

.6 Following water-borne preservative treatment, dry material to maximum moisture content of 15%.

.7 Inspection of products treated with preservative by vacuum-pressure impregnation will be carried out by an accredited inspection agency of the Canadian Wood Preserver's Bureau (CWPB).

.8 Wood preservatives containing arsenic or chromium are not permitted.

.9 Fire-Retardant Treatment: to CAN/CSA O80.9M, CAN/CSA O80.20M and CAN/CSA O80.27M, pressure impregnated, and as follows:

.1 Flame Spread Classification: FSC 25 maximum.

.2 Smoke developed of not more than: 75.

.10 Complete fabrication of treated items before treatment where possible. If cut after treatment apply field treatment to cut surfaces.

.11 Wood Preservatives: Maximum allowable VOC limit 350 g/L in accordance with SCAQMD Rule #1113 - Architectural Coatings.

## 2.5 FASTENERS

.1 Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture. Where rough carpentry is exposed to weather (during or after construction), in ground contact, pressure preservative treated, or in area of high relative humidity, provide fasteners with hot dip zinc coating complying with ASTM A153 or of Type 304 stainless steel.

.2 Nails, spikes and staples: to CSA B111, hot dipped galvanized for exterior work and fire retardant treated materials. Provide stainless steel fasteners to ASTM F1667, No. 316 for preservative treated lumber.

.3 Power Driven Fasteners: Fasteners with a CCMC or ICC-ES evaluation report acceptable to authorities having jurisdiction.

.4 Nailing discs: flat caps, minimum 25 mm diameter, minimum 0.4 mm thick, sheet metal or fibre, formed to prevent dishing. Bell or cup shapes not acceptable.

.5 Through Bolts and Anchor Bolts: ASTM A307, Grade A; with ASTM A563 hex nuts and where indicated flat washers, hot dip galvanized to ASTM A153.

.6 Wood Screws: ASME B18.6.1 or as specified on Drawings.

.7 Lag Screws: ASME B18.2.1

.1 All lag screws to be machined threaded, not cast threaded.

.2 Pre-drilled hole sized in wood members for lag screws to be in accordance with CSA O86.

.3 Lag screws are acceptable only where specifically indicated on the Drawings. Do not substitute lag screws for self-tapping wood screws.

## 2.6 FASTENER FINISHES

.1 Galvanizing: to CSA-G164, use galvanized fasteners for exterior work, and pressure-preservative treated lumber.

## 2.7 ACCESSORIES

.1 Sealants: in accordance with Section 07 92 00 – Sealants.

.1 Maximum allowable VOC limit 250 g/L in accordance with SCAQMD Rule 1168.

.2 General purpose adhesive: to CSA O112 Series.

.1 Maximum allowable VOC limit 70 g/L in accordance with SCAQMD Rule 1168.

.3 Surface Applied Wood Preservative:

.1 Containing minimum 19.6% Disodium octaborate tetrahydrate and 1.0% dodecyl dimethyl ammonium chloride in propylene glycol and water in accordance with CAN/CSA-O80.

.2 Apply minimum of two coats applied in accordance with manufacturers written instructions.

.3 Basis-of-Design Materials:

.1 Boracol 20-2BD, Sasco Products Ltd.

.4 Sill-Sealer Gaskets: Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; 25 mm nominal thickness, compressible to 0.8 mm; selected from manufacturer's standard widths to suit width of sill members indicated.

.5 Rough Hardware (bolts, nuts, washers, etc.): Hot dip galvanized in conformity to CSA G164 or Grade A low carbon steel, conforming to ASTM A307.

.6 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, explosive actuated fastening devices, recommended for purpose by manufacturer.

.7 Expanding foam sealant:

.1 Acceptable Materials:

.1 GREAT STUFF PRO™, Dow Canada

.2 Hilti (Canada) Ltd. CF Filler Foams.

.3 Froth Pak, DuPont

## Part 3 Execution

### 3.1 INSTALLATION

.1 Comply with requirements of Building Code supplemented by following paragraphs.

.2 Install members true to line, levels and elevations, square and plumb.

.3 Construct continuous members from pieces of longest practical length.

.4 Do not splice structural members between supports unless noted otherwise.

.5 Install spanning members with "crown-edge" up.

.6 Select exposed framing for appearance. Install lumber and panel materials so that grade-marks and other defacing marks are concealed or are removed by sanding where materials are left exposed.

.7 Install sheathing in accordance with manufacturer's printed instructions.

.8 Install blocking, plates and backing for all components mounted on gypsum board walls, ceilings, and bulkheads requiring support.

.1 Components include, but not limited to: architectural woodworking components, door frames and hardware, windows, displays, lockers, handrails, mirrors, white boards and tack boards, washroom partitions and accessories, boot racks, curtains, interior signage, window treatments, manufactured specialties, mechanical and electrical devices, and items indicated as N.I.C. and requiring support.

.2 Center supporting members on fastening line of supported component.

.3 Supporting members to extend one stud spacing to each side of the supported component.

.9 Use dust collectors and high quality respirator masks when cutting or sanding wood panels.

.10 Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

.11 Comply with AWPA M4 and revisions specified in CSA O80 Series, supplementary requirements to AWPA M2 for applying field treatment to cut surfaces of preservative-treated lumber.

## 3.2 WOOD FRAME CONSTRUCTION

.1 Space framing members at 305 mm o/c, or as indicated otherwise on drawings. Construct members of continuous pieces of longest possible length.

.2 Provide 38 x 89 mm blocking at 610 mm o/c between engineered floor joists for lateral support of wall plates where walls run parallel to joists.

.3 Make allowance for erection stresses. Securely brace members in place to maintain plumb and true until permanently fixed and held to structure.

.4 Install fire-blocking as detailed.

.5 Fabricate wood frame construction to the requirements of the Building Code, Part 9, except where more stringent requirements are indicated on the drawings.

.6 Minimum sizes and spacing of members, thickness of materials, allowable species and lumber grades, shall meet the requirements of the above noted standards, unless indicated or specified otherwise.

.7 Minimize cutting of framing members for pipes, etc. by prior consultation with other trades. Cutting limitations in accordance with the Building Code.

.8 Construct framing as necessary to accommodate the work of other trades.

.9 Provide isolation protection between wood and concrete.

## 3.3 ERECTION

.1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.

.2 Countersink bolts where necessary to provide clearance for other work.

.3 Use nailing disks for soft sheathing as recommended by sheathing manufacturer.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 The work of this section includes:

.1 The supply, fabrication, delivery to the job site, finishing, and installation of site manufactured finish carpentry indicated on the drawings and as specified.

.2 Related Requirements:

.1 Section 05 50 00 – Metal Fabrications

.2 Section 06 10 00 – Rough Carpentry

.3 Section 06 40 00 – Architectural Woodwork

.4 Section 09 91 90 – Re Painting

### 1.2 REFERENCES

.1 Reference Standards:

.1 American Society for Testing and Materials International (ASTM):

.1 ASTM D1037-12(2020), Standard Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials.

.2 ASTM E84-23d, Standard Test Method for Surface Burning Characteristics of Building Materials.

.3 ASTM E1333-22, Standard Test Method for Determining Formaldehyde Concentrations in Air and Emissions Rates from Wood Products Using a Large Chamber.

.4 ASTM F1667/F1667M-21a, Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.

.2 American Wood Protection Association (AWPA):

.1 AWPA E16-22, Standard Field Test for Evaluation of Wood Preservatives to be used Above Ground (UC3B); Horizontal Lap-Joint Test.

.3 Architectural Woodwork Manufacturers Association of Canada (AWMAC):

.1 North American Architectural Woodwork Standards (NAAWS), Most Recent Edition.

.4 California Air Resources Board (CARB):

.1 Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products (2007).

.5 Canadian Hardwood Plywood and Veneer Association (CHPVA)

.6 Canadian Plywood Association (CanPly)

.1 The Plywood Handbook 2012.

.7 Canadian Standards Association (CSA Group):

.1 CSA B111-1974 (R2003), Wire Nails, Spikes and Staples.

.2 CSA-G164-18 (R2023), Hot Dip Galvanizing of Irregularly Shaped Articles, Includes Update No 1 (2020).

.3 CAN/CSA O80 Series:21 – Wood Preservation, Includes Administrative Update (2022) and Errata (2022).

.4 CSA O121-17 (R2022), Douglas Fir Plywood.

.5 CSA O141:23, Canadian Standard Lumber.

.6 CSA O151-17 (R2022), Canadian Softwood Plywood.

.7 CSA O153:19, Poplar Plywood.

.8 CSA Z760-94 (R2001), Life Cycle Assessment.

.8 National Lumber Grades Authority (NLGA):

.1 Standard Grading Rules for Canadian Lumber 2017.

.9 South Coast Air Quality Management District (SCAQMD):

.1 SCAQMD Rule 1113-16, Architectural Coatings.

.2 SCAQMD Rule 1168-22, Adhesive and Sealant Applications.

.10 Underwriters Laboratories of Canada (ULC):

.1 ULC 102.2, Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies (ULC S102.2)

.2 ULC-104, Standard Method for Fire Tests of Door Assemblies (CAN/ULC-S104-15).

## 1.3 ADMINISTRATION REQUIREMENTS

.1 Coordination

.1 Coordinate provision of concealed blocking or supports.

.2 Ensure that back-priming of finish carpentry surfaces concealed after installation, has been performed as specified in Section 09 91 90 – Re Painting, prior to installation.

.2 Materials and installation shall be in Metric measurements as specified.

## 1.4 ACTION SUBMITTALS / INFORMATIONAL SUBMITTALS

.1 Submit shop drawings in accordance with Section 01 11 00 – General Requirements, Submittal Procedures.

.1 Indicate details of construction, profiles, jointing, fastening and other related details.

.2 Indicate materials, thicknesses, finishes and hardware.

.2 Submit samples in accordance with Section 01 11 00 – General Requirements, Submittal Procedures.

.1 Submit samples, 300 mm x 300 mm of each wood species to receive finish, to the Consultant for review.

.2 Submit 250 mm long samples of each type of trim, moulding and handrail.

.3 Reviewed samples shall become the standard for the work.

## 1.5 CLOSEOUT SUBMITTALS

.1 Provide operations and maintenance data in accordance with Section 01 11 00 – General Requirements, Closeout Submittals.

## 1.6 QUALITY ASSURANCE

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

.2 Any reference to Custom or Premium grade in this specification shall be as defined in the NAAWS.

.3 Any item not given a specific quality grade shall be Custom grade as defined in the NAAWS.

.4 A copy of the NAAWS shall be made readily available for reference purposes on the job site.

.5 References in this specification to part and item numbers mean those parts and items contained within the NAAWS.

.6 Materials and installation shall be in metric measurements.

## 1.7 DELIVERY, STORAGE, AND HANDLING

.1 The Architectural Woodwork Manufacturer and the Contractor shall be jointly responsible to make certain that architectural woodwork is not delivered until the building and storage areas are sufficiently dry so that the architectural woodwork will not be damaged by excessive changes in moisture content.

.2 Architectural woodwork delivery, storage and handling shall be in accordance with Section two Care and Storage of the NAAWS.

.3 Delivered materials which are damaged in any way or do not comply with these specifications will be rejected by the Consultant and shall be removed from the job site and replaced with acceptable materials.

.4 Packaging Waste Management.

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

## 1.8 SITE CONDITIONS

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

# Part 2 Products

## 2.1 MATERIALS

.1 Finish carpentry work shall include all clear, kiln dried, dressed, or resawn material exposed to view in a finished building interior and exterior, including running and standing trim, wall bases, door frames, paneling, trim and other trim related products.

**2.2 PANEL MATERIAL**

.1 Douglas fir plywood (DFP): to CSA O121, standard construction.

.1 Interior ceiling applications: marine-grade Douglas fir sheathing, Grade G1S; exposure durability rating shall be 'EXTERIOR', and the glue used shall be a fully waterproof structural adhesive.

.2 Urea-formaldehyde free.

**2.3 PERFORMANCE / DESIGN CRITERIA FOR WALL AND CEILING MOUNTED WOOD**

.1 Surface Performance Characteristics: Tested in accordance with ULC 102.2.

.1 Flame Spread: 150 or less.

.2 Smoke Developed: 300 or less.

.2 Attachment Devices: Size for five times design load indicated in ASTM C635, Table One, Direct Hung.

**2.4 FABRICATION**

.1 Fabricate items rigid, plumb and square, as detailed, with tight, bevelled, hairline joints. Sand work smooth, set all nails and screws.

.2 Countersink bolts and washers, fill holes with matching wood plugs.

**2.5 ACCESSORIES**

.1 Fasteners: to suit size and nature of components being fastened.

.2 Nails and staples: to CSA B111; galvanized to CSA-G164 for exterior work, interior humid areas and for treated lumber; stainless steel finish elsewhere.

.3 Wood screws: plain], type and size to suit application.

.4 Adhesive: recommended by manufacturer.

.1 Adhesives: maximum VOC limit 30 g/L in accordance with SCAQMD Rule 1168 - Adhesives and Sealants Applications.

**Part 3 Execution**

**3.1 EXAMINATION**

.1 Contractor, Owner, and Consultant to visit site at 80% completion and note state of Work and finishes in the various areas in which cabinet and millwork to be installed.

.2 Ensure surfaces are ready to receive Work. All surfaces of other Work to be finished and painted before being built-over or covered in any way or millwork installed.

**3.2 INSTALLATION**

.1 Do finish carpentry to Quality Standards of the NAAWS, except where specified otherwise.

.2 Scribe and cut as required to fit abutting walls, and surfaces, to fit properly into recesses and to accommodate intersecting or penetrating objects; secure materials and components in place, rigid, plumb and square, with tight, hairline joints to locations indicated on Drawings and in accordance with NAAWS, and as follows:

.1 Form joints to conceal shrinkage.

.2 Set finishing nails to receive filler.

.3 Countersink screws in round cleanly cut hole and plug with wood plug matching material being secured.

.4 Fabricate in the longest practical length with the purpose of minimizing the field joints.

.3 Fastening:

.1 Position items of finished carpentry work accurately, level, plumb, true and fasten or anchor securely.

.2 Design and select fasteners to suit size and nature of components being joined. Use proprietary devices as recommended by manufacturer.

.3 Set finishing nails to receive filler. Where screws are used to secure members, countersink screw in round smooth cut hole and plug with wood plug to match material being secured.

.4 Replace items of finish carpentry with damage to wood surfaces including hammer and other bruises.

.4 Paneling:

.1 Install paneling in accordance with NAAWS Section 8.6.1.11.

.2 Secure paneling using adhesive recommended for purpose by manufacturer. Fill nail holes caused by temporary fixing with filler matching wood in colour.

.3 Secure paneling using concealed fasteners.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 This Section Includes:

.1 Shop manufactured architectural woodwork in accordance with Architectural Woodwork Standards (NAAWS).

.2 Cabinet hardware.

.2 Related Requirements:

.1 Section 05 50 00 – Metal Fabrications

.2 Section 06 10 00 – Rough Carpentry

.3 Section 06 20 00 – Finish Carpentry

.4 Section 07 92 00 – Sealants

.5 Section 09 21 16 – Gypsum Board Assemblies

.6 Section 09 91 9 0 – Re Painting

.7 Mechanical: Sinks in countertops

.8 Electrical

### 1.2 REFERENCES

.1 Reference Standards:

.1 American National Standards Institute (ANSI):

.1 ANSI/NEMA LD 3-2005, High-Pressure Decorative Laminates. (HPDL).

.2 ANSI/HPVA HP-1-2020, Standard for Hardwood and Decorative Plywood.

.2 American Society for Testing and Materials International (ASTM):

.1 ASTM A240/A240M-23a, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, and Strip for Pressure Vessels and for General Applications.

.2 ASTM A480/A480M-23b, Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip.

.3 ASTM A666-23, Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

.4 ASTM D1037-12(2020), Standard Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials.

.5 ASTM D2555–17a, Standard Practice for Establishing Clear Wood Strength Values.

.6 ASTM D2559–12a (R2018) Standard Specification for Adhesives for Bonded Structural Wood Products for Use Under Exterior Exposure Conditions.

.7 ASTM D2832-92(2016), Standard Guide for Determining Volatile and Nonvolatile Content of Paint and Related Coatings.

.8 ASTM D3574-17, Standard Test Methods for Flexible Cellular Materials-Slab, Bonded, and Molded Urethane Foams.

.9 ASTM D3930–08(2023), Standard Specification for Adhesives for Wood-Based Materials for Construction of Manufactured Homes.

.10 ASTM D4300-23, Standard Test Methods for Ability of Adhesive Films to Support or Resist the Growth of Fungi.

.11 ASTM D5116-17, Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products.

.12 ASTM D5672/D5672M-22, Standard Test Method for Testing Flexible Cellular Materials Measurement of Indentation Force Deflection Using a 25-mm (1-in.) Deflection Technique.

.13 ASTM E1333-22, Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates from Wood Products Using a Large Chamber.

.3 Architectural Woodwork Manufacturers Association of Canada (AWMAC):

.1 North American Architectural Woodwork Standards (NAAWS), Most Recent Edition.

.4 Canadian Standards Association (CSA Group):

.1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.

.2 CAN/CSA O80 Series:21 – Wood Preservation, Includes Administrative Update (2022) and Errata (2022).

.3 CSA O112.9:21, Evaluation of Adhesives for Structural Wood Products (Exterior Exposure), Includes Administrative Update (2022).

.4 CSA O112.10-08 (R2022), Evaluation of Adhesives for Structural Wood Products (Limited Moisture Exposure), Includes Update No. 1 (2010), Update No. 2 (2010).

.5 CSA O121-17 (R2022), Douglas Fir Plywood.

.6 CSA O141:23, Canadian Standard Lumber.

.7 CSA O151-17 (R2022), Canadian Softwood Plywood.

.8 CSA O153:19, Poplar Plywood.

.5 International Organization for Standardization (ISO):

.1 ISO 4586 Series:2018 - High-pressure decorative laminates (HPL, HPDL) - Sheets based on thermosetting resins (usually called laminates).

.2 ISO 14040:2006, Environmental Management-Life Cycle Assessment - Principles and Framework.

.3 ISO 14041:1998, Environmental Management-Life Cycle Assessment - Goal and Scope Definition and Inventory Analysis.

.6 National Hardwood Lumber Association (NHLA):

.1 Rules for the Measurement and Inspection of Hardwood and Cypress 2019.

.7 National Lumber Grades Authority (NLGA):

.1 Standard Grading Rules for Canadian Lumber 2017.

.8 South Coast Air Quality Management District (SCAQMD):

.1 SCAQMD Rule 1113-16, Architectural Coatings.

.2 SCAQMD Rule 1168-22, Adhesive and Sealant Applications.

.9 Underwriters Laboratories of Canada (ULC):

.1 ULC 102, Standard Method for Surface Burning Characteristics of Building Materials and Assemblies (ULC S102).

.2 Definitions:

.1 Exposed Surfaces of Casework: Surfaces visible when doors are closed, including visible surfaces in open cabinets or behind glass doors, and interior faces of door fronts, bottom of upper cabinets when 1220 mm of more above finished floor, sides of all modular components regardless of their position in the assembled casework, and any surface visible from above.

.2 Semi-exposed Surfaces of Casework: Surfaces behind opaque doors, including interiors and bottoms of wall mounted casework, horizontal surface of toe set back.

.3 Concealed Surfaces of Casework: Surfaces not usually visible after installation, including sleepers, web frames, dust panels, and ends of cabinets installed directly against and completely concealed by walls or other cabinets; tops of wall cabinets and utility cabinets.

## 1.3 ACTION SUBMITTALS / INFORMATIONAL SUBMITTALS

.1 Submit shop drawings in accordance with Section 01 11 00 – General Requirements, Submittal Procedures.

.1 Show location of each item, dimensioned plans and elevations, large scale details, attachment devices, and other components.

.2 Show details of construction, profiles, jointing, fastening and other related details.

.3 Show materials, thicknesses, finishes and hardware.

.4 Show locations and sizes of cut-outs and holes for plumbing fixtures and other items installed in architectural woodwork.

.5 Provide model schedule for seismic anchoring of millwork to walls.

.2 Submit samples in accordance with Section 01 11 00 – General Requirements, Submittal Procedures.

.1 Submit two finished samples, 610 mm x 610 mm of each finish to be applied at the factory, to the Consultant for approval. Where materials are being matched, verify that specified materials match existing prior to submitting samples.

.2 Alternative cabinet hardware from that specified shall be submitted to the Consultant for approval.

.3 Reviewed samples shall become the standard for the work.

## 1.4 CLOSEOUT SUBMITTALS

.1 Project Record Sheet: Submit to the Consultant two copies of the project record sheet identifying the project title and address, Owner, Consultant, and

Architectural Woodwork Subcontractor. Indicate materials and finishes used for architectural woodwork and whether shop finished, or site finished and by whom. Include type and source of all cabinet hardware and any special items used under architectural woodwork.

.2 Submit in accordance with Section 01 11 00 – General Requirements, Closeout Submittals.

## 1.5 QUALITY ASSURANCE

.1 Architectural Woodwork Standards (NAAWS) and Errata shall be used to establish the minimum level of quality for this project.

.2 Execute the work of this Section by a member of AWMAC with five years' experience in work of comparable complexity and scope.

.3 Any reference to Custom or Premium grade in this specification shall be as defined in the NAAWS.

.4 Any item not given a specific quality grade shall be Custom grade as defined in the NAAWS.

.5 A copy of the NAAWS shall be made readily available for reference purposes on the job site.

.6 References in this specification to part and item numbers mean those parts and items contained within the NAAWS.

.7 Perform the Work in accordance with the definition of 'Good Workmanship' as defined in the NAAWS.

.8 Remove and replace finish carpentry Work which does not conform to the NAAWS.

.9 Materials and installation shall be in metric measurements.

## 1.6 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, store, and handle materials in accordance with the NAAWS. Control the temperature and humidity in accordance with NAAWS recommendations, before, during, and after delivery, during storage, and during and after installation as required.

.2 Provide protective coverings of suitable material for plastic laminate items, taking special precautions to protect corners.

.3 Do not permit delivery of millwork to the site until the area is sufficiently dry so that woodwork shall not be damaged by excessive changes in ambient humidity.

.4 Packaging Waste Management

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

## 1.7 SITE CONDITIONS

.1 Comply with the NAAWS requirements for care and storage for optimum temperature and humidity conditions. Maintain a minimum 430 lx (40 f.c.) illumination on surfaces and areas where work is being installed.

.2 Where work is indicated to be fitted to other construction, check dimensions of other construction by field measurement before fabrication; show recorded field measurements on final Shop Drawings. Coordinate fabrication schedule with construction schedule and progress to avoid delay of Work.

.3 Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with fabrication without field measurements. Coordinate other construction to ensure that actual dimensions correspond to guaranteed dimensions.

## Part 2 Products

### 2.1 MATERIALS

.1 Basis-of-Design Materials: Materials and colours listed below form the Basis-of-Design materials for this project.

.2 Materials other than named products Basis-of-Design materials may be acceptable to the Consultant; submit information in accordance with Section 01 11 00 – General Requirements, Product Options and Substitutions no later than seven days prior to bid closing date and as follows:

.1 Proposed alternates shall match colour range, texture and performance characteristics of named products, and shall not require a change to colour board for Project.

.2 Proposed alternates found acceptable by Consultant will be listed in an Addendum.

.3 The Consultant is not obliged to accept any materials presented for their review and does not need to provide reasons for rejection of proposed alternates.

.3 Use clean stock only and comply with NAAWS for quality grades specified.

.4 Furring, Blocking, Shims, and Hanging Strips: Fire retardant treated softwood, Softwood or hardwood lumber, kiln dried to less than 8% moisture content.

.5 Panel Materials: Provide panel materials meeting requirements for moisture content and grades in accordance with NAAWS requirements and as specified below. Panel products must be manufactured with no added urea-formaldehyde.

.6 Douglas fir sheathing, Grade B-B; exposure durability rating shall be ‘EXTERIOR’, and the glue used shall be a fully waterproof structural adhesive

.7 European Multi-Ply Plywood: Grade B/BB, urea-formaldehyde free.

.8 Softwood Plywood: Meeting CSA O121 or CSA O151, cross-banded, sanded G1S, thickness as indicated.

.9 Poplar plywood: to CSA O153, utility interior moisture resistant type.

.10 Lumber:

.1 Softwood: to CSA O141, kiln dried to maximum moisture content of 12%, dressed 4 sides.

.11 High Pressure Decorative Laminate (HPDL): to ISO 4586-2 and ANSI/NEMA LD3; Grades and application in accordance with applicable NAAWS requirements and as follows:

- .1 Constructed of multiple layers of phenolic resin-saturated kraft paper in combination with a layer of decorative melamine-saturated paper, all fused together under heat and pressure.
- .2 Horizontal General Purpose Grade (HGS): thickness of 1.2 mm ±0.12 mm, used on the following:
  - .1 Horizontal surfaces, unless specified otherwise.
- .3 Vertical General Purpose Grade (VGS): thickness of 0.7 mm ±0.10 mm, used on the following:
  - .1 Vertical surfaces, unless specified otherwise.
  - .2 Exposed portions of case bodies, including ends, divisions and bottoms.
  - .3 Exposed shelves.
  - .4 Casework Doors: exposed and semi-exposed surfaces.
- .4 Liner Grade (CLS): thickness of 0.5 mm ±0.10 mm, used on the following:
  - .1 Semi-exposed shelves.
  - .2 Interior portions of case bodies.
- .5 Laminate backer grade (BKL): thickness of 0.5 mm ±0.10 mm, used on the following:
  - .1 Concealed surface of casework backs.
- .6 Colour Basis-of-Design: as indicated on Drawings.
- .7 Acceptable Materials:
  - .1 Arborite.
  - .2 Fenix
  - .3 Formica.
  - .4 Lamin-Art.
  - .5 Nevamar.
  - .6 Pionite.
  - .7 Wilsonart.

.12 Low Pressure Decorative Laminate: to ANSI/NEMA LD3, in accordance with applicable NAAWS requirements, and as follows:

- .1 Melamine impregnated papers thermally fused under pressure.
- .2 Thickness: 0.5 mm minimum.
- .3 Wear Resistance: 400 cycles minimum.
- .4 Colours: as indicated on Drawings.

.13 Edging:

- .1 Edge type shall conform to NAAWS requirements.
- .2 Solid, high impact, purified, colour-thru, acid resistant, PVC edging.
  - .1 3 mm edging at counter tops, doors, and splashes.
  - .2 1 mm edging at cabinet boxes, exposed shelving, and concealed shelving.

.3 All edges of door panels shall be finished the same as face and back (6 sides finished).

.14 Adhesive:

.1 Decorative laminate: polyvinyl acetate or aliphatic resin in accordance with manufacturer's recommendation for curing under pressure for bonding to wood cores, water resistant type.

.2 Edge banding: Thermoplastic hot melt, synthetic resin suitable for applying thin veneer wood edge banding and film overlays.

.15 Sealant: in accordance with Section 07 92 00 – Sealants.

## 2.2 CABINET WORK

.1 Work shall conform to applicable NAAWS requirements.

.2 Apply edge banding to all four edges.

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

## 2.3 CABINET FABRICATION

.1 General

.1 Flush overlay cabinet door fronts as detailed.

.2 Fabricate gables and edges meeting walls oversize to allow for scribing to fit on site.

.3 Use non-telegraphing grain plywood when laminate is the specified finish.

.4 Assemble Work with flush butt hairline corners and joints. Cut-outs for services to be done on site during installation. No hairline cracks will be allowed in the face area of cabinet work modules unless approved in writing by Consultant.

.5 Carefully fit, cope or mitre and well glue-up Joints. There shall be no end wood visible on finished surfaces.

.6 Set nail heads in finished surfaces. Countersink screws and bolts, except those detailed to be exposed, and fill holes with edge grain wood plugs to match colour and grain.

.7 Ensure adjacent part of continuous work match in colour and pattern.

.2 Construction

.1 Minimum core thicknesses as follows:

.1 Doors, plywood, 19 mm;

.2 Lower case backs against walls, plywood, 10 mm;

.3 Upper case backs against walls, plywood, 10 mm;

.4 Shelves, fixed and adjustable, plywood, 19 mm;

.5 Counter top cores, Plywood with non-telegraphing grain, 19 mm with 38 mm edge, for wet areas, use plywood with type two adhesive and ensure that all cut-outs are sealed prior to installation of sinks, primer is not considered to be an appropriate sealer;

.6 All other work Poplar Veneer Plywood, 19 mm.

.2 Glue, dowel, mortise, lock joint or dado all cabinet work and cabinet work. Do not use staples. Nailing and screws are acceptable. Do not surface nail or screw through countertops.

.3 Blocking, framing, web frames to be solid lumber.

.4 Cut and adapt all Work to receive hardware.

.1 Drill and prepare end gables for insert type shelf standards on gables.

.2 Install all finishing hardware and fittings in shop.

.3 Fittings which may be susceptible to damage during shipping and installation may be installed after millwork installed on site.

## 2.4 CABINET HARDWARE

.1 Provide the following cabinet hardware, in quantity required, complete with all screws, bolts, washers for complete installation.

.2 Non-Exposed Fasteners: fabricators choice consistent with quality level specified.

.3 Exposed Fasteners: Architectural appearance, material, finish and fastener tool type as selected by Consultant; coordinate sample submittals before ordering materials.

.4 Draw Bolt Fasteners: Mitre butt joint fastener, adjustable and requiring no special tools for installation, galvanized.

.1 Acceptable Materials:

.1 Häfele Canada Inc.

.2 K&V 516, Knape & Vogt Canada.

.3 BP5162G, Richelieu

.5 Spacers: Rigid PVC to size and profile indicated.

.6 Access Panel Connectors

.1 Basis-of-Design Materials:

.1 Type JCBA0101C2 complete with Tee-Nut 26112, Richelieu.

.7 Pulls: Typical doors.

.1 Wire Pulls: as indicated on Door Schedule on Drawings.

.8 Hinges:

.1 Typical Cabinet Doors: Concealed, euro-style hinge with cover caps; fully adjustable for overlay, depth, height and closing force; opening angle of 110°; self-closing feature; nickel plated steel construction; overlay and half overlay mounting, and soft closers, size and profile to suit cabinet construction:

.1 Acceptable Materials:

.1 CLIP top Series, Blum Canada Ltd.

.2 Tiomos, GRASS Canada.

.3 Salice 700 Series, Häfele Canada Inc.

.4 Sensys, Hettich Canada LP.

.9 Locks:

.1 Typical lockable doors: Nickel finished, master keyed, keyed alike in groups, cam lock with plate, adjust keying group to suit requirements:

.1 Basis of Design Materials:

.1 100DR, Olympus

.2 Acceptable Manufacturers:

.1 CompX National.

.2 Richelieu.

.3 Trimline.

.10 Shelf Rests:

.1 Stainless steel pin rests: 7 mm Ø socket collar inserts for steel pin shelf supports, drill holes in cabinet work to accept collar, chrome or nickel finish:

.1 Acceptable Materials:

.1 Series 331/325 grommet, Knape & Vogt Canada.

.2 5829-180/2292-180, Richelieu.

## 2.5 FACTORY FINISHING – CABINET WORK

.1 Cabinet work for High Pressure Decorative Laminate Finish:

.1 NAAWS Quality Grade Custom.

.2 Construction: Cabinet work shall conform to applicable sections of the NAAWS.

.3 Exposed Parts and interior of cabinet doors: High pressure decorative laminate, substrate as indicated.

.4 Semi-Exposed Parts: Low pressure decorative laminate, substrate as specified above.

.5 Concealed parts: Low pressure decorative laminate backer to balance face materials.

.6 Backprime concealed surfaces before installation as follows:

.1 Surfaces in contact with concrete, masonry, floors or floor finishes.

.2 Underside of window stools.

.3 Underside of front edges of countertops and toe-spaces.

.4 Other surfaces that may be subjected to moisture during use or cleaning.

.2 Laminate Countertops

.1 Countertops shall be self edge type to applicable NAAWS requirements.

.2 Custom counter shall be seamless.

.3 Thickness: 38 mm.

## Part 3 Execution

### 3.1 EXAMINATION

.1 Site Conditions for installation of architectural woodwork shall be in accordance with applicable NAAWS requirements.

.2 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 PREPARATION

.1 Obtain measurements from site.

.2 Check access to ensure large pieces of work can be safely handled to their place of final installation.

.3 Verify that solid blocking for support and anchoring of woodwork is installed where required. Confirm exact height and location with Drawings and Consultant.

.4 Protect finished surfaces and materials of other trades from damage.

.5 Ensure services and roughing-in which affect or are connected to or through this work are complete and acceptable.

.6 Back prime cabinet work immediately after delivery to site.

### 3.3 INSTALLATION

.1 Install work to applicable NAAWS and Quality Assurance requirements.

.2 Install cabinet work in its indicated locations, plumb, level, and true.

.3 Anchor to floor, walls, blocking, or ceiling using fastening devices and hardware consistent with the building materials encountered. Do not use wood plugs. Do not use plastic plugs for ceilings or walls. Provide wall strapping as required.

.4 Anchor cabinet work and millwork to building structure. Shim level and set square in relation to adjoining surfaces. Scribe to adjacent Work. Provide allowance for finish flooring installation to base.

.5 Cabinet work:

.1 Fasten to framing using zinc-coated bolts, countersunk and plugged with matching wood plugs.

.2 Set cabinetwork in place, on base, anchoring securely to building structure and to adjoining cabinetwork. Use approved connector type fasteners between items of cabinetwork to hold adjoining pieces tightly together.

.3 Scribe to smooth snug fit with adjoining surfaces and materials to align work. Mitre corners.

.4 Perform cutting, fitting, repairing in woodwork as required by other trades where their work is connected to or part of this work.

.5 Cut out openings for mechanical, electrical, and communications fittings and fixtures. Coordinate and cooperate in the connection and installation of mechanical, electrical, and communications work.

.6 Apply sealant between countertops and adjoining walls and cabinetwork. Seal edges of cut-out core material before fixtures installed.

.7 Install finishing hardware shipped loose.

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

## 3.4 ADJUSTING

.1 During and after installation adjust all hardware and operating parts as necessary to ensure smooth and proper operation.

## 3.5 CLEANING

.1 Clean all cabinet, countertops, shelves and fixtures.

.2 Repair any marks, scratches or marring.

.3 Remove and replace damaged, marked, or stained architectural woodwork.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 This Section includes requirements for repairs to existing roof where new plumbing components connect to the existing roofing assembly.

.2 Products supplied for Work of this section must be from a single manufacturer and compatible with adjacent products.

.3 Drawings contain details that suggest directions for general configuration of roofing and flashing components; these details can be developed further by the roofing subcontractor provided that the final installation provides a weather tight installation and maintains relationships with other building elements.

.4 Related Requirements:

- .1 Section 06 10 00 – Rough Carpentry
- .2 Section 07 62 00 – Sheet Metal Flashing and Trim
- .3 Section 07 92 00 – Sealants

### 1.2 REFERENCES

.1 Reference Standards:

- .1 American Society for Testing of Materials International (ASTM):
  - .1 ASTM C1396/C1396M-17, Standard Specification for Gypsum Board
- .2 Canadian Roofing Contractors Association (CRCA):
  - .1 CRCA Roofing Specifications Manual.
- .3 Canadian Standards Association (CSA Group):
  - .1 CSA O141:23, Canadian standard lumber.
  - .2 CSA O325:21, Construction sheathing (Adopted NIST PS 2-18, with Canadian deviations), Includes Administrative Update (2021).
- .4 Factory Mutual Global (FM Approvals):
  - .1 FM Approvals 4470, Single-Ply, Polymer-Modified Bitumen Sheet, Built Up Roof (BUR) and Liquid Applied Roof Assemblies for Use in Class 1 and Non-combustible Roof Deck Construction. 2012.
- .5 National Lumber Grades Authority (NLGA):
  - .1 NLGA Standard Grading Rules for Canadian Lumber 2017.
- .6 Roofing Contractor’s Association of British Columbia (RCABC):
  - .1 Roofing Practices Manual.
  - .2 RoofStar Guarantee Program.

### 1.3 ADMINISTRATIVE REQUIREMENTS

.1 Pre-Construction Meetings: Meet on site at the location of required penetrations and repairs in accordance with Section 01 31 19 – Project Meetings before ordering materials to review existing conditions affecting work of this Section, determine membrane and flashing types, patching and repair procedures and protection of interior components from water infiltration and weather, attended by the following:

.1 Consultant.

.2 Contractor.

.3 Installer.

.4 Owner's Representative.

.2 Sequencing: Install roofing repair materials that can be completely repaired in the same day including installation of base flashings.

.3 Scheduling: Schedule roofing repairs when installation of roof penetration alterations are substantially complete.

## 1.4 ACTION SUBMITTALS / INFORMATIONAL SUBMITTALS

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

.1 Provide manufacturer's printed product literature, specifications and datasheets for membranes and roofing system components and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Provide one electronic copy of WHMIS SDS - Safety Data Sheets in accordance with WHMIS acceptable to Labour Canada, and Health and Welfare Canada.

## 1.5 QUALITY ASSURANCE

.1 Conform to Roofing Application Standards Manual as published by RCABC.

.2 Work shall be executed by an applicator approved by the RCABC as a member in good standing at time of application.

.1 Confirm if RCABC warranty on existing roof exists. RCABC Approved Contractor shall perform the work or any changes to the roof to maintain the warranty. Confirm prior to bidding.

## 1.6 DELIVERY, STORAGE, AND HANDLING

.1 Packaging Waste Management

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

## 1.7 SITE CONDITIONS

.1 Existing Conditions: Protect openings using tarps, dams and diversion materials to prevent water or snow from entering interior of building.

.2 Ambient Conditions: Install materials during dry weather and temperatures are within manufacturer's written minimum and maximum application range.

# Part 2 Products

## 2.1 MATERIALS

.1 Roofing Nails: Spiral nails having 25 mm Ø steel round top cap 25 mm Ø and 3 mm Ø shank in accordance with membrane manufacturer's

recommendations, length to penetrate solid wood supports by a minimum of 38 mm and plywood substrates by a minimum of 19 mm.

.2 Primer: Primer comprised of elastomeric bitumen and solvents, and adhesive enhancing resins as recommended by membrane roofing manufacturer to suit substrates and installation conditions.

.3 Vents: Pre-manufactured, stainless steel construction, purpose-made to suit application and location, designed to tie-in to SBS modified membrane roofing systems.

.1 Basis-of-Design Materials:

.1 Materials as required (coordinate with electrical and mechanical Drawings), Thaler Metal Industries Ltd., include submittal of manufacturer's 20-year Warranty.

.4 Flashing: as specified in Section 07 62 00 – Sheet Metal Flashing and Trim.

## 2.2 ACCESSORIES

.1 Provide materials required for a complete installation including; but not limited to, accessories listed in this Section, and as required to provide a weather tight, leak proof repair.

.2 Waterproofing Mastic: Mastic comprised of synthetic rubbers, plasticized with bitumen and solvents, and aluminum pigments to provide greater resistance to ultraviolet light degradation.

.3 Pitch Pocket Filler: Aluminum coloured solvent based mastic containing bitumen modified with SBS synthetic rubber and fibres, specifically intended for pitch pocket fill.

# Part 3 Execution

## 3.1 EXAMINATION

.1 Verify that substrates and conditions are in accordance with manufacturer's written recommendations and installation guidelines before starting work of this Section.

.2 Start of roofing work will be interpreted as meaning roofing conditions are in accordance with manufacturer's requirements.

## 3.2 PREPARATION

.1 Building Protection: Provide tarps and hoarding as required to protect existing building finishes and assemblies from work of this Section; clean any spills and repair any damaged materials resulting from work of this Section.

.2 Penetration Protection: Provide suitable protection during preparation and installation of new roofing penetrations to prevent water or weather from entering interior spaces:

.1 Lap protective coverings over existing roofing to prevent water ingress.

.2 Secure protective coverings against wind blow-off.

.3 Leave protective covering in place for duration of the work.

## 3.3 ROOFING REPAIRS

.1 Remove existing roofing and flashing systems to accommodate new roofing penetrations, accessories and flashing systems:

.1 Remove existing systems to expose substrates.

.2 Clean and prepare surfaces ready for new materials.

.2 Provide new materials as required to form a complete and continuous roof assembly:

.1 Include additional sloped insulation as required to form new crickets around new construction to prevent ponding around new curbed roof openings.

.2 Complete work of this Section in accordance with original design intent of existing roofing assembly.

.3 Restore existing roofing to original condition, remove construction debris and leave area of work in a condition acceptable to the Consultant; remove all traces of splashed or spilled materials.

.4 Restore existing roofing flashings to original condition, matching colour and profile where repairs are observable from grade or from other parts of the building.

## 3.4 SITE QUALITY CONTROL

.1 Inspection and testing of roofing application may be carried out by testing laboratory designated by Owner in cooperation with the Consultant.

.2 Inspection fees will be paid by the Owner in accordance with Section 01 11 00 – General Requirements, Quality Control.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 Section Includes:

.1 Self adhesive waterproofing system materials.

.2 Accessories.

.2 Related Requirements:

.1 Section 06 10 00 – Rough Carpentry

.2 Section 07 92 00 – Sealants

### 1.2 REFERENCES

.1 Reference Standards:

.1 American Society for Testing and Materials International (ASTM):

.1 ASTM C836/C836M(2022)Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course.

.2 ASTM D41/D41M-11(2023), Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.

.3 ASTM D412-16(2021), Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.

.4 ASTM D570-22, Standard Test Method for Water Absorption of Plastics.

.5 ASTM D882-18, Standard Test Method for Tensile Properties of Thin Plastic Sheeting

.6 ASTM D903-98(2017) Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.

.7 ASTM D1876-08(2023), Standard Test Method for Peel Resistance of Adhesives (T-Peel Test).

.8 ASTM D3767-03(2020), Standard Practice for Rubber-Measurement of Dimensions.

.9 ASTM D4716/D4716M-22, Standard Test Method for Determining the (In-plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.

.10 ASTM D5147/D5147M-18, Standard Test Methods for Sampling and Testing Modified Bituminous Sheet Material.

.11 ASTM D6163/D6163M-21, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fibre Reinforcements.

.12 ASTM E96/E96M-23, Standard Test Method for Gravimetric Determination of Water Vapor Transmission Rate of Materials.

.13 ASTM F2130-11(2018), Standard Test Method for Measuring Repellency, Retention, and Penetration of Liquid Pesticide Formulation Through Protective Clothing Materials.,

.2 Canadian Roofing Contractors Association (CRCA):

.1 CRCA Roofing Specifications Manual.

.3 Canadian Standards Association (CSA Group):

.1 CSA A123.23-15 (R2020), Product Specification for polymer-modified bitumen sheet, prefabricated and reinforced.

## 1.3 ADMINISTRATIVE REQUIREMENTS

.1 Convene pre-installation meeting one week prior to beginning waterproofing Work, with waterproofing contractor's representative, Engineer, Consultant, and Contractor in accordance with Section 01 11 00 – General Requirements, Project Meetings to:

.1 Verify project requirements.

.2 Co-ordination with other building subtrades.

.3 Review installation procedures, including:

.1 Substrate requirements for Project acceptance.

.2 Waterproofing installation.

.3 Phasing and sequencing requirements.

.4 Termination, flashing, expansion joint, and penetration requirements.

.5 Review inspection, testing, and quality control procedures.

.6 Manufacturer’s warranty requirements.

## 1.4 ACTION SUBMITTALS / INFORMATIONAL SUBMITTALS

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

.1 Provide one electronic copy of most recent technical waterproofing components data sheets describing materials' physical properties and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit membrane manufacturer’s standard details that will be utilized for this project, indicate changes that must be made to make the details project specific for review by the Consultant.

.3 Provide one electronic copy of WHMIS SDS - Safety Data Sheets in accordance with WHMIS acceptable to Labour Canada, and Health and Welfare Canada and indicate VOC content for:

.1 Primers.

.2 Sealants.

.3 Solvents.

.4 Membrane.

.2 Submit shop drawings in accordance with Section 01 33 00 – Submittal Procedures:

.1 Provide typical details of penetrations and transitions.

.2 Manufacturer's Certificate: certify that products meet or exceed specified requirements.

.3 Test and Evaluation Reports: submit laboratory test reports certifying compliance of bitumen and membrane with specification requirements.

.4 Manufacturer's Installation Instructions: indicate special precautions required for seaming the membrane.

.5 Manufacturer's field report: in accordance with Section 01 11 00 – General Requirements, Quality Control.

.6 Reports: indicate procedures followed, ambient temperatures and wind velocity during application.

## 1.5 QUALITY ASSURANCE

.1 Installer Qualifications: Engage experienced installer acceptable to the membrane manufacturer with a minimum of three years experience who has completed systems similar in material, design, and extent to that indicated for Project and with record of successful performance.

.2 Obtain primary waterproofing materials from single manufacturer and/or ensure materials ordered and supplied are compatible with one another.

.3 Coordination between all installers of each component of membrane is essential to ensure continuity of system and that junctions between the various components are effectively sealed.

## 1.6 DELIVERY, STORAGE, AND HANDLING

.1 Provide and maintain dry, off-ground weatherproof storage.

.2 Store rolls of membrane in upright position.

.3 Remove only in quantities required for same day use.

.4 Store sealants at +5 degrees C minimum.

.5 Handle waterproofing materials in accordance with manufacturer's written directives, to prevent damage or loss of performance.

.6 Store and manage hazardous materials in accordance with Section 01 11 00 – General Requirements, Health and Safety Requirements.

.7 Packaging Waste Management

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

## 1.7 SITE CONDITIONS

.1 Ambient Conditions:

.1 Apply waterproofing within the range of ambient and substrate temperatures recommended by waterproofing manufacturer.

.2 Minimum temperature for solvent-based adhesive in accordance with manufacturer’s recommendations.

.3 Install waterproofing on substrate, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into waterproofing system.

## Part 2 Products

### 2.1 PERFORMANCE / DESIGN CRITERIA

.1 Compatibility between components of waterproofing system is essential. Provide written declaration to Consultant stating that materials and components, as assembled in system, meet this requirement.

### 2.2 SELF-ADHESIVE WATERPROOFING SYSTEM MATERIALS

.1 Primer: to CGSB 37-GP-9Ma, elastomeric bitumen, solvent primer with adhesive enhancing resins to enhance adhesion of self-adhesive membranes at temperatures above -10°C as recommended by membrane manufacturer.

.1 Acceptable Materials:

.1 Blueskin Adhesive, Henry Company

.2 S.A.M. Adhesive, IKO.

.3 Elastocol Stick, Soprema.

.4 Mel-Prime, W.R. Meadows.

.2 Waterproofing Membrane: SBS modified bitumen self-adhering sheet membrane with cross-laminated polyethylene film, covered by pull-off release sheets and as follows:

.1 Minimum total thickness: 1.5 mm.

.2 Tensile strength (membrane): 2.24 MPa to ASTM D412.

.3 Tensile strength (film): 34 MPa to ASTM D882

.4 Ultimate elongation: minimum 55% to ASTM D412.

.5 Flexibility at cold temperature: minimum -26°C.

.6 Water vapour transmission: ≤0.05 perms to ASTM E96.

.7 Puncture Resistance: minimum 0.22 kN to ASTM E154.

.8 Acceptable Materials:

.1 MiraDRI 860/861, Carlisle CCW.

.2 Blueskin WP200, Henry Company

.3 Aquabarrier FP, IKO

.4 Colphene 3000, Soprema

.5 Mel-Rol, W.R. Meadows

### 2.3 ACCESSORIES

.1 Provide accessories consistent with manufacturer system.

.2 Liquid Membrane Flashing: two-component polymethyl methacrylate-based (PMMA) liquid membrane.

.1 Basis of Design Materials:

.1 Alsan RS230

.3 Waterproofing Mastic: single component sealing compound to seal exterior, vertical and horizontal terminations as recommended by manufacturer.

## Part 3 Execution

### 3.1 EXAMINATION AND PREPARATION OF SURFACES

.1 Do not proceed with work until conditions are in accordance with manufacturers instructions.

.2 Ensure surfaces are smooth, dry, clean and free of ice and debris as per manufacturer's recommendations.

.3 Do not install materials in conditions of snow or rain.

.4 Cure concrete a minimum of 14 days, adhesion test is recommended before membrane application.

.5 Verify the compatibility of membrane components with curing compounds, coatings, or other materials which are already installed on the surfaces to be treated.

.6 Abrasive blast surface if required to promote adhesion.

.7 Report cracks over 3 mm wide to Consultant. Fill crack with waterproofing mastic. Apply 150 mm wide strip of membrane centered over crack.

### 3.2 METHOD OF EXECUTION

.1 Perform Work on a continuous basis as surface and weather conditions allow.

.2 Protect adjoining surfaces against damage that could result from the waterproofing installation.

### 3.3 PRIMER APPLICATION

.1 Apply primer coating as recommended by manufacturers printed instructions. If not covered the same day, primed surfaces must be re-primed.

### 3.4 SELF-ADHESIVE WATERPROOFING MEMBRANE INSTALLATION

.1 Select waterproofing membrane according to temperatures during application. For membrane applications (not primer) at temperature below -10°C, contact membrane manufacturer.

.2 Install membrane in strict accordance with manufacturers written instructions or specification requirements whichever is more stringent.

.3 Apply pre-stripped membrane and seal with waterproofing mastic to all protrusions through waterproofing membrane.

.4 Align the first roll of membrane to a previously drawn chalk line.

.5 Pre-strip edges with a 150 mm wide strip of membrane centered on the corner. Membrane to be installed in direct contact with the substrate not leaving any voids under the membrane strip.

.6 Install membrane onto primed surface by peeling back the paper backing on the underside and adhering the membrane to the surface.

.7 Install subsequent rolls in the same manner and aligned with the preceding roll with a side lap of at least 75 mm. End laps must be overlapped at least 150 mm.

.8 Holes and tears in the membrane must be repaired with the appropriate membrane material. The repair must exceed the affected surface area by at least 75 mm. The membrane piece applied for the repair must be sealed around its edges with mastic.

.9 Use a roller approved by manufacturer to apply pressure over the entire surface of the membrane to ensure perfect adhesion.

.10 Contractor to verify meticulously the membrane installation at the end of each day of work and before application of membrane protection system and backfilling.

.11 Seal all inside corner overlaps with a bead of mastic after membrane installation.

.12 Uppermost edge of membrane is to be mechanically fastened to the concrete substrate using applicable fasteners and termination bars.

.13 Apply mastic on the top edge of membrane to prevent water infiltration.

.14 Any waterproofing membrane left exposed after backfilling shall be protected from ultra violet and mechanical damages.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 Section Includes:

.1 Metal Sheet Soffit.

.2 Accessories: Erection girts flashings, trim and closures, fastenings and sealant.

.2 Related Requirements:

.1 Section 06 10 00 – Rough Carpentry

.2 Section 07 62 00 – Sheet Metal Flashing and Trim

.3 Section 07 92 00 – Sealants

### 1.2 REFERENCES

.1 Reference Standards:

.1 American Society for Testing and Materials International (ASTM):

.1 ASTM A653/A653M-23, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 ASTM D146/D146M-04(2020), Standard Test Methods for Sampling and Testing Bitumen-Saturated Felts and Woven Fabrics for Roofing and Waterproofing.

.3 ASTM D412-16(2021), Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.

.2 Canadian General Standards Board (CGSB):

.1 CAN/CGSB 79.1-M91, Insect Screens (Withdrawn).

### 1.3 ACTION SUBMITTALS / INFORMATIONAL SUBMITTALS

.1 Submit samples in accordance with Section 01 11 00 – General Requirements, Submittal Procedures:

.1 Submit samples of soffit panel, in the selected colour on actual metal base.

.2 Submit shop drawings in accordance with Section 01 11 00 – General Requirements, Submittal Procedures:

.1 Submit shop drawings showing assembly and installation details, method of sealing and flashing, building connection attachments, provision for thermal movement, fabrication details and static release loads and static release forces.

### 1.4 DELIVERY, STORAGE, AND HANDLING

.1 Cover pre-finished components to protect surface finishes from damage and deterioration.

.2 Store components off the ground to prevent twisting, bending or delamination. Slope to shed moisture.

.3 Packaging Waste Management

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

## Part 2 Products

### 2.1 PERFORMANCE / DESIGN CRITERIA

.1 Design and construct soffit system so that completed installation is air, vapour and moisture resisting from interior and exterior.

.2 Maximum deflection not to exceed L/180 under system own weight plus wind and suction loads acting normal to the plane in accordance with the Building Code Climatic Data, wind load 1:30 years.

.3 Provide movement of components without causing buckling, failure of joint seals, undue stress on fasteners when subject to seasonal temperature range, from -40°C to +50°C, and preceding noted wind and suction loads.

.4 Include expansion joints to accommodate movement in soffit system and between soffit system and building structure, where these movements are caused by deflection of building structure. Accommodate these movements, without permanent distortion, damage to infills, racking of joints, breakage of seals, or water penetration.

.5 Provide for positive drainage to the exterior of all water entering or condensation occurring within the system.

### 2.2 MATERIALS

.1 Metal Sheet Soffit: Prefinished, preformed galvanized sheet steel, 0.48 mm (26 ga.) metal core thickness. Profile as required x maximum length, perforated and as follows:

.1 Colour: As selected by Consultant from Stelco/Dofasco 8000 Series standard colour range.

.2 Acceptable Fabricators:

.1 Custom Metal Contracting Ltd.

.2 Thermal Systems KWC Ltd.

.3 Basis of Design Materials:

.1 AD300, VicWest Steel Inc.

### 2.3 ACCESSORIES

.1 Erection girts: As recommended by cladding manufacturer.

.2 Flashing, Trim and Closures: core thickness and finish to match metal soffit and as required for complete installation.

.3 Fastenings: Manufacturer's standard or custom to suit design loads and application. Finish all exposed fasteners to match soffit panels.

.4 Sealant: In accordance with Section 07 92 00 - Sealants, type as recommended by manufacturer for specific end use, colour to match soffit panels.

## Part 3 Execution

### 3.1 PREPARATION

.1 Obtain all dimensions from job site.

.2 Ensure all structural support is aligned and condition is acceptable.

.3 Provide additional structural framing as may be required to conform with Performance Requirements.

### 3.2 INSTALLATION

.1 Install in accordance with manufacturer's written instructions and Contract Documents, plumb, true, level, and rigid.

.2 Install soffit panels to structural support by hidden mechanical fasteners.

.3 Install support girts, as required, to structural support. Interlock and seal side and end joints.

.4 Install flashings to divert all moisture and condensation to exterior.

.5 Install pre-formed corners and end enclosures, caulked and sealed to arrest direct weather penetration.

.6 Ensure panels aligned horizontally.

### 3.3 CLEANING

.1 Remove all excess materials, debris and equipment at completion.

.2 Clean all panels clean and free of all grime and dirt.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 Section Includes:

.1 Metal flashings.

.2 Accessories: Isolation coating, roofing cement, underlay for metal flashing, metal accessories, sealants, fasteners, counter flashing wind restraint clips, washers, adhesives and insect screen.

.2 Related Requirements:

.1 Section 06 10 00 – Rough Carpentry

.2 Section 07 92 00 - Sealants

.3 Other technical sections as required.

### 1.2 REFERENCES

.1 Reference Standards:

.1 American Society for Testing and Materials International (ASTM):

.1 ASTM A606/A606M-23, Standard Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance.

.2 ASTM A653/A653M-23 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.3 ASTM A792/A792M-23, Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

.4 ASTM B370-22 Standard Specification for Copper Sheet and Strip for Building Construction.

.5 ASTM D523-14(2018), Standard Test Method for Specular Gloss.

.6 ASTM D822-23, Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.

.7 ASTM D4586/D4586M-07(2018), Standard Specification for Asphalt Roof Cement, Asbestos-Free.

.2 Canadian General Standards Board (CGSB):

.1 CAN/CGSB 37.29M89, Rubber-Asphalt Sealing Compound (Withdrawn).

.2 CAN/CGSB 51.32-M77, Sheathing, Membrane, Breather Type (Withdrawn).

.3 CAN/CGSB 79.1-M91, Insect Screens (Withdrawn).

.3 Canadian Roofing Contractors Association (CRCA):

.1 Roofing Specifications Manual.

.4 Canadian Standards Association (CSA Group):

.1 CSA A123.3-05 (R2015), Asphalt Saturated Organic Roofing Felt.

.2 CSA AAMA/WDMA/CSA 101/I.S.2/A440:22, North American Fenestration Standard/Specification for windows, doors, and skylights, Includes Errata (2018).

.3 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.

.5 Green Seal Environmental Standards:
  .1 GS-11, Paints, Coatings, Stains and Sealers, 2015.
  .2 GS-36, Adhesives for Commercial Use, 2013.
.6 Roofing Contractor's Association of British Columbia (RCABC):
  .1 Roofing Practices Manual.
  .2 Roofstar Guarantee Program.
.7 Sheet Metal and Air Conditioning Contractors' National Association (SMACNA):
  .1 Architectural Sheet Metal Manual, 7th Edition, 2012.
.8 South Coast Air Quality Management District (SCAQMD):
  .1 Rule 1113-16, Architectural Coatings.
  .2 Rule 1168-22, Adhesive and Sealant Applications.

## 1.3 ADMINISTRATIVE REQUIREMENTS

.1 Coordination:

  .1 Coordinate work of this Section with interfacing and adjoining Work for proper sequencing of each installation and to provide positive weather resistance, durability of the work, and protection of materials and finishes.

## 1.4 ACTION SUBMITTALS / INFORMATIONAL SUBMITTALS

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

.2 Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

.3 Submit one sample, 300 x 300 mm in size, illustrating metal finish colour.

.4 Submit manufacturer's printed product literature for sheet metal flashing systems materials, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.

## 1.5 QUALITY ASSURANCE

.1 Installer qualifications: Engage an experienced installer having a minimum of three years experience who has completed projects similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

.2 Construct and install roof metal flashings in accordance with RCABC Manual details and in accordance with the RCABC Manual. If requirements conflict, this specification takes precedence over the manual.

## 1.6 DELIVERY, STORAGE, AND HANDLING

.1 Stack pre-formed and pre-finished material in manner to prevent twisting bending and rubbing.

.2 Protect mechanical and other finishes on exposed surfaces from damage by applying a strippable, temporary protective film before shipping. Do not use adhesive papers or sprayed coatings that bond when exposed to sunlight or weather. Do not remove before the final cleaning of the building. Delivery

requirements shall be in accordance with the manufacturer's recommended methods of delivery.

.3 Provide protection for galvanized surfaces.

.4 Prevent contact of dissimilar metals during storage and protect from acids, flux, and other corrosive materials and elements.

.5 Protect prefinished surfaces from scratches and from rust staining.

.6 Packaging Waste Management

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

## 1.7 WARRANTY

.1 The same warranty provisions apply to flashings associated with roofing as to the roofing.

.2 Provide the manufacturers standard warranty with the minimum coverage of 20 years for the paint finish against chalking, fading, peeling, checking, cracking, or colour change.

.3 Provide Warranty for sheet metal flashing and trim to include in maintenance manuals as specified in Section 01 11 00 – General Requirements, Closeout Submittals

# Part 2 Products

## 2.1 METAL FLASHINGS

.1 Zinc coated galvanized steel sheet (pre-finished): Type A commercial quality to ASTM A653/A653M, with Z275 designation zinc coating.

.1 Class: F1S-Finished one side.

.2 Thickness: minimum 0.61 mm base metal thickness.

.3 Factory Finish: silicone modified polyester

.1 Basis-of-Design Materials:

.1 WeatherXL

.2 Valspar

.3 Perspectra, Dofasco.

.4 Colour: As directed by Consultant.

## 2.2 FABRICATION

.1 Fabricate sheet metal building flashings and trim in accordance with the recommendations of SMACNA's Architectural Sheet Metal Manual that apply to the design, dimensions, metal, and other characteristics as required.

.2 Cross break flashing taller than 350 mm to prevent oil canning.

.3 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

.4 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.

.5 Make flashings of prefinished metal for cap flashings, for all flashings adjacent to roofing at roof edges and area dividers and where exposed to view from ground. Make flashings for other locations, of plain galvanized metal as follows:

.1 Use 0.45 mm metal core thickness except where otherwise indicated.

.2 Use 0.62 mm metal core thickness wherever a flat length exceeding 305 mm wide occurs.

.3 Use 0.80 mm metal core thickness for concealed fastening strips.

.6 Make joints to allow for thermal movement, space S-Lock joints at 2440 mm with metal clips or 1200 mm if no metal clips for maximum centres.

.7 Form non-expansion, but movable, joints in metal to accommodate elastomeric sealant in accordance with SMACNA standards.

.8 Make flashings for building into masonry and concrete so that joints can be lapped 100 mm or more.

.9 Strengthen free edges of metal flashings by folding to form a 13 mm hem.

.10 Make flashings to curbs, walls and parapets a minimum of 200 mm high, where possible.

.11 Where curb-mounted roof penetrations are not required, provide flashing sleeves and collars for all pipes and conduit extending through the roof. Sleeves shall be soldered to a piece of sheet metal extending at least 150 mm onto the surrounding roof.

.12 Make joints for corners and intersections with standing seams except where exposed of pre-finished metal when seams shall be flat locked.

.13 All bends machine made; form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

.14 Fabricate cleats and attachment devices from same material as sheet metal component being anchored or from compatible, non-corrosive metal recommended by sheet metal manufacturer, and as follows:

.1 Size as recommended by SMACNA manual or sheet metal manufacturer for application but not less than thickness of metal being secured.

.15 Back paint metal flashings in contact with dissimilar metals or materials with bituminous paint that would result in electrolytic action or corrosion.

## 2.3 ACCESSORIES

.1 Isolation coating: alkali resistant bituminous paint.

.2 Roofing Cement: to ASTM D4586/D4586M, asphalt based, asbestos free.

.3 Waterproofing Underlayment: self adhering membrane for high temperature applications; rubberized asphalt will not flow up to temperatures as high as116°C.

.1 Primer: as recommended by manufacturer.

.2 Acceptable Materials:

.1 Ice and Water Shield HT, GCP Applied Technologies.

.2 Stormshield, IKO.

.3 Jiffy Seal Ice & Water Guard HT, Protecto Wrap.

.4 LapLock PSU (HT), Roofnado

.5 Lastobond Shield HT, Soprema.

.6 W.R. Meadows.

.4 Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of Work, matching or compatible with material being installed; noncorrosive; size and thickness required for performance.

.5 Sealants: as indicated in Section 07 92 00 - Sealants.

.6 Fasteners: of same material as sheet metal, to CSA B111, as recommended by sheet metal manufacturer; non-corrosive. Finish of exposed parts to match material being fastened.

.7 Counter Flashing Wind Restraint Clips: Provide clips being installed before counter flashing to prevent wind uplift of the counter flashing lower edge.

.8 Washers: of same material as sheet metal, 1 mm thick with rubber packings.

.9 Insect Screen:

.1 In accordance with CAN/CGSB 79.1.

.2 Stainless Steel Wire: Type 304, 18 x 16 mesh (1.13 mm x 1.3 mm) using nominal 0.28 mm wire diameter; having minimum 66.08% apparent opening size, using non-magnetic stainless steel wire.

.3 Clips: low conductivity fibreglass attachments clips for assemblies with concrete structure.

.10 Adhesives: Type recommended by flashing sheet metal manufacturer for waterproof and weather resistant seaming and adhesive application of flashing sheet metal.

.11 Touch-up paint: as recommended by prefinished material manufacturer.

## Part 3 Execution

### 3.1 EXAMINATION

.1 Check mounting and counterflashing of mechanical items and report any defect to the Consultant.

.2 Verify that solid wood blocking or sheathing provided to back-up flashings, nails, screws set, and wood provides a smooth flat plane.

### 3.2 INSTALLATION GENERAL

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

.2 Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing, rattling, leaking and fastener disengagement.

.3 Install metal flashings on all surfaces such as roof cant edges, sleepers, parapets and cap type, wall junctions, roof dividers, curbs, roof control joints, through roof penetrations and the like, and as otherwise required to provide flashing type

protection to details. Unless otherwise directed extend all flashings down as indicated on drawings. Additionally install counter and base flashings unless otherwise directed by the Consultant.

.4 Sheet metal flashings are intended to protect the roof membrane from accelerated deteriorating effects of the elements, and to limit mechanical damage of the membrane, and are not intended to protect the work from direct migration of moisture. Ensure that the roofing system membrane terminations are fully water tight, without reliance on covering flashing.

.5 Provide sheet metal flashing and trim that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects:

.1 Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements.

.2 Base engineering calculations on surface temperatures of materials due to both solar heat gain and nighttime sky heat loss.

.3 Temperature change (range): 67 degrees Celsius ambient; 100 degrees Celsius material surfaces.

.6 Provide sheet metal flashing and trim to create a rain screen assembly to the completed air/vapour and roofing membrane termination details.

.7 Install prefinished metal fascia to complete edge details. Install as separate piece from flashing.

.8 Coordinate installation of flashing work of this Section with flashing work of other Sections which ties into this work. Coat surfaces of different metals such as aluminum and galvanized steel which are in contact to each other, with bituminous paint to prevent electrolysis.

.9 Form metal flashings as indicated on drawings, if not indicated on drawings slope flashing a minimum of 1 to 5 to the exterior.

## 3.3 INSTALLATION: METAL FLASHING

.1 Apply metal roof flashing to RCABC recommended requirements as a minimum.

.2 Install sheet metal flashing and trim in accordance with performance requirements, manufacturer's installation instructions, and SMACNA's Architectural Sheet Metal Manual.

.3 Fasten metal base flashing to walls or upstands along top of flashing. Do not secure to cant strip. Form lapped corner joints. Extend rolled edge of base flashing approximately 25 mm on to roof from toe of cant, and rest on top of roof surface.

.4 Do not use exposed fastening unless indicated, or concealed fastening is not possible. Locations and methods shall be approved by Consultant.

.5 Provide underlay under sheet metal.

.1 Secure in place and lap joints 100 mm.

.6 Counterflash bituminous flashings at intersections of roof with vertical surfaces and curbs.

.1 Flash joints using S-lock forming tight fit over hook strips.

.7 Lock end joints and caulk with sealant.

.8 Separate metal from non-compatible metal or corrosive substrates by coating concealed surfaces, at locations of contact, with asphalt mastic or other permanent separation as recommended by manufacturer.

.9 Underlayment: Install a slip sheet of red rosin paper and a course of polyethylene underlayment where installing stainless steel or aluminum directly on cementitious or wood substrates. Provide high-temp self adhered membrane at parapet flashing locations.

.10 Bed flanges of Work in a thick coat of roofing cement where required for waterproof performance.

.11 Install pans, where shown around items projecting through roof membrane.

.12 Install wind clips as required for flashing.

.13 Install drainage items fabricated from sheet metal, with straps, adhesives, and anchors recommended by SMACNA's Manual or the Item manufacturer, to drain roof in the most efficient manner.

.14 Coordinate roof drain flashing installation with roof drainage system installation.

.15 All exposed and pre-finished flashings to provide a smooth flat surface free of indentations, bumps, oil-canning, or twists, all edges, bends hard, sharp and true to line.

## 3.4 CLEANING

.1 Proceed in accordance with Section 01 11 00 – General Requirements, Cleaning.

.2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

.3 Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.

.4 Leave work areas clean, free from grease, finger marks and stains.

## 3.5 PROTECTION

.1 Provide final protection and maintain conditions that ensure sheet metal flashing and trim Work during construction is without damage or deterioration other than natural weathering at the time of Substantial Performance.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 Section Includes:

.1 Sealant types:

.1 Acrylic latex one part.

.2 Mould and mildew resistant.

.3 Silicone for general construction and air-seal.

.4 Multi-component polyurethane.

.5 Single-component polyurethane or hybrid.

.6 Control joint.

.2 Accessories: Rod backings, high density foam, bond breaker tape, preformed sealants, primer, joint cleaner and bond breaker.

.2 Related Requirements:

.1 Section 06 40 00 – Architectural Woodwork

.2 Section 07 13 52 – Sheet Membrane Waterproofing

.3 Section 07 62 00 – Sheet Metal Flashing and Trim

.4 Section 09 21 16 – Gypsum Board Assemblies

.5 Division 23 – Mechanical

.6 Other technical sections as required.

### 1.2 REFERENCES

.1 Reference Standards:

.1 American Society for Testing and Materials International (ASTM):

.1 ASTM C510 Test Method for Staining and Color Change of Single-or Multi-component Joint Sealants

.2 ASTM C639 Test Method for Rheological (Flow) Properties of Elastomeric Sealants

.3 ASTM C661 Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer

.4 ASTM C679 Test Method for Tack-Free Time of Elastomeric Sealants

.5 ASTM C719 Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement

.6 ASTM C793 Test Method for Effects of Accelerated Weathering on Elastomeric Joint Sealants

.7 ASTM C794-18, Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants.

.8 ASTM C834-17(2023), Standard Specification for Latex Sealants.

.9 ASTM C1183 Test Method for Extrusion Rate of Elastomeric Sealants

.10 ASTM C919-22, Standard Practice for Use of Sealants in Acoustical Applications.

.11 ASTM C920-18, Standard Specification for Elastomeric Joint Sealants.

.12 ASTM C1193-16(2023), Standard Guide for Use of Joint Sealants.

.13 ASTM C1246 Test Method for Effects of Heat Aging on Weight Loss, Cracking and Chalking of Elastomeric Sealants

.14 ASTM C1247 Test Method for Durability of Sealants Exposed to Constant Immersion in Liquids

.15 ASTM C1330-23, Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants.

.16 ASTM C1521-19 (2020), Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints.

.17 ASTM D2240-15(2021), Standard Test Methods for Rubber Property, Durometer Hardness.

.2 Canadian General Standards Board (CAN/CGSB)

.1 CAN/CGSB-19.0-M77 (Withdrawn) Methods of Testing Putty, Caulking and Sealing Compounds.

.2 CAN/CGSB-19.13-M87 (Withdrawn) Sealing Compound, One Component, Elastomeric Chemical Curing.

.3 CAN/CGSB-19.18-M87 (Withdrawn) Sealing Compound, One Component, Silicone Base, Solvent Curing.

.4 CAN/CGSB-19.21-M87 (Withdrawn) Sealing and Bedding Compound Acoustical.

.5 CAN/CGSB-19.24-M90 (Withdrawn) Multi-Component, Chemical-Curing Sealing Compound.

.3 Department of Justice Canada (Jus):

.1 Canadian Environmental Protection Act, 1999 (2018) (CEPA).

.4 Sealant, Waterproofing, and Restoration Institute (SWRI):

.1 Sealants: The Professionals' Guide 2013 Edition.

.5 South Coast Air Quality Management District (SCAQMD):

.1 SCAQMD Rule 1168-22, Adhesives and Sealants Applications.

.6 Transport Canada (TC):

.1 Transportation of Dangerous Goods Act, 1992 (2019 amend.) (TDGA).

.7 Underwriters Laboratories

.1 UL 2761 – Sealants and Caulking Compounds

.8 Underwriters Laboratories of Canada (ULC):

.1 ULC 115, Standard Method of Fire Tests of Firestop Systems.

## 1.3 ACTION SUBMITTALS / INFORMATIONAL SUBMITTALS

.1 Submit product data in accordance with Section 01 11 00 – General Requirements, Submittal Procedures.

.1 Submit Workplace Hazardous Materials Information System WHMIS SDS - Safety Data Sheets. WHMIS SDS acceptable to Labour Canada and Health and Welfare Canada for sealants. Indicate VOC content.

.2 Submit samples in accordance with Section 01 11 00 – General Requirements, Submittal Procedures.

.1 Provide colour samples of the actual sealants for approval; painted or printed colour charts are not acceptable.

.3 When required by Consultant, submit test certificates from an approved Canadian materials testing laboratory indicating that sealants meet the requirements of the standards specified, and that the tests have been conducted in accordance with ASTM D2240.

.4 Submit manufacturer's printed product literature, specifications and data sheet. Indicate the following:

.1 Caulking compound.

.2 Primers.

.3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.

.4 Manufacturers Warranty.

.5 Submit manufacturer’s installation instructions for each product used.

## 1.4 QUALITY ASSURANCE

.1 Caulking shall be performed by a manufacturer approved contractor with minimum three years successful experience in Work of similar size and complexity.

.2 Before performing Work of this Section, submit the names of proposed materials. If specified using Standards, indicate Qualification Number.

.3 Compatibility: Ensure sealants are compatible with adjacent materials and are approved by manufacture for use with adjacent materials.

.4 Mock-Ups:

.1 Construct mock-up in accordance with Section 01 11 00 – General Requirements, Quality Control.

.2 Before performing caulking work do sample applications of each type of sealant for approval. Site locations for sample applications shall be designated by Consultant. Approved samples shall form standard for this project and no work of inferior quality will be allowed. Start no final work until approval of samples is given by the Consultant.

.3 Sealant manufacturer to perform pull test to confirm adhesion of all exterior sealants types. Allow Consultant to perform pull tests as required to verify sealant installation.

.5 Consultant may do pull tests on site installed beads at minimum 5 locations. Contractor to cut sealants when Consultant is present and repair sealant beads after tests are complete.

## 1.5 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, handle, store and protect materials in accordance with Manufacturer’s Requirements.

.2 Deliver containers labelled and sealed, complete with written application and maintenance instructions.

.3 Store materials in a dry heated enclosure in accordance with manufacturer's instructions.

.4 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.5 Place materials defined as hazardous or toxic in designated containers.

.6 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.

.7 Unused sealant material must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.

.8 Divert unused joint sealing material from landfill to official hazardous material collections site approved by Consultant.

.9 Empty plastic joint sealer containers are not recyclable. Do not dispose of empty containers with plastic materials destined for recycling.

.10 Fold up metal banding, flatten, and place in designated area for recycling.

.11 Packaging Waste Management

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

## 1.6 SITE CONDITIONS

.1 Ambient Conditions:

.1 Do not proceed with installation of joint sealants under following conditions:

.1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4 degrees C.

.2 When joint substrates are wet.

.2 Joint-Width Conditions:

.1 Do not proceed with installation of joint sealants where joint widths are less than or greater than those allowed by joint sealant manufacturer for applications indicated.

.3 Joint-Substrate Conditions:

.1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

.2 Substrate must be clean, dry, and frost free.

## 1.7 WARRANTY

.1 Contractor hereby warrants that caulking work will not leak, crack, crumble, melt, shrink, run, lose adhesion or stain adjacent surfaces in accordance with General Conditions, but for three years.

.2 Provide Warranty for sealants to include in maintenance manuals as specified in Section 01 11 00 – General Requirements, Closeout Submittals.

## Part 2 Products

### 2.1 PERFORMANCE/DESIGN CRITERIA

.1 Sealant Design: Design Structural sealant to withstand loads without breakage, loss, failure of seals, product deterioration, and other defects.

.2 Design installed sealant to withstand:

- .1 Dead loads and live loads caused by positive and negative wind loads acting normal to plane of wall as calculated in accordance with current Building Code. as measured in accordance with ASTM E330/E330M.
- .2 Movement from ambient temperature range of 49 degrees C.
- .3 Movement and deflection of structural support framing.
- .4 Water and air penetration.

.3 Sealant system shall satisfy following requirements for duration of warranty period:

- .1 Waterproof, flexible, and thermally compatible with substrate under applicable service conditions.
- .2 Provide a weather-tight seal that does not allow moisture penetration.
- .3 Shall not debond, crack, or craze.
- .4 Shall not leak.

.4 Reference to products does not relieve manufacturer of responsibility to comply fully with specified criteria.

### 2.2 SEALANT MATERIALS

.1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.

.2 When low toxicity caulks are not possible, confine usage to areas which off gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize offgas time.

.3 Unless otherwise specified, VOC content limits of sealants shall be in accordance with SCAQMD Rule 1168 and as follows:

- .1 Architectural Materials:
  - .1 Sealants: VOC content limit 250 g/L.
  - .2 Sealant Primers for Non-Porous Surfaces: VOC content limit 250 g/L.
  - .3 Sealant Primers for Porous Surfaces: VOC content limit 775 g/L.
- .2 Roofing:
  - .1 Non-Membrane Related Sealants: VOC content limit 300 g/L.
  - .2 SBS Membrane Sealant Primer: VOC content limit 500 g/L.
- .3 All Other Applications:

.1 Sealants: VOC content limit 420 g/L.

.2 Sealant Primers: VOC content limit 750 g/L.

## 2.3 SEALANT MATERIAL DESIGNATIONS

.1 Type S-1: Acrylic Latex One Part, Shore A Hardness 20, to ASTM C834.

.1 Acceptable Materials:

.1 Latacalk, Chemtron.

.2 Sonolac, SIKA Sonneborn.

.3 Latex 100, Tremco.

.2 Type S-2: Silicone Sealant, mould and mildew resistant to ASTM C920; type S; grade NS; class 50; use NT, G, and A.

.1 Acceptable Materials:

.1 Multiseal, Chemtron.

.2 Dowsil 795 Silicone, Dow

.3 SCS2000, GE.

.4 895 NST, Pecora

.5 Spectrem 2 Silicone, Tremco Inc.

.6 Knight Shield Silicone 5700 Series, W. R. Meadows

.3 Type S-3: Silicone Sealant, general construction and air-seal sealant.

.1 To ASTM C920: type S; grade NS; class 50; use NT, M, G, A, O.

.1 Acceptable Materials:

.1 Dowsil 790 Silicone, Dow (for porous substrates)

.2 Dowsil 795 Silicone, Dow (for non-porous substrates)

.4 Type S-5: Acoustical Sealant, interior, non-skimming, non-hardening, simple component synthetic rubber sealant.

.1 Acceptable Materials:

.1 Metaseal, Chemtron.

.2 AIS 919, Pecora

.3 Acoustical Sealant, Tremco.

.5 Type S-6: Multi-component polyurethane sealant, chemical curing, exterior wall sealant.

.1 To ASTM C920: type M; grade NS; class 50; use T, NT, M, A, O.

.2 Acceptable Materials:

.1 MasterSeal NP2, SIKA.

.2 Thioplast 400, Chemtron.

.3 830, Isoflex.

.4 Dynatrol II, Pecora

.5 Sikaflex 2c NS, Sika.

.6 Dymeric, Tremco.

.7 Deck-O-Seal, W. R. Meadows

.6 Type S-7: Single-component polyurethane or hybrid sealant, non-sag, for general construction.

.1 To ASTM C920: type S; grade NS; class 25; use NT, M, A, O, T.

.2 Acceptable Materials:

.1 Masterseal NPI or 150, SIKA Sonneborne.

.2 Multiflex, Chemtron.

.3 H1 or S1, Loxon

.4 Mapeflex P1, MAPEI Inc.

.5 Dynatrol I-XL Hybrid, Pecora

.6 Sikaflex 1a or SikaHyflex 150LM, Sika.

.7 Dymonic FC, Tremco Inc.

.8 Pourthane NS, W.R. Meadows Canada.

.7 Type S-11: Control Joint Sealant, two component, polyurea based, load bearing, self levelling sealant.

.1 Acceptable Materials:

.1 Euco Qwikjoint UVR, Euclid Chemical.

.2 Planiseal Rapid Joint 15, MAPEI Inc.

.8 Type S-13: Single-component polyurethane sealant, medium-modulus, non-sag, low-VOC, UV stable.

.1 To ASTM C920: type S; grade NS; class 50; use NT, T, M, A, O, I.

.2 Acceptable Materials:

.1 Multiflex, Chemtron.

.2 Vulkem 116, Mameco.

.3 Dymonic 100, Tremco Inc.

.4 Pourthane NS, W. R. Meadows

.9 Type S-14: Silicone Sealant for Low Energy Surfaces

.1 Single component, neutral cure silicone sealant, designed for adhering to low energy surfaces common in sheet and polyethylene faced self-adhered membranes. Primer as recommended by the manufacturer.

.2 Basis-of-Design Materials:

.1 DowSil 758 Silicone Sealant, Dow

.3 Warranty duration: 20 years

## 2.4 COLOURS

.1 Colours: To match adjacent materials, as selected by Consultant, from manufacturer's standard colour range. Confirm with Consultant prior to application.

## 2.5 SEALANT SELECTION

.1 Where no specified type of sealant is shown or specified, confirm sealants specified in this Section appropriate for its location.

.2 Make sealant selections consistent with manufacturer's recommendations.

.3 Use acrylic sealant Type S-1 only on the interior and only in situations where little or no movement can occur.

.4 Use mould & mildew resistant silicone sealant Type S-2 for non-moving joints in washrooms and kitchens. Do not use on floors.

.5 Use silicone general construction sealant Type S-3 or Type S-6 and S-7 for all joints, interior and exterior, where no other specific sealant type specified. Use Type S-6 for joints over 19 mm.

.6 Use acoustical sealant Type S-5 and air seal sealant Type S-3 only where they will be fully concealed and only where no constant or consistent air pressure difference will exist across the joint.

.7 Use multi-component sealant type S-6, primed penetration element surfaces other than concrete, for mechanical and electrical service penetrations in concrete foundation walls.

.8 Use control joint sealant S-11 as filler for interior, horizontal saw cut or preformed control joints, where joints are subject to low temperatures (freezer floors) and where joints require nosing support.

.9 Use sealant S-13 for sealing exterior holes and penetrations around pipes and other services passing through concrete foundations and requiring greater movement capability.

.10 Use sealant S-14 for sealing materials to the polyethylene faced self-adhered membrane and vapour permeable self-adhered membrane.

## 2.6 ACCESSORIES

.1 Preformed Compressible and Non-Compressible back-up materials that are non-staining, compatible with joint substrate, sealants, primers, and other joint fillers, and are approved for applications indicated by sealant manufacturer based on site experience and laboratory testing.

.1 Rod Type Sealant Backings:

.1 ASTM C1330, Type C (closed cell material with a surface skin), Type O (open cell material) or Type B (bi-cellular material with a surface skin).

.2 Use any of the preceding types, as approved in writing by joint sealant manufacturer for joint application indicated.

.3 Size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

.4 Non-adhering to sealant, to maintain two sided adhesion across joint.

.5 Allow backer rod to breathe outside of packaging 24 hours before application.

.6 Oversize 30% to 50% of joint size.

.2 High Density Foam.

.1 Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m$^3$ density, or neoprene foam backer, size as recommended by manufacturer.

.3 Bond Breaker Tape.

.1 Polyethylene bond breaker tape or other tape recommended by sealant manufacturer which will not bond to sealant.

.2 Primer: Non-staining type as recommended by sealant manufacturer.

.3 Joint Cleaner: Non-corrosive solvent type recommended by sealant manufacturer for applicable substrate materials.

.4 Bond Breaker: Pressure-sensitive plastic tape that will not bond to sealants.

## Part 3 Execution

### 3.1 PROTECTION

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

### 3.2 EXAMINATION

.1 Carefully inspect surfaces, materials to receive sealants and verify they are physically capable of retaining sealant bond.

.2 Verify that fillers and backing provided under other Sections properly installed.

.3 Grind joint surfaces if required to achieve adequate surface preparation.

### 3.3 PREPARATION

.1 Prepare surfaces in accordance with manufacturer’s instructions.

.2 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

.3 Maintain workmanship of highest quality in accordance with best trade practice.

.4 Ensure that joint forming materials are compatible with sealant.

.5 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work. Wire brush loose materials and other foreign matter which might impair adhesion of sealant.

.6 Use air stream to blow out dirt and water from crevices.

.7 Ensure joint surfaces are dry and frost free.

.8 Prime all porous material (e.g. wood, masonry, concrete, ceramic or paver tile, etc).

.9 Prime other joints when recommended by manufacturer. Use a brush that will reach all parts of the joints. Mask adjoining surfaces with tape prior to priming to prevent staining.

### 3.4 PRIMING

.1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

## 3.5 BACKUP MATERIAL

.1 Use backer rod as specified, to limit depth of sealant and to act as bond breaker at back of joint.

.2 Install joint filler to achieve correct joint depth and shape, with approximately 30% - 50% compression.

.3 Where depth of joint does not permit the use of backer rod apply paper masking tape to back of joint to act as bond breaker.

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

## 3.6 MIXING

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

## 3.7 APPLICATION

.1 Apply sealant in strict accordance with manufacturer's recommendations.

.2 Install sealant with a width to depth ratio in accordance with manufacturer's recommendations.

.3 For joints where movement is possible, apply backer rod to achieve a joint depth of one half the joint width but not less than 9 mm; for joints larger than 25 mm use a depth of 13 mm.

.4 Use pressure gun fitted with suitable nozzle. Use sufficient pressure to fill voids and joints solid.

.5 Form surface of sealant smooth, free from ridges, wrinkles, sags, or air pockets and imbedded impurities. Neatly tool surface to a slight concave appearance.

.6 Tool sealants to achieve air tight joints. Use wet tools as required.

.7 Ensure bead is solid, filling entire space between sides and bedding material, exerting sufficient pressure to obtain maximum bond, by allowing sealant to bulge out in advance of nozzle.

.8 Apply sealant within recommended temperature ranges. Consult manufacturer when sealant cannot be applied within recommended temperature range.

.9 Seal perimeters of hollow metal door frames on both sides.

.10 Seal control joints in gypsum board, and junctures between interior partitions with exterior walls.

.11 Seal window and door frames around the inside perimeter, so that an airtight seal is obtained, as indicated on drawings.

.12 Seal joints in floors and walls and around service and mechanical and electrical fixture penetrations.

.13 Seal at all locations where dissimilar material meet.

.14 Curing

- .1 Cure sealants in accordance with sealant manufacturer's instructions.
- .2 Do not cover up sealants until proper curing has taken place.

.3 On porous surfaces allow sealant to cure overnight, and remove excess by light wire brushing.

## 3.8 CLEANING

.1 Clean adjacent surfaces immediately and leave Work neat and clean.

.2 Remove excess and droppings, using recommended cleaners as work progresses.

.3 Remove masking tape after initial set of sealant.

.4 Correct staining and discolouring of adjacent surfaces as directed by Consultant.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 This Section includes the following types of manually operated overhead coiling doors:

.1 Counter shutters.

.2 Related Requirements:

.1 Section 05 50 00 - Metal Fabrications
.2 Section 06 10 00 - Rough Carpentry
.3 Section 07 92 00 - Sealants
.4 Section 09 21 16 - Gypsum Board Assemblies
.5 Section 09 91 90 – Re Painting

### 1.2 REFERENCES

.1 Reference Standards:

.1 American National Standards Association (ANSI)/ National Electrical Manufacturers Association (NEMA):

.1 ANSI/NEMA MG 1-2021, Motors and Generators.

.2 American Society for Testing and Materials International (ASTM):

.1 ASTM A36/A36M-19, Standard Specification for Carbon Structural Steel.

.2 ASTM A123/A123M-17, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

.3 ASTM A653/A653M-23, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.4 ASTM A924/A924M-22a, Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

### 1.3 ADMINISTRATIVE REQUIREMENTS

.1 Pre-installation meeting: one week prior to beginning work of this Section, with Contractor, Consultant, installer, manufacturer’s representative to:

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Co-ordination with other building subtrades.

.4 Review manufacturer's installation instructions and warranty requirements.

### 1.4 ACTION SUBMITTALS / INFORMATION SUBMITTALS

.1 Submit product data in accordance with Section 01 11 00 – General Requirements, Submittal Procedures.

.1 Submit manufacturer's printed product literature, specifications and data sheet.

.2 Submit summary of forces and loads on walls and jamb.

.2 Submit shop drawings in accordance with Section 01 11 00 – General Requirements, Submittal Procedures.

.1 Indicate each type of grille, arrangement of hardware, operating mechanism, electrical equipment, anchor methods, pertinent dimensioning and required clearances.

.3 Submit samples in accordance with Section 01 11 00 – General Requirements, Submittal Procedures.

.1 Submit duplicate 300 mm long pieces of coiling curtain, slats, guides.

.4 Manufacturer's Instructions:

.1 Submit manufacturer's installation instructions.

## 1.5 CLOSEOUT SUBMITTALS

.1 Provide operation and maintenance data for overhead coiling doors, and hardware for incorporation into manual specified in Section 01 11 00 – General Requirements, Closeout Submittals.

.1 Include name and contact information of original installer.

.2 Submit manufacturer’s brochures and parts list describing actual materials used for installed system.

## 1.6 QUALITY ASSURANCE

.1 Qualifications: Provide proof of qualifications when requested by Consultant:

.1 Manufacturer: Obtain products listed in this Section from listed manufacturers and that have local distribution and servicing facilities.

.2 Installers: Use installers that have completed manufacturer's authorized training program and that are certified to install and maintain units delivered for this Project.

.3 Source Limitations: Obtain products through one source from a single manufacturer; obtain electrical operators and controls from overhead coiling door manufacturer supplying products to this project.

.2 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

.3 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

## 1.7 DELIVERY, STORAGE AND HANDLING

.1 Packaging Waste Management

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

## 1.8 SITE CONDITIONS

.1 Site Measurements: Verify dimensions by site measurements before fabrication and indicate measurements on shop drawings where overhead coiling grilles are

required to fit within openings; coordinate fabrication schedule with construction progress to avoid delaying the Work.

.2 Established Dimensions: Establish dimensions and proceed with fabricating overhead coiling grilles without site measurements where site measurements cannot be made without delaying the Work; coordinate construction to ensure that actual site dimensions correspond to established dimensions.

### 1.9 WARRANTY

.1 Provide manufacturers standard 5 year warranty.

## Part 2 Products

### 2.1 MANUFACTURERS

.1 Subject to compliance with requirements specified in this section, and as established by the Basis-of-Design materials, manufacturers offering similar products that may be incorporated into the Work include the following:

.1 Amstel Manufacturing Inc.
.2 Cookson Company.
.3 Cornell Ironworks.
.4 Dynamic Closures Corporation.
.5 Kinnear/Wayne-Dalton Corporation.
.6 McKeon Door Company.
.7 MobilFlex Folding and Rolling Closures Inc.
.8 Overhead Door Corporation.
.9 Pentagon.
.10 Raynor.
.11 Richards Wilcox Canada.

### 2.2 PERFORMANCE / DESIGN CRITERIA

.1 Structural Performance: Provide overhead coiling doors capable of withstanding the effects of gravity loads and other loads and stresses without evidencing permanent deformation of door components.

.2 Wind Loads: Minimum one/50 year occurrence in accordance with the Building Code, acting inward and outward.

.3 Operation Cycle Requirements: Provide overhead coiling door components and operators capable of operating for not less than 10,000 cycles.

### 2.3 COUNTER DOORS

.1 Curtains: Fabricate overhead coiling door curtain of interlocking slats, designed to withstand wind loading indicated, in a continuous length for width of door without splices with slats of thickness and mechanical properties recommended by door manufacturer for performance, size, and type of door indicated, and as follows:

.1 Steel Door Curtain Slats: Zinc coated (galvanized), cold rolled structural steel (SS) sheet; in accordance with ASTM A653/A653M, Z275 coating designation:

.1 Minimum Core Metal (Uncoated) Thickness: 0.72 mm.

.2 Flat profile slats 38 mm high x 13 mm deep.

.2 End Locks: Manufacturer's standard locks on not less than alternate curtain slats for curtain alignment and resistance against lateral movement.

.3 Bottom Bar for Counter Doors: Manufacturer's standard continuous channel or tubular shape, to suit type of curtain slats with continuous lift handle and vinyl astragal.

.4 Curtain Jamb Guides:

.1 Fabricate curtain jamb guides of angles, or channels and angles, of material and finish to match curtain slats, with sufficient depth and strength to retain curtain, to allow curtain to operate smoothly, and to withstand loading.

.2 Provide continuous integral wear strips to prevent metal-to-metal contact and to minimize operational noise; with removable stops on guides to prevent over travel of curtain.

.5 Integral Frame, Hood, and Fascia:

.1 Fabricate from minimum 1.5 mm thick, hot dip galvanized steel sheet with Z275 zinc coating, in accordance with ASTM A653/A653M.

.2 Contour to fit end brackets; roll and reinforce top and bottom edges for stiffness.

.3 Provide closed ends for surface mounted hoods and provide fascia for any portion of between jamb mounting projecting beyond wall face; provide intermediate support brackets to prevent sagging.

.4 Hood Material: Fabricate hoods for steel doors of minimum 0.72 mm thick, hot dip galvanized steel sheet with Z275 zinc coating, in accordance with ASTM A653/A653M.

.5 Shape: Square.

## 2.4 COUNTER BALANCING MECHANISM

.1 Counterbalance doors using adjustable tension, steel helical torsion spring mounted around steel shaft and contained in spring barrel connected to door curtain with barrel rings using manufacturer’s standard grease sealed or self lubricating graphite bearings for rotating members.

.2 Fabricate spring barrel from hot formed, structural quality, welded or seamless carbon steel pipe, of sufficient diameter and wall thickness to support rolled up curtain without distortion of slats and to limit barrel deflection to not more than 2.5 mm/m of span under full load.

.3 Fabricate spring balance from one or more oil tempered, heat treated steel helical torsion springs; size springs to counterbalance weight of curtain with uniform adjustment accessible from outside barrel; include cast steel barrel plugs to secure ends of springs to barrel and shaft.

.4 Fabricate torsion rod for counterbalance shaft of cold rolled steel, sized to hold fixed spring ends and carry torsion load.

.5 Provide manufacturer's standard cast iron or cold rolled steel plate mounting brackets.

### 2.5 MANUAL DOOR OPERATORS

.1 Manual Push-Up Operation: Provide counterbalance mechanism requiring 110 N or less to raise door.

### 2.6 FINISHES

.1 Steel and Galvanized Steel Finishes: Manufacturer's standard powder coat finish consisting of primer and topcoat; colour selected by Consultant.

### 2.7 ACCESSORIES

.1 Weather Seals:

.1 Replaceable, adjustable, continuous, compressible weather stripping gaskets fitted to bottom and top of exterior doors; 3 mm minimum thickness at door head; replaceable, continuous sheet secured to inside of hood.

.2 Replaceable, adjustable, continuous, flexible, 3 mm minimum thickness flexible vinyl, rubber, or neoprene seals at door jambs for a weather tight installation.

.2 Push/Pull Handles: Push-up operated doors, galvanized steel lifting handles on each side of door.

.3 Slide Bolt: Side locking bolts to engage through slots in tracks located on both jamb sides, operable from coil side.

.4 Locking Device: Manufacturer’s standard locking device assembly with lock, spring loaded dead bolt, operating handle, cam plate, and adjustable locking bar to engage through slots in tracks, and as follows:

.1 Locking Bars: Full disc cremone type, both jamb sides operable from inside only.

## Part 3 Execution

### 3.1 INSTALLATION

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

.2 Install doors in accordance with manufacturer's printed instructions.

.3 Install coiling doors and operating equipment and required hardware, jamb and head moulding strips, anchors, inserts, hangers, and equipment supports in accordance with manufacturer’s written instructions and as specified.

.4 Adjust door operating components to ensure smooth opening and closing of doors.

## 3.2 FIELD QUALITY CONTROL

.1 Have manufacturer of products supplied under this Section review Work involved in handling, installation/application, protection and cleaning of its products, and submit written reports in acceptable format to verify compliance of Work with Contract.

.2 Manufacturer's field services: provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

.3 Schedule site visits to review Work at stages listed:

.1 After delivery and storage of products, and when preparatory Work on which Work of this Section depends is complete, but before installation begins.

.2 Twice during progress of Work at 25% and 60% complete.

.3 Upon completion of Work, after cleaning is carried out.

.4 Obtain reports within three days of review and submit.

## 3.3 CLOSEOUT ACTIVITIES

.1 Adjusting: Lubricate bearings and sliding parts; adjust doors to operate easily, free of warp, twist, or distortion.

.2 Demonstration: Engage a factory authorized service representative to train Owner's maintenance personnel to test, adjust, operate, and maintain coiling grille.

## 3.4 CLEANING

.1 Perform cleaning of aluminum components in accordance with: AAMA/FGIA 609.1 - Voluntary Guide Specification for Cleaning and Maintenance of Architectural Anodized Aluminum.

.2 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.3 Clean with damp rag and approved non-abrasive cleaner in accordance with manufacturer's instructions.

.4 Remove traces of primer, caulking; clean doors and frames.

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

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 This Section includes equipment and services necessary for mechanical preparation of existing substrates to receive new flooring finishes.

.2 Related Requirements:

.1 Section 09 05 23 – Common Work Results for Flooring Preparation: Floor levelling and toppings required for improved floor flatness tolerances relating to applied finishes.

### 1.2 REFERENCES

.1 Reference Standards:

.1 American Society for Testing and Materials International (ASTM):

.1 ASTM D4258-23, Standard Practice for Surface Cleaning Concrete for Coating.

.2 ASTM D4259-18, Standard Practice for Preparation of Concrete by Abrasion Prior to Coating Application.

.2 International Concrete Repair Institute (IRCI):

.1 IRCI Technical Guideline No. 310.2R-2013, Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair.

### 1.3 ADMINISTRATIVE REQUIREMENTS

.1 Coordination: Coordinate work of this Section with requirements of floor levelling and topping materials specified in Section 09 05 23 – Common Work Results for Flooring Preparation for surface profile.

.2 Pre-Construction Meetings: Conduct a pre-construction meeting to discuss existing concrete slab condition, procedures proposed for substrate preparation, location of required on-site mock-ups and surface profile requirements for installation of levelling products in accordance with Section 01 11 00 - General Requirements, Project Meetings, attended by Consultant, Contractor, Subcontractor and other Subcontractors or Suppliers affected by work of this Section.

.3 Scheduling: Schedule work of this Section to occur during non-work hours in occupied buildings to minimize disturbance to adjacent spaces.

### 1.4 ACTION SUBMITTALS / INFORMATIONAL SUBMITTALS

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

.2 Action Submittals: Provide the following submittals before starting any work of this Section:

.1 Product Data: Submit product data sheets describing mechanical preparation methods and cleaning methods and equipment proposed for use on project.

.3 Informational Submittals: Provide the following submittals before starting any work of this Section:

.1 Dust and Water Control Plan: Submit written description of materials and procedures used to control and remove dust and water from work area, methods to prevent spread of dust and water to adjacent occupied spaces and to prevent contamination of HVAC systems.

## 1.5 QUALITY ASSURANCE

.1 Qualifications: Provide proof of qualifications when requested by Consultant:

.1 Installer: Use installer having experience in preparation of flooring substrates of similar extent and complexity as required for this Project, using equipment and methods to reduce risk of damage to substrates.

.2 Mock-Ups:

.1 Provide required Mock-Up in accordance with Section 01 11 00 – General Requirements, Quality Control, and as follows:

.1 Notify Consultant and others affected by work of this Section a minimum of 48 hours in advance of installation of work described in this Section.

.2 Mock-up minimum 10 m2 area indicating typical surface preparation required for the Project, at location as directed by Consultant and agreed upon in advance; create a separate mock-up for each different surface profile required by floor levelling.

.3 Allow 24 hours for review of mock-up by Consultant and others affected by work of the Section before completing work of this Section.

.4 Mock-up will be reviewed for consistency of surface profile required by floor levelling.

.5 Acceptable mock-up will serve as standard for remainder of the Work required for the Project.

.1 Correct mock-up and request additional review by Consultant when changes are required.

.2 Mock-up will remain in place and serve as minimum acceptable standard for work of this Section and related Sections when accepted by Consultant.

# Part 2 Products

## 2.1 EQUIPMENT

.1 Surface Preparation Equipment: Use equipment of a type recommended by Subcontractor that minimizes dust and water generation, and that provides surface profiles required by subsequent floor levelling, and as follows:

.1 CSP 2 through CSP 4 Surface Profiling: Abrasive blast or grinding type equipment with vacuum recovery systems to control dust and collect surface aggregate.

.2 CSP 3 through CSP 8 Surface Profiling: Dry shot blast type equipment with vacuum recovery systems to contained blast materials and collect surface aggregate.

.3 CSP 2 through CSP 10 Surface Profiling: Mechanical impact or high or ultra-high pressure water jet type equipment with aggregate and effluent recovery system.

.2 Limitations: Notify and obtain acceptance from Consultant where surface profiling required by floor levelling use of high or ultra-high pressure water jet, or mechanical impact methods that have moderate to high potential to cause microcracking before starting work of this Section:

.1 Consultant may consider alternate methods of floor preparation when less damaging methods are not practical based on site conditions or timing of work required by this Section.

## Part 3 Execution

### 3.1 EXAMINATION

.1 Verify that work of others affected by this Section, or work required by this Section is complete before starting mechanical preparation and surface profiling and as follows:

.1 Confirm degree of floor profile require for installation of floor levelling specified in other Sections before starting work of this Section.

.2 Starting work of this Section denotes acceptance of site conditions and implementation of surface profile required of floor levelling required by other Sections.

### 3.2 PREPARATION

.1 Use methods that reduce potential for microcracking of concrete substrates, and that minimize the amount of water or residue clean-up.

.2 Prepare concrete substrate and create surface profile in accordance with ASTM D4259; clean concrete in accordance with ASTM D4258 using methods compatible with levelling, and as follows:

.1 Prepare surface profiles required by levelling in accordance with ICRI Technical Guideline No. 310.2.

.2 Acceptable substrate surfaces will be free of laitance, oil, grease, flooring adhesive, paint, and other surface contaminates capable of affecting bond of specified floor finishes to concrete substrate.

.3 Prepare surfaces to receive Self-Levelling Underlayment as specified in Section 09 05 23 - Common Work Results for Flooring Preparation to minimum CSP 3 or as otherwise required by Self-Levelling Underlayment manufacturer.

### 3.3 SITE QUALITY CONTROL

.1 Testing and Inspection Agency: Owner will appoint inspection and testing agency in accordance with Section 01 11 00 – General Requirements, Quality Control, and as follows:

.1 Notify Consultant, and inspection and testing agency with sufficient timing to allow reasonable opportunity for review; provide assistance and access to the Work.

.2 Inspection and testing will include visual inspection of completed substrate preparation to verify that contamination is removed and specified ICRI surface profile are achieved using ICRI standard rubber mold for visual comparison.

.2 Non-Conforming Work: Repair work that does not meet specified ICRI surface profile at no additional expense to the Owner.

## 3.4 PROTECTION

.1 Protect prepared substrates from contamination; re-clean substrates that are contaminated by construction operations prior to installation of specified floor levelling.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 This Section includes requirements for preparation of existing slabs to receive applied flooring for installation required flatness, and levelness.

.2 Related Requirements:

.1 Section 09 05 13 – Mechanical Preparation of Flooring Substrates: Preparation of concrete substrates to receive self-levelling underlayments.

.2 Mechanical and Electrical Drawings

### 1.2 REFERENCES

.1 Reference Standards:

.1 Southern Coast Air Quality Management District (SCAQMD):

.1 Rule 1113, Architectural Coatings, Amended 2016.

### 1.3 ADMINISTRATIVE REQUIREMENTS

.1 Pre-Construction Meetings: Arrange for Pre-Construction Meeting in accordance with Section 01 11 00 – General Requirements, Project Meetings, with Contractor, Subcontractor, Subcontractors or suppliers affected by the Work of this Section, and Consultant to discuss installation requirements and site reviews required by the Consultant.

.2 Provide minimum 72 hours to Consultant before starting Work of this Section; increase notice period where time period spans weekends or statutory holidays.

### 1.4 ACTION SUBMITTALS / INFORMATIONAL SUBMITTALS

.1 Provide required information in accordance with Section 01 11 00 – General Requirements, Submittal Procedures.

.2 Action Submittals: Provide the following submittals before starting any Work of this Section:

.3 Product Data: Submit product data for products specified indicating physical properties, performance characteristics, acceptability of substrates, application limitations and test results.

### 1.5 QUALITY CONTROL

.1 Qualifications: Provide proof of qualifications during the course of the Work of this Section:

.1 Manufacturer: Obtain specified products through one source from a single manufacturer or using materials from a secondary source that are acceptable to the manufacturer.

.2 Installer: Install using personnel experienced in installation of flooring preparation products specified in this Section who are trained, licenced or otherwise approved by the manufacturer.

.2 Certifications: Provide proof of the following during the course of the Work:

.1 Compliance Certification: Provide letter from flooring adhesive manufacturers stating that product selected from Acceptable Products specified in this Section is compatible with flooring adhesives specified in Sections listed in Related Requirements.

### 1.6 SITE CONDITIONS

.1 Ambient Conditions: Maintain air temperature and substrate temperature in accordance with manufacturer's printed installation instructions.

## Part 2 Products

### 2.1 MANUFACTURERS

.1 Acceptable Products Manufacturers: Subject to compliance with requirements specified in this Section; where multiple listings of manufacturers occur, use any of the following listed manufacturers' Products in accordance with Section 01 11 00 – General Requirements, Product Options and Substitutions:

.1 Ardex Engineered Cements.
.2 Custom Building Products
.3 Laticrete Canada
.4 MAPEI Canada Inc.
.5 Sika Canada Ltd.
.6 W.R. Meadows of Canada.

.2 Unsolicited Substitutions: Consultant may consider additional manufacturers having similar products to Acceptable Products Manufacturers listed above during the construction period, provided they meet the performance requirements established by the named Products and provided they submit requests for substitution before starting any work of this Section:

.1 Do not use substitute materials to establish Bid Price.
.2 Apparent Substitutions that appear as a part of the Project without review and acceptance by the Consultant will be rejected, and replaced with one of the specified Products.

### 2.2 PERFORMANCE REQUIREMENTS

.1 Volatile Organic Compound (VOC) Limitations: Provide products for each site applied coating used within the building envelope (interior side of weatherproofing system) complying with the VOC Limits established by South Coast Air Quality Management District Rule #1113, Architectural Coatings.

### 2.3 PATCHING AND LEVELLING MATERIALS

.1 Underlayment: Cementitious, self-levelling, single component, polymer modified underlayment with manufacturer's recommended primer and crack repair materials; for application thicknesses to a minimum feather edge to 13 mm; interior grade and as follows:

.1 Acceptable Materials:

.1 K 15 Premium Self Levelling Underlayment, Ardex.

.2 CustomTech TechLevel 150, Custom Building Products
.3 Supercap SC500, Laticrete
.4 Novoplan® 2 Plus, MAPEI.
.5 Sikafloor Level 125, Sika Canada Ltd.
.6 Sure-Flo ST, W.R. Meadows.

.2 Patching and Flash Patching Materials

.1 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 as follows:

.1 Acceptable Materials:

.1 SD-P, Ardex.
.2 CustomTech TechPatch MP, Custom Building Products
.3 Skim Lite, Laticrete.
.4 Planiprep SC, MAPEI Inc.
.5 SikaQuick 1000, Sika Canada Ltd.
.6 Sealtight Meadow-Crete H, W.R. Meadows.

.3 Fine Finish Flash Patching Materials: Cementitious based, polymer modified, fine aggregate, single component, ultra-fast drying, early strength floor patching compounds having high adhesion with manufacturer's recommended primer and surface profile; for application in thicknesses from 0 mm to 6 mm, and as follows:

.1 Acceptable Materials:

.1 SD-F Feather Finish®, Ardex.
.2 CustomTech Silk Patch, Custom Building Products
.3 Laticrete
.4 Planipatch®, MAPEI.
.5 Sika® Level SkimCoat CA, Sika Canada Ltd.
.6 Sealtight Meadow-Patch® T1, W.R. Meadows.

## 2.4 ACCESSORIES

.1 Primer: Product compatible with and as recommended by patching and levelling product manufacturer.

# Part 3 Execution

## 3.1 EXAMINATION

.1 Verification of Conditions: Verify concrete substrates before beginning of installation of Products specified in this Section.

.1 Ensure concrete floors are dry by using test methods recommended by flooring manufacturer, and exhibit negative alkalinity, carbonization or dusting.

.2 Installation of products specified in this Section will denote acceptance of site conditions.

## 3.2 PREPARATION

.1 Surface Preparation – General:

.1 All substrates must be structurally sound, dry, solid and stable.

.2 Substrate must be clean and free of dust, dirt, oil, grease, paint, curing agents, concrete sealers, latex compounds, loosely bonded toppings, loose particles, laitance, adhesive residue, and any other substance or condition that may prevent or reduce adhesion.

.3 Ensure substrates are sound, level, free of cracks greater than 3 mm in width, and changes in elevation that may adversely affect installation.

.4 Ensure concrete is free of any negative hydrostatic pressure and excessive moisture.

.2 Prepare and mechanically profile concrete slabs in accordance with Section 09 05 13 - Mechanical Preparation of Flooring Substrates.

.1 Ensure substrate and ambient room temperatures are between 10°C and 35°C before application and for 72 hours after application.

## 3.3 INSTALLATION – UNDERLAYMENTS

.1 Mixing:

.1 Mix in a clean mixer in accordance with manufacturer's written instructions. Use appropriate mixing and delivery method in accordance with area to receive underlayment.

.2 If pump mixing is being used, periodically clean pump in accordance with manufacturer's written instructions.

.1 Do not overwater.

.2 Thoroughly mix with high-speed mixer (at about 1100 rpm) to a homogenous, smooth, lump-free consistency.

.3 Do not overmix; which could cause air to become trapped, shortening the pot life or cause pin holing during application and curing.

.3 Application:

.1 Place Product in a ribbon pattern to achieve a continuous flow of wet material to avoid trapping air or creating a cold joint.

.2 Set width of pour that is ideal for maintaining a wet edge throughout placement; adjust width of pour to maintain wet edge.

.3 Immediately after placing Product, spread with gauge rake; smooth surface after achieving required thickness.

## 3.4 INSTALLATION – PATCHING AND FLASH PATCHING PRODUCTS

.1 Mixing:

.1 Mix in a clean container in accordance with manufacturer's written instructions.

.2 Do not overwater.

.3 Thoroughly mix with low-speed mixer (at about 300 rpm) to a smooth, lump-free consistency.

.4 Do not mix more material than can be applied within eight to ten minutes.

.5 Avoid air entrapment and prolonged mixing, which will shorten pot life.

.2 Application:

.1 Select an appropriate flat-edge steel trowel.

.2 Immediately apply mixed patching and levelling products to substrate, according to the desired thickness. Do not exceed manufacturer's maximum single-coat thickness.

.3 Blend into the surrounding area and finish to the required smoothness

## 3.5 PROTECTION

.1 Protect from traffic dirt or dust from other trades until the final installation of the floor covering.

.2 Allow for extended periods of cure and protection when temperatures drop below 16°C and/or when relative humidity is higher than 70%.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 Section Incudes:

.1 Interior moisture resistant gypsum wallboard.

.2 Ceiling/wall access doors

.3 Accessories such as nails, screws, adhesives, casing beads, caps, mouldings, sealants, trims, gaskets and joint treatments.

.2 Related Requirements:

.1 Section 06 10 00 – Rough Carpentry

.2 Section 07 92 00 – Sealants

.3 Section 09 91 90 – Re Painting

### 1.2 REFERENCES

.1 Reference Standards:

.2 American Society for Testing and Materials International (ASTM):

.1 ASTM A653/A653M-23, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 ASTM C423-23, Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.

.3 ASTM C475/C475M-17(2022), Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.

.4 ASTM C514-04(2020), Specification for Nails for the Application of Gypsum Board.

.5 ASTM C557-03(2017), Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.

.6 ASTM C840-23, Standard Specification for Application and Finishing of Gypsum Board.

.7 ASTM C1002-22, 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.

.8 ASTM C1047-19, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.

.9 ASTM C1396/C1396M-17, Standard Specification for Gypsum Board.

.10 ASTM D3273-21, Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

.11 ASTM D5420-21, Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact).

.12 ASTM E84-23d, Standard Test Method for Surface Burning Characteristics of Building Materials.

.13 ASTM E413-22, Classification for Rating Sound Insulation.

.14 ASTM E695-22, Standard Test Method of Measuring Relative Resistance of Wall, Floor and Roof Construction to Impact Loading.

.3 Association of the Wall and Ceiling Industry (AWCI).

.4 British Columbia Wall & Ceiling Association (BCWCA).

.5 Canadian General Standards Board (CGSB):

.1 CAN/CGSB-71.25-M88, Adhesives, for Bonding Drywall to Wood Framing and Metal Studs. (Withdrawn)

.6 Gypsum Association (GA):

.1 GA-214-2021 Levels of Finish for Gypsum Panel Products.

.7 South Coast Air Quality Management District (SCAQMD):

.1 SCAQMD Rule 1168-22, Adhesives and Sealants Applications.

.8 Underwriters' Laboratories of Canada (ULC):

.1 ULC 102, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies. (ULC S102)

.2 ULC 114, Standard Method of Test for Determination of Non-Combustibility in Building Materials.

## 1.3 ACTION SUBMITTALS / INFORMATIONAL SUBMITTALS

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

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

## 1.4 DELIVERY, STORAGE, AND HANDLING

.1 Deliver materials in original packages, containers or bundles bearing manufacturers brand name and identification.

.2 Store materials inside, level, under cover. Keep dry. Protect from weather, other elements and damage from construction operations and other causes.

.3 Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trim from being bent or damaged.

.4 Packaging Waste Management

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

## 1.5 SITE CONDITIONS

.1 Ambient Conditions:

.1 Maintain temperature minimum 10 degrees C, maximum 21 degrees C for 48 hours prior to and during application of gypsum boards and joint treatment, and for at least 48 hours after completion of joint treatment.

.2 Apply board and joint treatment to dry, frost free surfaces.

.3 Ventilation: Ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

## Part 2 Products

### 2.1 MANUFACTURERS

.1 Acceptable Manufacturers:

.1 Cabot Gypsum Company
.2 CertainTeed Gypsum Canada Inc.
.3 CGC Inc.
.4 Georgia-Pacific Canada, Inc.

### 2.2 GYPSUM MATERIALS

.1 Mould resistant board: to ASTM C1396/C1396M and as follows:

.1 Type: regular.
.2 Size: 1220 mm x maximum practical length.
.3 Thickness: as indicated on Drawings.
.4 Acceptable Materials:
.1 M2Tech Moisture & Mould Resistant Gypsum Board, CertainTeed.
.2 Sheetrock Mold Tough, CGC Inc.
.3 ToughRock Mold-Guard, Georgia-Pacific Canada, Inc.
.4 Quietrock ES-MR, Pabco Gypsum.

### 2.3 FRAMING MATERIALS

.1 Studs: as indicated in Section 06 10 00 – Rough Carpentry.

.2 Metal furring runners, hangers, tie wires, inserts, anchors.

### 2.4 CEILING/WALL ACCESS DOORS

.1 Architectural, flush mounting access panels for gypsum board installation, thickness and fire rating to match wall assembly, manufacturer's standard sizes selected to suit access requirements, complete with extruded aluminum frame, concealed hinge and a removable door panel, air tight gasket and screwdriver slot latch mechanism. Confirm proposed location and number of access doors with Consultant prior to installation.

.1 Non-Rated Access Doors and Frames:

.1 Concealed Flange Access Panel: Flush design frame with a drywall bead taping flange, specifically for use with gypsum board.
.1 Frame: 1.90 mm (14 gauge) galvanized steel.
.2 Door Panel: 1.52 mm (16 gauge) galvanized steel.
.3 Hinge: Fully concealed pin type hinge with 175 degree opening.
.4 Latch: Screwdriver operated cam latch.

.2 Exterior Flange Stainless Steel Access Panel: Surface mounted with exposed flange frame design. No. 4 polished finish 304 stainless steel.
  .1 Frame: 1.21 mm (18 gauge) stainless steel.
  .2 Door Panel: 1.52 mm (16 gauge) stainless steel.
  .3 Hinge: Fully concealed pin type hinge with 175 degree opening.
  .4 Latch: Screwdriver operated cam latch.

.2 Acceptable Manufacturers:
  .1 Access Panel Solutions.
  .2 Acudor Products, Inc.
  .3 Bauco Access Panel Solutions
  .4 Chicago Metallic/Rockfon Corporation.
  .5 Nystrom Building Products Co.

## 2.5 FINISHES

.1 Paint: in accordance with Section 09 91 90 – Re Painting.

## 2.6 ACCESSORIES

.1 Nails: to ASTM C514.

.2 Steel drill screws: to ASTM C1002.

.3 Stud adhesive: to CAN/CGSB-71.25-M88.

.4 Laminating compound: as recommended by manufacturer, asbestos-free.

.5 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, 0.5 mm base thickness galvanized metal to ASTM A653, perforated flanges, one piece length per location.

.6 Strippable Edge Trim: Extruded PVC with pre-masked L-shaped tape on trim with tear away protective serrated strip for removal after compound and paint is applied, for use at areas where gypsum butts aluminum frames and where gypsum butts concrete or concrete block.

.7 Insulating strip (sill gasket): rubberized, moisture resistant 3 mm thick cork or foam strip, width to suit, with self sticking adhesive on one face, lengths as required.

.8 Joint Treatment Materials: Provide joint compound and accessory materials in accordance with ASTM C475/C475M and as follows:

  .1 Joint Tape:
    .1 Interior Mould Resistant Gypsum Board: Fibreglass mesh tape.

  .2 Joint Compound for Interior Mould Resistant Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
    .1 Pre-filling: Setting type joint compound.
    .2 Embedding and First Coat: Setting type joint compound.
    .3 Fill Coat: Setting type, sandable topping compound.

## Part 3 Execution

### 3.1 ERECTION

.1 Perform application and finishing of gypsum board in accordance with ASTM C840 except where specified otherwise.

.2 Do not install gypsum based products where there will be direct exposure to water or continuous high humidity conditions.

.3 Install work level to tolerance of 1:1200.

.4 Install wall furring for gypsum board wall finishes in accordance with ASTM C840, except where specified otherwise.

.5 Furr openings and around built-in equipment, cabinets, access panels, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.

.6 Furr duct shafts, beams, columns, pipes and exposed services where indicated.

.7 Erect drywall resilient furring transversely across studs and joists spaced maximum 600 mm on centre and not more than 150 mm from ceiling/wall juncture. Secure to each support with 25 mm drywall screw.

### 3.2 APPLICATION

.1 Do not apply gypsum board until bucks, anchors, blocking, sound attenuation, electrical and mechanical work are approved.

.2 Apply single layer gypsum board to wood framing using screw fasteners. Maximum spacing of screws 300 mm on centre.

.1 Single-Layer Application:

.1 Apply gypsum board on ceilings prior to application of walls in accordance with ASTM C840.

.2 Apply gypsum board vertically or horizontally, providing sheet lengths that will minimize end joints.

.2 No offset in exposed face of walls and partitions will be permitted because of single-ply and two-ply or three-ply application requirements.

.3 Apply mould-resistant gypsum board at locations as indicated. Apply mould-resistant sealant to edges, ends, cut-outs which expose gypsum core and to fastener heads.

.4 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 in accordance with ASTM C919. Seal full perimeter of cut-outs around electrical boxes, ducts, in partitions where perimeter sealed with acoustic sealant.

.5 Install gypsum board on walls vertically to avoid end-butt joints.

.6 Install gypsum board with face side out.

.7 Do not install damaged or damp boards.

.8 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

## 3.3 INSTALLATION

.1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 150 mm on centre or using contact adhesive for full length.

.2 Install casing beads where ceilings abut dissimilar materials.

.3 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.

.4 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.

.5 Construct control joints of preformed units or two back-to-back casing beads set in gypsum board facing and supported independently on both sides of joint.

.6 Splice corners and intersections together and secure to each member with three screws.

.7 Install access doors to electrical and mechanical fixtures specified in respective sections.

.1 Rigidly secure frames to furring or framing systems.

.8 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.

.9 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with GA-214:

.1 Levels of finish (at locations below or as indicated on Drawings)

.1 Level 0: No taping, finishing or accessories required for areas of temporary construction.

.2 Level One: Embed tape for joints and interior angles in joint compound. Surfaces to be free of excess joint compound; tool marks and ridges are acceptable. Use at plenum areas above ceilings, in attics, or in concealed spaces.

.3 Level Two: Embed tape for joints and interior angles in joint compound and apply one separate coat of joint compound over joints, angles, fastener heads and accessories; surfaces free of excess joint compound; tool marks and ridges are acceptable. Use when gypsum is used as a substrate for tile.

.4 Level Three: Embed tape for joints and interior angles in joint compound and apply two separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges and where areas are to receive a heavy coating of textured material.

.5 Level Four: Embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges and where light textures or wall coverings are to be applied.

.10 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.

.11 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after surface finish is completed.

.12 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.

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

.14 Mix joint compound slightly thinner than for joint taping.

.15 Apply thin coat to entire surface using trowel or drywall broadknife to fill surface texture differences, variations or tool marks.

.16 Remove ridges by light sanding or wiping with damp cloth.

.17 Provide protection that ensures gypsum drywall work will remain without damage or deterioration at time of Substantial Performance.

## 3.4 NON-CONFORMING WORK

.1 Touch-up minor damage to finishes in accordance with manufacturer's instructions; remove and replace ceiling components that cannot be successfully cleaned and repaired.

## 3.5 CLEANING

.1 Clean exposed surfaces of panels, including trim, edge mouldings, and suspension system members in accordance with manufacturer's instructions.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 This Section includes resinous flooring systems with epoxy body.

.2 Related Requirements:

.1 Section 07 92 00 – Sealants

.2 Section 09 05 13 – Mechanical Preparation of Flooring Substrates

.3 Section 09 05 23 – Common Work Results for Flooring Preparation

### 1.2 REFERENCES

.1 Reference Standards:

.1 American Society for Testing and Materials International (ASTM):

.1 ASTM C307-23, Standard Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacing's.

.2 ASTM C413-18(2023), Standard Test Method for Absorption of Chemical-Resistant Mortars, Grouts, and Monolithic Surfacing's and Polymers Concretes.

.3 ASTM C579-23, Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.

.4 ASTM C580-18(2023), Standard Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing's, and Polymer Concretes.

.5 ASTM C811-98(2023), Standard Practice for Surface Preparation of Concrete for Application of Chemical-Resistant Resin Monolithic Surfacings. (Withdrawn 2012)

.6 ASTM D2240-15(2021) Standard Test Method for Rubber Property – Durometer Hardness.

.7 ASTM D2794-93(2024), Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).

.8 ASTM E648-23, Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.

.9 ASTM F1869-23, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.

.10 ASTM F2170-19a, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

.2 European Standards (EN):

.1 EN 196-1 (2016), - Methods of Testing Cement - Part 1: Determination of Strength.

.2 EN1062-11, Paints and Varnishes - Coating Materials and Coating Systems for Exterior Masonry and Concrete - Part 11: Methods of Conditioning Before Testing.

.3 EN 13892-8, Methods of Test for Screed Materials - Part 8: Determination of Bond Strength.

.3 German Institute for Standardization (DIN):

.1 DIN 53505, Shore A and Shore D Hardness Testing of Rubber.

.4 International Organization for Standardization (ISO):

.1 ISO-5470-1(2016), Rubber or Plastics-Coated Fabrics Determination of Abrasion Resistance.

## 1.3 ADMINISTRATIVE REQUIREMENTS

.1 Convene pre-installation meeting one week prior to beginning work of this Section, with Contractor, Consultant, installer, manufacturer's representative to:

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Co-ordination with other building subtrades.

.4 Review manufacturer's installation instructions and warranty requirements.

## 1.4 ACTION SUBMITTALS / INFORMATIONAL SUBMITTALS

.1 Submit product data in accordance with Section 01 11 00 – General Requirements, Submittal Procedures.

.1 Submit manufacturer's technical data, application instructions, and general recommendations for each resinous flooring material required.

.2 Submit samples in accordance with Section 01 11 00 – General Requirements, Submittal Procedures:

.1 Verification Sample: submit 150 mm x 150 mm samples of each type of resinous flooring required, applied to a rigid backing, in colour and finish indicated.

.3 Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.

.4 Manufacturer's Field Reports: submit to manufacturer's written reports within 3 days of review, verifying compliance of Work, as described in PART THREE - FIELD QUALITY CONTROL.

## 1.5 CLOSEOUT SUBMITTALS:

.1 Submit in accordance with Section 01 11 00 – General Requirements, Closeout Submittals.

.1 Submit copies of manufacturer's written maintenance information for inclusion in the operations manual including specific warning of any maintenance practice or materials that may damage or disfigure the finished Work.

## 1.6 QUALITY ASSURANCE

.1 Regulatory Requirements: materials, including primers, resins, curing agents, finish coats, aggregates and sealants are manufactured and tested under an ISO 9001 registered quality system.

.2 Qualifications: Provide proof of qualifications when requested by Consultant:

.1 Manufacturers: Obtain primary materials from a single manufacture with not less than ten years of successful experience in manufacturing and installing principal materials described in this Section. Contractor shall have completed at least five projects of similar size and complexity.

.2 Applicators: Use experienced applicators as approved by materials manufacturer who have completed a minimum of ten applications similar in material and extent to those indicated and whose work has a record of successful in service performance.

.3 Single-Source Responsibility: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, through one source from a single manufacturer. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.

.4 Mock-Ups:

.1 Provide required mock-up in accordance with Section 01 11 00 – General Requirements, Quality Control and as follows:

.1 Apply mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

.2 Apply full-thickness mockups on 10 $m^2$ floor area selected by Consultant.

.3 Reviewed mockups may become part of the completed Work if undisturbed at time of Substantial Performance.

## 1.7 DELIVERY, STORAGE, AND HANDLING

.1 Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.

.2 Store materials to prevent deterioration from moisture, heat, cold, direct sunlight, or other detrimental effects.

.3 Materials used shall be factory pre-weighed and pre-packaged in single, easy to manage batches to eliminate on site mixing errors. No on-site weighing or volumetric measurements allowed.

.4 Packaging Waste Management

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

## 1.8 SITE CONDITIONS

.1 Ambient Conditions:

.1 Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.

.2 Maintain material and substrate temperature between 18°C and 30°C during resinous flooring application and for not less than 24 hours after application.

.2 Site Conditions:

.1 Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.

.2 Close spaces to traffic during resinous flooring application and for not less than 24 hours after application, unless manufacturer recommends a longer period.

.3 Concrete substrate shall be properly cured for a minimum of 30 days. A vapor barrier must be present for concrete subfloors on or below grade. Otherwise, an osmotic pressure resistant grout must be installed prior to the resinous flooring.

## Part 2 Products

### 2.1 MANUFACTURERS

.1 Acceptable Manufacturers: Subject to compliance with requirements in this Section and as recommended by the manufacturer, manufacturers offering products that may be incorporated into the Work include the following:

.1 MAPEI Inc.

.2 Sika Canada Inc.

.3 Stonhard Group.

### 2.2 MATERIALS

.1 Basis-of-Design Materials: Materials and colours listed below form the Basis-of-Design materials for this project.

.2 Materials other than named products Basis-of-Design materials may be acceptable to the Consultant; submit information in accordance with Section 01 11 00 – General Requirements, Product Options and Substitutions no later than seven days prior to bid closing date and as follows:

.1 Proposed alternates shall match colour range, texture and performance characteristics of named products, and shall not require a change to colour board for Project.

.2 Proposed alternates found acceptable by Consultant will be listed in an Addendum.

.3 The Consultant is not obliged to accept any materials presented for their review and does not need to provide reasons for rejection of proposed alternates.

### 2.3 COMPONENTS

.1 Resinous Flooring: troweled mortar base with broadcast topping. Liquid rich, slurry type systems will not be accepted.

.1 System Characteristics:

.1 Colour and Pattern: selected by Consultant from manufacturer's standards.

.2 Wearing Surface: medium.

.3 Overall System Thickness: 1 mm.

.2 System Components: Manufacturer's standard components that are compatible with each other and as follows:

.1 Primer:

.1 Resin: epoxy.

.2 Formulation Description: two component, 100 percent solids.

.3 Application Method: brush, squeegee and roller.

.4 Number of Coats: as indicated on Manufacturer’s instructions for surface type required. .

.5 Basis of Design Materials:

.1 Primer SN, MAPEI.

.2 Epoxy Based Industrial Flooring:

.1 Resin: epoxy.

.2 Formulation Description: two-component, 100% solids, UV stable.

.3 Finish: gloss.

.4 Colour: as selected by Consultant from manufacturer’s standard colour chart.

.5 Number of Coats: as indicated on Manufacturer’s instructions for surface type required.

.6 Basis-of-Design Materials:

.1 Mapefloor I 302 SL, MAPEI.

.3 Colour and Pattern: as selected by Consultant from manufacturer’s standards.

.4 Wearing Surface: slip resistant.

.3 System Physical Properties: Provide resinous flooring system with the following minimum physical property requirements when tested according to test methods indicated:

.1 Compressive Strength: 50N/mm2 after 7 days per EN196-1(2016).

.2 Bond Strength: 3.4 N/mm2 per EN 13892-8.

.3 Flexural Strength: 20 N/mm2 per EN196-1(2016).

.4 Permeability to Water: 0.002 kg/m2 EN 1062-11.

.5 Abrasion Resistance: 828 mg. per ISO 5470-1(2016).

## 2.4 ACCESSORIES

.1 Patching and Fill Material: Resinous product of or approved by resinous flooring manufacturer and recommended by manufacturer for application indicated.

.2 Joint Sealant: Type recommended or produced by resinous flooring manufacturer for type of service and joint condition indicated.

## Part 3 Execution

### 3.1 PREPARATION

.1 General: Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean, dry, and neutral Ph substrate for resinous flooring application.

.2 Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.

.1 Mechanically prepare substrates as follows:

.1 Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.

.2 Comply with ASTM C811 requirements, unless manufacturer's written instructions are more stringent.

.2 Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written recommendations.

.3 Verify that concrete substrates are dry.

.1 Perform in situ probe test, ASTM F2170. Proceed with application only after substrates do not exceed a maximum potential equilibrium relative humidity of 75 percent.

.2 Perform anhydrous calcium chloride test, ASTM F1869. Proceed with application only after substrates have maximum moisture-vapor-emission rate of 5 lb of water/1000 sq. ft. of slab in 24 hours.

.3 Perform additional moisture tests recommended by manufacturer. Proceed with application only after substrates pass testing.

.4 Verify that concrete substrates have neutral Ph and that resinous flooring will adhere to them. Perform tests recommended by manufacturer. Proceed with application only after substrates pass testing.

.3 Resinous Materials: Mix components and prepare materials according to resinous flooring manufacturer's written instructions.

.4 Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.

.5 Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written recommendations.

### 3.2 APPLICATION

.1 General: Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.

.1 Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.

.2 Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.

.3 At substrate expansion and isolation joints, provide joint in resinous flooring to comply with resinous flooring manufacturer's written recommendations.

.1 Apply joint sealant to comply with manufacturer's written recommendations.

.2 Apply primer where required by resinous system, over prepared substrate at manufacturer's recommended spreading rate.

.3 Topcoat(s): Remove any surface irregularities by lightly abrading and vacuuming the floor surface. Mix and apply topcoat with strict adherence to manufacturer's installation procedures and coverage rates. Apply number of coats indicated for flooring system and at spreading rates recommended in writing by manufacturer.

## 3.3 TERMINATIONS

.1 Chase edges to “lock” the coating system into the concrete substrate along lines of termination.

.2 Penetration Treatment: Lap and seal coating onto the perimeter of the penetrating item by bridging over compatible elastomer at the interface to compensate for possible movement.

.3 Trenches: Continue coating system into trenches to maintain monolithic protection. Treat cold joints to assure bridging of potential cracks.

.4 Treat floor drains by chasing the coating to lock in place at point of termination.

## 3.4 JOINTS AND CRACKS

.1 Treat control joints to bridge potential cracks and to maintain monolithic protection.

.2 Treat cold joints and construction joints to bridge potential cracks and to maintain monolithic protection on horizontal and vertical surfaces as well as horizontal and vertical interfaces.

.3 Discontinue floor coating system at vertical and horizontal contraction and expansion joints by installing backer rod and compatible sealant after coating installation is completed. Provide sealant type recommended by manufacturer for traffic conditions and chemical exposures to be encountered.

## 3.5 FIELD QUALITY CONTROL

.1 Have manufacturer of products supplied under this Section review Work involved in handling, installation/application, protection and cleaning of its products, and submit written reports in acceptable format to verify compliance of Work with Contract.

.2 Manufacturer's field services: provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

.3 Schedule site visits to review Work at stages listed:

.1 After delivery and storage of products, and when preparatory Work on which Work of this Section depends is complete, but before installation begins.

.2 Twice during progress of Work at 25% and 60% complete.

.3 Upon completion of Work, after cleaning is carried out.

.4 Obtain reports within three days of review and submit.

.5 Material Sampling: Owner may at any time and any numbers of times during resinous flooring application require material samples for testing for compliance with requirements.

.1 Owner will engage an independent testing agency to take samples of materials being used. Material samples will be taken, identified, sealed, and certified in presence of Contractor.

.2 Testing agency will test samples for compliance with requirements, using applicable referenced testing procedures or, if not referenced, using testing procedures listed in manufacturer's product data.

.3 If test results show applied materials do not comply with specified requirements, pay for testing, remove noncomplying materials, prepare surfaces coated with unacceptable materials, and reapply flooring materials to comply with requirements.

## 3.6 CURING

.1 Cure resinous flooring materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of application and prior to completion of curing process. Close area of application for a minimum of 18 hours after application.

## 3.7 CLEANING

.1 Cleaning: Remove temporary covering and clean resinous flooring just prior to final inspection. Use cleaning materials and procedures recommended by resinous flooring manufacturer.

## 3.8 PROTECTION

.1 Protect resinous flooring materials from damage and wear during construction operation. Where temporary covering is required for this purpose, comply with manufacturer's recommendations for protective materials and method of application.

.2 Protect surfaces after final coats.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 Section includes for labour, materials, tools and other equipment, services and supervision required to complete all interior and exterior repainting work as indicated on the Drawings and Specifications.

.2 Work listed in this Section includes, but is not limited to, the following:

.1 Moisture testing of substrates.

.2 Surface preparation of substrates as required for acceptance of paint, including cleaning, small crack repair, patching, caulking, and making good surfaces and areas to the limits defined under MPI Repainting Manual Preparation requirements.

.3 Specific pre-treatments noted in this specification or as required by the MPI Repainting Manual.

.4 Sealing and priming surfaces for repainting in accordance with MPI Repainting Manual requirements.

.5 Provision of safe and adequate ventilation as required where toxic, volatile or flammable materials are being used.

.3 Related Requirements:

.1 Technical sections as indicated.

### 1.2 REFERENCES

.1 Reference Standards:

.1 American Society of Testing and Materials International (ASTM):

.1 ASTM D16-24, Standard Terminology for Paint, Related Coatings, Materials, and Applications.

.2 ASTM E84-23d, Standard Test Method for Surface Burning Characteristics of Building Materials.

.3 ASTM F1869-23, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.

.4 Green Seal Environmental Standards:

.1 Standard GS-11, Paints, Coatings, Stains and Sealers, Edition 4.0, 2021.

.2 Master Painters Institute (MPI):

.1 Approved Products List

.2 Maintenance Repainting/Restoration Manual.

.3 Society for Protective Coatings (SSPC):

.1 SSPC Paint Series, Paint Guidelines.

.2 SSPC SP Series, Surface Preparation Guidelines.

.3 SSPC-PA Series, Paint Application Guidelines.

.4 South Coast Air Quality Management District (SCAQMD):

.1 SCAQMD Rule 1113-16, Architectural Coatings.

.5 Underwriters Laboratories ECOLOGO Certification Program (UL):

.1 UL 2768, Architectural Surface Coatings (formerly CCD-47).

## 1.3 ADMINISTRATIVE REQUIREMENTS

.1 Coordination:

.1 Coordinate work of this section with Section 01 11 00 – General Requirements, Temporary Utilities and Construction Facilities for provision of temporary heat and light, scaffolding and platforms and housekeeping services.

.2 Coordinate preparation of substrates with other sections of work for the correction of defects and Degree of Surface Deterioration Level DSD-4 deficiencies listed below that may adversely affect repainting work.

.3 Coordinate phasing of the work with the requirements of Sections 01 11 00 – General Requirements, Summary of Work.

.2 Pre-Installation Meeting:

.1 Convene pre-installation meeting one week prior to beginning work of this Section and on-site installations in accordance with Construction Progress Schedule.

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Coordination with other building subtrades.

.4 Review manufacturer's installation instructions and warranty requirements.

.3 Scheduling:

.1 Schedule repainting operations to prevent disruption of and by other trades when applicable; do not change work schedule without written acceptance from the Consultant and Owner.

.2 Schedule repainting operations to prevent disruption of occupants in and about the building. Obtain written authorization from Consultant/Owner for changes in work schedule.

.3 Conduct repainting in occupied facilities during hours listed in Section 01 11 004 – General Requirements, Work Restrictions, and to account for the Owner's operating requirements during silent hours and on weekends.

.4 Schedule work such that painted surfaces will have dried before occupants are affected.

## 1.4 ACTION SUBMITTALS / INFORMATIONAL SUBMITTALS

.1 Comply with requirements of Section 01 11 00 – General Requirements, Submittal Procedures.

.2 Action Submittals: Provide the following submittals before starting any work of this Section:

.1 Product Data: Submit list of all painting materials used for the Work to the Consultant for review prior to ordering materials for each paint system indicated, including block fillers and primers:

.1 Material List: An inclusive list of required coating materials indicating each material and cross reference specific coating, finish system, and application; identify each material by manufacturer's catalogue number and general classification.

.2 Base Information: Confirmation of manufacturer’s ability to supply paint in a variety of base tints, specific to the range of colours being used on this project; indicate colour of base tint used and amount of colourant added to establish Scheduled colours.

.3 Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material.

.2 Samples: Provide stepped samples, defining each separate coat, including block fillers and primers using representative colours required for the project; label each sample for location and application, and as follows:

.1 Samples for Verification: When requested by the Consultant, provide samples for each colour and material, with texture to simulate actual conditions, on representative samples of the actual substrate as follows:

.1 Painted Wood: 200 mm long or square samples for each colour and material on representative sample wood used for the Work.

.2 Stained or Natural Wood: 200 mm long or square samples of natural or stained wood finish on representative species of wood used for the Work.

.3 Painted Gypsum Board: 200 mm long or square samples for each colour and material.

.3 Informational Submittals: Provide the following submittals when requested by the Consultant:

.1 Certification: Submit certification reports for paint products indicating that they meet or exceed low VOC and coloured base requirements listed in this Section.

.2 Purchase Orders: Retain purchase orders, invoices and other documents for verification of compliance with specification and design requirements.

.3

.4 Submit two sets of Workplace Hazardous Materials Information System WHMIS SDS - Safety Data Sheets prior to commencement of work for review and for posting at job site as required.

.5 Submit work schedule for various stages of work for the Consultant’s review and Owner’s approval when repainting occupied areas, if requested.

.6 Provide an itemized list complete with manufacturer, paint type and colour coding for all colours used for Owner's later use in maintenance for use in the operations and maintenance manual specified in Section 01 11 00 – General Requirements, Closeout Submittals.

## 1.5 MAINTENANCE MATERIAL SUBMITALS

.1 Provide maintenance materials in accordance with Section 01 11 00 – General Requirements, Closeout Submittals.

.2 Provide a minimum of 4 litres of each type and colour of paint from same production run (batch mix) used in unopened cans, properly labelled and identified for Owner's later use in maintenance.

.3 Store where directed by the Owner.

## 1.6 QUALITY ASSURANCE

.1 Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in service performance, and as follows:

.1 Have a minimum of five years proven satisfactory experience and shall show proof before commencement of work that he will maintain a qualified crew of painters throughout the duration of the work.

.2 When requested provide a list of the last three comparable jobs including, name and location, specifying authority, start and completion dates and cost amount of the painting work.

.3 Only qualified journeymen who have a Tradesman Qualification Certificate of Proficiency shall be engaged in painting and decorating work.

.4 Apprentices may be employed provided they work under the direct supervision of a qualified journeyman in accordance with trade regulations.

.2 Materials, preparation and workmanship shall conform to the standards contained in the latest edition of the Master Painters Institute (MPI) Maintenance Repainting/Restoration Manual.

## 1.7 DELIVERY, STORAGE, AND HANDLING

.1 Deliver painting materials in sealed, original labelled containers bearing manufacturer's name, brand name, type of paint or coating and colour designation, standard compliance, materials content as well as mixing and/or reducing and application requirements.

.2 Store paint materials in original labelled containers in a secure (lockable), dry, heated and well ventilated single designated area meeting the minimum requirements of both paint manufacturer and authorities having jurisdiction and at a minimum ambient temperature of 7°C. Store only materials used on this project on site.

.3 Provide adequate fireproof storage lockers, take necessary precautions, and post warning signs (i.e.: no smoking) where toxic, volatile, explosive, or flammable materials are being used or stored, as follows:

.1 Take necessary precautions and safety measures to prevent fire hazards and spontaneous combustion, and to protect the environment from spills.

.2 Materials considered to constitute a fire hazard include, but are not limited to, paints, solvents, drop clothes and similar materials.

.3 Storage containers considered as adequate include but are not limited to; manufacturers original closed and rated containers.

.4 Remove empty open containers from the site on a daily basis.

.5 Provide adequate storage facilities.

.4 Packaging Waste Management

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

## 1.8 SITE CONDITIONS

.1 Perform interior and exterior repainting work only when ambient air and substrate temperatures and humidity level is within the manufacturer's recommended performance range.

.2 Provide continuous ventilation and sufficient heating facilities to maintain minimum ambient air and substrate temperatures for 24 hours before, during and after paint application.

.3 Provide supplemental ventilating and heating equipment where ventilation and heating from existing system is not adequate to meet minimum safety and performance requirements; gas fired heating units will not be permitted, unless accepted in writing by the Consultant and authorities having jurisdiction.

.4 Test substrate surfaces (concrete, masonry, plaster and wood) for moisture and alkalinity using a properly calibrated electronic Moisture Meter, except that concrete floors can be tested using a cover patch test; maximum moisture shall not exceed:

.1 12% for concrete and masonry (concrete block), use concrete test ASTM F1869 for concrete floors.

.2 15% for wood.

.3 12% for plaster and gypsum board.

.5 Provide a minimum lighting level of 323 Lux (30 foot candles) on surfaces being repainted.

.6 Apply paint only to dry, clean, and adequately prepared surfaces in areas where dust is no longer generated by construction activities such that airborne particles will not affect the quality of finished surfaces.

.7 Additional exterior application requirements:

.1 Perform no exterior repainting work when the ambient air and substrate temperatures are below 10°C.

.2 Perform no exterior repainting work unless environmental conditions are within MPI and paint manufacturer's requirements or until adequate

weather protection is provided. Where required, provide suitable weatherproof covering and sufficient heating facilities to maintain minimum ambient air and substrate temperatures for 24 hours before, during and after paint application.

.3 Perform no exterior repainting work when the relative humidity is above 85% or when the dew point is less than 3°C variance between the air/surface temperature.

## Part 2 Products

### 2.1 MATERIALS

.1 Materials used for this project shall be listed in the latest edition of the MPI Approved Product List and shall be from a single manufacturer for each system used.

.2 Materials not listed, such as linseed oil, shellac, turpentine, and similar products shall be the highest quality product of an approved manufacturer listed in the MPI Approved Product List and shall be compatible with other coating materials as required.

.3 Materials and paints shall be lead and mercury free.

.4 Only qualified products with E2 "Environmentally Friendly" ratings are acceptable for use on this project, Use E3 rated products where available.

.5 Paint materials shall have good flowing and brushing properties and shall dry or cure free of blemishes, sags, air entrapment and other effects deleterious to the final finish as noted below.

.6 Paints and coatings shall meet flame spread and smoke developed ratings designated by local Building Code requirements and authorities having jurisdiction.

### 2.2 EQUIPMENT

.1 Painting Equipment: to best trade standards for type of product and application.

.2 Spray-Painting Equipment: of ample capacity, suited to the type and consistency of paint or coating being applied and kept clean and in good working order at all times.

### 2.3 MIXING AND TINTING

.1 Paints shall be ready-mixed and pre-tinted; re-mix paint in containers prior to and during application to break-up of lumps, and provide complete dispersion of settled pigment, and provide consistent colour and gloss.

.2 Paste, powder or catalyzed paint mixes shall be mixed in strict accordance with manufacturer's written instructions.

.3 Thin paint for spraying in strict accordance with paint manufacturer's instructions; where directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Consultant.

## 2.4 FINISH AND COLOURS

.1 Unless otherwise specified, all repainting work shall be done in accordance with MPI Premium Grade requirements.

.2 Colours: Refer to the Finish Legend on Drawings for identification and location.

.3 Access doors, registers, radiators and covers, exposed piping and electrical panels shall be repainted to match adjacent surfaces (i.e. colour, texture and sheen), unless otherwise noted or where pre-finished.

.4 Second coat in three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

## 2.5 GLOSS/SHEEN RATINGS

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

| Gloss Level | Description | Units @ 60 degrees | Units @ 85 degrees |
|---|---|---|---|
| **G1** | Matte or Flat finish | 0 to 5 | 10 maximum |
| **G2** | Velvet finish | 10 maximum | 10 to 35 |
| **G3** | Eggshell finish | 10 to 25 | 10 to 35 |
| **G4** | Satin finish | 20 to 35 | 35 minimum |
| **G5** | Semi-Gloss finish | 35 to 70 | |
| **G6** | Gloss finish | 70 to 85 | |
| **G7** | High-Gloss finish | > 85 | |

.2 Gloss level ratings of painted surfaces as indicated on Drawings.

# Part 3 Execution

## 3.1 EXAMINATION

.1 Prior to commencement of repainting work, thoroughly examine and test conditions and surfaces scheduled for repainting and report in writing to the Consultant any conditions or surfaces that will adversely affect work of this Section.

.2 The degree of surface deterioration (DSD) shall be assessed using the assessment criteria indicated in the MPI Maintenance Repainting Manual as follows:

| Condition | Description |
|---|---|
| **DSD-0** | Sound Surface (may include visual (aesthetic) defects that do not affect film’s protective properties). |
| **DSD-1** | Slightly Deteriorated Surface (may show fading; gloss reduction, slight surface contamination, minor pin holes scratches, etc.)/Minor cosmetic defects (runs, sags, etc.). |
| **DSD-2** | Moderately Deteriorated Surface (small areas of peeling, flaking, slight cracking, staining, etc.). |

| Condition | Description |
|---|---|
| **DSD-3** | Severely Deteriorated Surface (heavy peeling, flaking, cracking, checking, scratches, scuffs, abrasion, small holes and gouges). |
| **DSD-4** | Substrate Damage (repair or replacement of surface required by others). |

.3 Other than the repair of DSD-1 to DSD-3 defects included under this scope of work, structural and DSD-4 substrate defects discovered prior to and after surface preparation or after first coat of paint shall be made good and sanded by others ready for painting, unless otherwise agreed to by the Owner and painter to be included in this Work.

.4 No repainting work shall commence until all such DSD-4 adverse conditions and defects have been corrected and surfaces and conditions are acceptable to the Painting Subcontractor. The Painting Subcontractor shall not be responsible for the condition of the substrate or for correcting defects and deficiencies in the substrate, which may adversely affect the painting work except for minimal work normally performed by the Painting Subcontractor and as, indicated herein. It shall always, however, be the responsibility of the Painting Subcontractor to see that surfaces are properly prepared before any paint or coating is applied. It shall also be the Painting Subcontractor's responsibility to paint the surface as specified providing that the owner accepts responsibility for uncorrected DSD-4 substrate conditions.

.5 No painting work shall commence until all such adverse conditions and defects have been corrected and surfaces and conditions are acceptable to the Painting Subcontractor and Inspection Agency.

## 3.2 PREPARATION

.1 Prepare surfaces for repainting in accordance with MPI Maintenance Repainting/Restoration Manual requirements, refer to the MPI Maintenance Repainting/Restoration Manual for specific requirements for the following:

- .1 Environmental conditions.
- .2 pH testing.
- .3 Acid etching.
- .4 Rust stain removal.
- .5 Mildew removal.
- .6 Vertical and horizontal concrete surfaces.
- .7 Concrete masonry units.
- .8 Structural steel and miscellaneous metals.
- .9 Steel exposed to high heat.
- .10 Galvanized and zinc coated metal.
- .11 Dimension and dressed lumber.
- .12 Wood doors.
- .13 Wood paneling and casework.

.2 Pressure wash exterior surfaces where required prior to repainting in accordance with MPI standards for type of surfaces and recommended pressures to ensure

complete removal of all loose paint, stains, dirt, and other foreign matter. Carry out this work only by qualified tradesman experienced in pressure water cleaning. The use of water hose cleaning will not be considered satisfactory, unless specifically specified. Allow sufficient drying time and test all surfaces using an electronic moisture meter before commencing work.

.3 Sand, clean, dry, etch, neutralize and/or test all surfaces under adequate illumination, ventilation and temperature requirements.

.4 Remove and securely store miscellaneous hardware, surface fittings and fastenings (i.e.: electrical plates, mechanical louvers, door and window hardware), removable rating, hazard or instruction labels, washroom accessories, light fixture trim, and similar items from wall and ceiling surfaces, and doors and frames, prior to repainting and replace upon completion:

.1 Carefully clean and replace removed items upon completion of repainting work in each area.

.2 Do not use solvent or reactive cleaning agents on items that will mar or remove finishes (i.e.: lacquer finishes).

.3 Doors shall be removed before repainting to paint bottom and top edges and then re-hung.

.5 Protect adjacent surfaces and areas, including non-removable rating and instruction labels on doors, frames, equipment, piping, landscaping, walks, signage, and similar items, from repainting operations and damage by drop cloths, shields, masking, templates, or other suitable protective means and make good any damage caused by failure to provide such protection.

## 3.3 APPLICATION

.1 Commence repainting only when substrates are acceptable and environmental conditions (i.e.: heating, ventilation, lighting and completion of other subtrade work, if applicable) are acceptable for applications of products.

.2 Apply primer, paint or stain in accordance with MPI Architectural Painting Specification Manual Premium Grade finish requirements.

.3 Apply primer, paint or stain in a workmanlike manner using skilled and trade-qualified applicators as noted under Quality Assurance.

.4 Apply primer, paint or stain within an appropriate time frame after cleaning and preparation to prevent weathering or water staining of substrate when environmental conditions encourage flash-rusting, rusting, contamination or the manufacturer's paint specifications require earlier applications.

.5 Primer, paint or stain coats specified are intended to cover surfaces satisfactorily when applied at proper consistency and in accordance with manufacturer's recommendations.

.6 Tint each coat of paint progressively lighter to enable confirmation of number of coats.

.7 The number of coats and film thickness required are the same regardless of application method, except that dark tinted colours will require a minimum of four coats with an additional clear urethane or water based light industrial coating type of coating applied in high traffic areas.

.8 Sand and dust between each coat to provide an anchor for next coat and to remove defects in previous coat (runs, sags, etc.) visible from a distance up to 1000 mm.

.9 Do not apply finishes on surfaces that are not sufficiently dry unless manufacturer's directions state otherwise; each coat shall be sufficiently dry and hard before a following coat is applied.

.10 Apply materials in strict accordance with manufacturer’s spread rates and application requirements to avoid air entrapment in applied coats.

## 3.4 MPI INTERIOR REFINISHING SYSTEMS

.1 Paint interior surfaces in accordance with MPI Maintenance Repainting/Restoration Manual premium requirements and the systems listed in this Article.

.2 Concrete Masonry Units: (smooth and split face block and brick):

.1 RIN 4.2A - Latex semi-gloss level finish.

.3 Structural Steel and Metal Fabrications: (columns, beams, joists and miscellaneous metal):

.1 RIN 5.1N – Latex gloss level as directed.

.4 Steel-High Heat: (boilers, furnaces, heat exchangers, breeching, pipes, flues, stacks, etc., with temperature range as noted):

.1 RIN 5.2A: Heat resistant enamel finish, maximum 205°C.

.2 RIN 5.2B: Heat resistant aluminum paint finish, maximum 427°C.

.3 RIN 5.2C: Inorganic zinc rich coating, maximum 400°C.

.4 RIN 5.2D: High heat resistant coating, maximum 593°C.

.5 Galvanized Metal: (not chromate passivated) (for high contact/high traffic and low contact/low traffic areas as noted on doors, frames, railings, misc. steel, pipes, overhead decking, ducts, etc.):

.1 RIN 5.3J - High performance architectural latex gloss level as directed.

.6 Dimension Lumber: (columns, beams, exposed joists, underside of decking, etc.):

.1 RIN 6.2H – Polyurethane Varnish, Clear.

.7 Plaster and Gypsum Board Surfaces: (gypsum board and textured finishes):

.1 RIN 9.2B – High performance architectural latex, gloss level as directed.

## 3.5 MPI EXTERIOR REFINISHING SYSTEMS

.1 Paint exterior surfaces in accordance with MPI Maintenance Repainting/Restoration Manual premium requirements and the systems listed in this Article.

.2 Concrete Masonry Units: (smooth and split face block and brick):

.1 REX 4.2C – W.B. Light Industrial Coating, gloss level as directed.

.3 Structural Steel and Metal Fabrications: (columns, beams, joists and miscellaneous metal):

.1 REX 5.1K – W.B. Light Industrial Coating (over W.B. primer), gloss level as directed.

.4 Steel - High Heat: (heat exchangers, breeching, pipes, flues, stacks, etc., with temperature range as noted).

.1 REX 5.2A: Heat resistant enamel finish, maximum 205°C.

.2 REX 5.2B: Heat resistant aluminum enamel finish, maximum 427°C.

.3 REX 5.2C: Inorganic zinc rich coating, maximum 400°C.

.4 REX 5.2D: High heat resistant coating, maximum 593°C.

.5 Galvanized Metal: (not chromate passivated) (for high contact/high traffic and low contact/low traffic areas as noted on doors, frames, railings, misc. steel, pipes, overhead decking, ducts, etc.):

.1 REX 5.3C – Epoxy finish. for use in high contact / high traffic areas.

.2 REX 5.3G – W.B. light industrial coating, gloss level as directed (over epoxy primer).

.6 Dimension Lumber: (columns, beams, exposed joists, underside of decking, siding, fencing, etc.)

.1 REX 6.3A – Latex (over latex primer), gloss level as directed.

## 3.6 MECHANICAL AND ELECTRICAL EQUIPMENT

.1 Repainting of mechanical and electrical work shall include exposed to view, previously painted mechanical and electrical equipment and components including, but not limited to, panels, conduits, piping, hangers, ductwork, and similar items.

.2 Touch up scratches and marks and repaint such mechanical and electrical equipment and components with colour, and sheen finish to match existing unless otherwise noted or scheduled.

.3 Do not paint over nameplates or instruction labels.

.4 Leave unfinished exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish.

.5 Keep repainted sprinkler heads free of paint.

.6 Do not paint interior transformers and substation equipment.

## 3.7 FIELD QUALITY CONTROL: STANDARD OF ACCEPTANCE

.1 Where "special" painting, coating or decorating system applications (i.e. elastomeric coatings) or non-MPI Approved Product List or systems are to be used, paint or coating manufacturer shall provide as part of this work, certification of surfaces and conditions for specific paint or coating system application as well as on site supervision, inspection and approval of their paint or coating system application as required at no additional cost to Consultant.

.2 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Consultant.

## 3.8 CLEANING

.1 Remove all paint where spilled, splashed, splattered or sprayed as work progresses using means and materials that are not detrimental to affected surfaces.

.2 Keep work area free from an unnecessary accumulation of tools, equipment, surplus materials and debris.

.3 Remove combustible rubbish materials and empty paint cans each day and safely dispose of it in accordance with requirements of authorities having jurisdiction.

.4 Clean equipment and dispose of wash water/solvents as well as all other cleaning and protective materials (i.e.: rags, drop cloths, masking papers, etc.), paints, thinners, paint removers/strippers in accordance with the safety requirements of authorities having jurisdiction.

.5 Waste Management

.1 Comply with requirements of Section 01 11 00 - General Requirements, Waste Management and Disposal.

.2 The following procedures shall be followed to reduce the amount of contaminants entering waterways, sanitary or storm drain systems or into the ground:

.1 Retain cleaning water for water-based materials to allow sediments to be filtered out. In no case shall equipment be cleaned using free draining water.

.2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.

.3 Return solvent and oil-soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.

.4 Dispose of contaminants in an approved legal manner in accordance with hazardous waste regulations.

.5 Empty paint cans are to be dry prior to disposal or recycling (where available).

.6 Close and seal tightly partly used cans of materials including sealant and adhesive containers and store protected in well ventilated, fire-safe area at moderate temperature.

.3 Collect waste paint by type and provide for delivery to recycling or collection facility where paint recycling is available.

.4 Comply with requirements of authorities having jurisdiction, to the use, handling, storage and disposal of hazardous materials.

## 3.9 PROTECTION

.1 Protect newly painted exterior surfaces from rain and snow, condensation, contamination, dust, salt spray and freezing temperatures until paint coatings are completely dry.

.2 Curing periods shall exceed the manufacturer's recommended minimum time requirements.

.3 Erect barriers or screens and post signs to warn, limit or direct traffic away or around work area as required.

## 3.10 SCHEDULE

.1 Fill in schedule and submit to Consultant for review.

| **MASTER PAINTERS INSTITUTE PAINT SCHEDULE** | | | | | |
|---|---|---|---|---|---|
| Company: | | | Phone: | | |
| Contact: | | | Email: | | |
| | | | | | |
| | | | | | |
| **Specified Quality:** | | | | | |
| | | | | | |
| **Master Painters Institute** | | | **Approved Paint Products** | | |
| Substrate | MPI# | MPI Name | Manufacturer | Product | Code |
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**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 Section Includes:

.1 Fibre reinforced plastics (FRP) wall covering.

.2 Accessories including adhesive and sealant.

.2 Related Requirements

.1 Section 05 50 00 – Metal Fabrications

.2 Section 06 10 00 – Rough Carpentry

.3 Section 09 21 16 – Gypsum Board Assemblies

### 1.2 REFERENCES

.1 Reference Standards:

.1 American Society for Testing and Materials International (ASTM):

.1 ASTM D256-23e1, Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.

.2 ASTM D543-21, Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents.

.3 ASTM D635-22, Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.

.4 ASTM D790-17, Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

.5 ASTM D1784-20, Standard Classification System and Basis or Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.

.6 ASTM E84-23d, Standard Test Method for Surface Burning Characteristics of Building Materials.

.2 International Code Council (ICC):

.1 ICC A117.1-2017, Accessible and Usable Buildings and Facilities.

.3 Underwriter's Laboratories of Canada (ULC):

.1 ULC 102, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies (ULC S102).

### 1.3 ADMINISTRATIVE REQUIREMENTS

.1 Pre-Installation Meetings: convene pre-installation meeting one week prior to beginning work of this Section and on-site installation, with contractor's representative and Consultant in accordance with Section 01 11 00 – General Requirements, Construction Schedule to:

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Co-ordination with other building subtrades.

.4 Review manufacturer's installation instructions.

### 1.4 ACTION SUBMITTALS / INFORMATIONAL SUBMITTALS

.1 Submit product data in accordance with Section 01 11 00 – General Requirements, Submittal Procedures.

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

.2 Submit two copies of WHMIS SDS - Safety Data Sheets. Indicate VOC's:

.1 For sealant materials during application and curing.

.2 For adhesives.

.2 Submit shop drawings in accordance with Section 01 11 00 – General Requirements, Submittal Procedures.

.1 Indicate, by large scale details, materials, finishes, dimensions, anchorage and assembly.

.3 Submit samples in accordance with Section 01 11 00 – General Requirements, Submittal Procedures.

.1 Submit duplicate 300 mm long samples of profiles and colours.

.2 Prepare approx. 3 m. sample of feature wall protection.

.4 Submit closeout data in accordance with Section 01 11 00 – General Requirements, Closeout Submittals:

.1 Provide manufacturer's printed recommendations for general maintenance and cleaning of each impact resistant wall protection unit for incorporation into operations and maintenance manuals.

### 1.5 QUALITY ASSURANCE

.1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

.2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

### 1.6 DELIVERY, STORAGE, AND HANDLING

.1 Packaging Waste Management

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

## Part 2 Products

### 2.1 MATERIALS

.1 Fibre Reinforced Plastics (FRP): Fiberglass roving reinforcement with resin mix consisting of polyester copolymer, inorganic fillers, pigments and catalysts and as follows:

.1 Flexural Strength: 13 841 to ASTM D790.

.2 Tensile Strength: 9958 to ASTM D638.

.3 Impact Strength (IZOD): Four to ASTM D256.

.4 Surface Burning: Class A or Class C to ASTM E84.

## 2.2 WALL PROTECTION

.1 Impact Resistant Wall Covering: Fibre reinforced plastic (FRP) panel resistant to rot, corrosion, and staining and will not support growth of mold or mildew.

.1 Thickness: 2.4 mm.

.2 Colour: as indicated on Finish Legend on Drawings. .

.3 Surface Texture: smooth.

.4 Fire and smoke performance: Class A.

.5 Acceptable Materials:

.1 Panolam, FRP.

.2 Wall Panels, Marlite FRP.

.3 Thermo Design, Sequentia.

## 2.3 ACCESSORIES

.1 Provide manufacturers joint strips, start and edge trim, and cut-tile transition strips.

.2 Adhesive: water resistant type as recommended by manufacturer for substrate. Confirm compatibility with substrate or provide primer as required.

.3 Sealant: in accordance with Section 07 92 00 - Sealants, colour as directed.

# Part 3 Execution

## 3.1 PREPARATION

.1 All surfaces must be free from dust and cleaned prior to installation. The working environment must also be dust free. Failure to comply with these conditions will reduce the bond strength between the adhesive and substrate, and may cause the panels to debond.

.2 Apply sealer e.g. PVA primer or similar, to absorbent / porous substrates (particularly plaster finishes and unprimed sheetrock) minimum of twelve hours prior to the installation.

.3 Prior to installation, complete painting which comes in contact with panels, as sealant used at junctions is non-paintable.

.4 Store panels flat and be pre-conditioned a minimum of 24 hours in ambient temperatures similar to the prevailing operational conditions.

.5 Store panels on a level flat surface off the ground (risk of condensation on the panels if stored on damp surfaces). Storage on uneven surfaces could cause the panels to distort prior to installation.

## 3.2 INSTALLATION

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

.2 Install impact resistant wall protection units level, plumb, and true to line without distortions. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished Work.

.3 Install impact resistant wall protection units in locations and at mounting heights indicated on Drawings.

.4 Provide splices, mounting hardware, anchors, and other accessories required for a complete installation, and as follows:

.1 Provide anchoring devices to withstand imposed loads.

## 3.3 CLEANING

.1 Clean plastic covers and accessories using a standard, ammonia based, household cleaning agent immediately after completion of installation.

.2 Remove excess adhesive using methods and materials recommended in writing by manufacturer.

**END OF SECTION**

# APPENDIX

May 15, 2025

**CITY OF COQUITLAM**
**Parks, Recreation, Culture & Facilities | Major Capital Projects**
3000 Guildford Way
Coquitlam, BC V3B 7N2

Attention: Mr. Wei Duan, P.Eng., PMP, LEED Green Associate
Capital Project Manager

**Ref: PRE-PROJECT HAZARDOUS BUILDING MATERIALS SURVEY FOR THE PLANNED RENOVATION OF THE MACKIN PARK CONCESSION BUILDING AT 1046 BRUNETTE AVENUE, COQUITLAM, BC**

## 1.0 INTRODUCTION

Astech Consultants Ltd. (Astech) was retained by the City of Coquitlam to conduct a Pre-Project Hazardous Building Materials Survey and compile a detailed report on the presence and location of asbestos containing building materials, lead, polychlorinated biphenyls (PCBs), mercury, stored chemicals, and silica to be impacted by the planned renovation of the Mackin Park Concession Building located at 1046 Brunette Avenue, Coquitlam, BC. The subject of this report includes areas listed in Section 4.1 below. Buildings that are located on the property, but are not within the scope of work, include a washroom building.

Astech's survey and report format is designed specifically to satisfy the current applicable regulation from the Workers' Compensation Board of British Columbia (WCB) Occupational Health and Safety Regulation 20.112 regarding hazardous building material assessments by a Qualified Person for buildings and structures.

This survey was conducted on May 7, 2025 by Scott Price assisted by Jesse James of Astech. It must be emphasized that this survey was concerned exclusively with the subject areas of the building. The site survey was destructive in nature and thorough in investigating layered floor, wall, and ceiling systems. However, inaccessible areas which would require the actual dismantling of substantial portions of the building in order to gain access were not investigated. No attempt was made to investigate other areas of the building, non-subject buildings on the property, underground services, or the surrounding property. Therefore, if during work activities, other hazardous materials, asbestos containing materials, or potential asbestos containing materials not included in this report are discovered, work should immediately cease in the affected area. At that time, Astech should be contacted so that they can initiate immediate appropriate action so that there are no undue delays.

## 2.0 BUILDING DESCRIPTION

The subject building on site is described as a one-storey concession building faced with concrete block. The building has had a few renovations over the years. The building is heated by an electric ceiling mounted heater.


#101-Bldg.C-17802-66th Avenue
Cloverdale, BC, Canada V3S 7X1
Tel: 604-575-1122 Fax: 604-575-1152

# 3.0 METHODOLOGY

## 3.1 ASBESTOS CONTAINING MATERIALS

A visual inspection was undertaken in order to determine the type, location, and homogeneous nature of asbestos and potential asbestos containing building materials located at the subject building. During this inspection, seven (7) bulk samples of potential asbestos containing materials were collected from specific locations of the building. The number of samples collected during this survey are in accordance with the guidelines established by the WCB in their 2023 publication Safe Work Practices for Handling Asbestos, and as indicated by actual site conditions. The samples collected were submitted for analysis at our in-house laboratory in accordance with the WCB Occupational Health and Safety Regulation, utilizing polarized light microscopy, and dispersion staining techniques. Results of laboratory analysis of the samples collected during this survey are attached.

## 3.2 LEAD FINISHES

A visual inspection was undertaken in order to determine the type and location of paints, primers, coatings, and/or glazing finishes suspected of containing lead at the subject building. During this inspection, twelve (12) potential lead finishes were analyzed from specific locations of the building. The finishes were analyzed in accordance with US EPA methods and the requirements of the WCB Occupational Health and Safety Regulation. Results of the finishes analyzed during this survey are attached.

## 3.3 LEAD CONSTRUCTION MATERIALS, SOLID PCBs, MERCURY, STORED CHEMICALS, AND SILICA

A visual inspection was undertaken at the subject areas in order to determine the presence of:

- construction materials suspected of containing lead and other heavy metals,
- fluorescent and high intensity discharge (HID) light fixtures suspected of containing PCB ballasts or capacitors,
- thermostats, light tubes/bulbs, and associated equipment suspected of containing mercury,
- stored chemicals suspected of being toxic, flammable, or explosive, and
- building materials suspected of containing silica in crystalline and non-crystalline forms.

# 4.0 INSPECTION RESULTS

## 4.1 ASBESTOS CONTAINING MATERIALS

**GENERAL NOTE**

**#1 Potential Asbestos Containing Building Materials:** The potential **asbestos** containing building materials listed below are not planned to be impacted by project and must be considered **asbestos** containing until laboratory results determine otherwise. In order to test the materials destructive testing may be required.

The visual inspection and/or analytical results determined that asbestos containing materials and/or potential asbestos containing materials are located at the following specific locations:

**MACKIN PARK CONCESSION BUILDING - GROUND FLOOR**

**Open Area**
- Non-asbestos concrete block mortar.
- Non-asbestos laminate adhesive.
- Non-asbestos filling compound behind wall laminate.
- No asbestos materials observed.

**MACKIN PARK CONCESSION BUILDING - EXTERIOR**

**Walls**
- Non-asbestos concrete block mortar.
- No asbestos materials observed.

**Doors and Windows**
- No asbestos materials observed.

**Rooftop**
- Potential **asbestos** containing rooftop membranes, felts, mastics, and caulkings (see General Note #1 above).

## 4.2 LEAD

The visual inspection and/or laboratory analytical results determined the following at the subject building (some of which is in a deteriorated condition and flaking):

**INTERIOR**
- white paint containing 1,122 parts per million (PPM) of **lead** was used on wood surfaces,
- grey paint containing 686 PPM of **lead** was used on concrete floor,
- white paint containing 331 PPM of **lead** was used on concrete block,
- dark green paint containing 39 PPM of **lead** was used on metal surfaces,
- dark green paint containing 14 PPM of **lead** was used on wood surfaces,
- grey paint containing <6 of **lead** was used on wood surfaces, and
- yellow paint containing <6 PPM of **lead** was used on wood surfaces.

**EXTERIOR**
- dark green paint containing 1,209 PPM of **lead** was used on concrete block,
- dark green paint containing 804 PPM of **lead** was used on metal surfaces,
- yellow paint containing 31 PPM of **lead** was used on metal surfaces,
- white paint containing <6 PPM of **lead** was used on wood surfaces,
- dark green paint containing <6 PPM of **lead** was used on wood surfaces, and
- white paint considered to be **lead** containing was used on metal surfaces.

## 4.3 PCBs

The visual inspection determined that there are two (2) newer fluorescent light fixtures at the subject building not suspected of having PCB containing ballasts.

### 4.4 MERCURY

The visual inspection determined that there are no wall mounted thermostats at the subject building that contain mercury. However, there are a few fluorescent light tubes at the subject building that contain mercury.

### 4.5 STORED CHEMICALS AND OTHER HAZARDOUS MATERIALS

The following list of materials were present in and around the subject building at time of inspection (including items likely to be retained by current occupants):

- a few containers of paint, cleaners, and petroleum products,
- a propane tank,
- a fire extinguisher,
- batteries in alarm system,
- compressors and piping with suspect ozone depleting substances (CFC's) in two freezers and a beverage cooler, and
- a few areas with rodent droppings.

### 4.6 SILICA

All concrete, cement, and any other cementitious building materials located at the subject building are suspected of containing silica in crystalline and non-crystalline forms.

### 4.7 GYPSUM BOARD

The visual inspection determined that there is no gypsum board located at the subject building.

## 5.0 RECOMMENDATIONS

### 5.1 ASBESTOS CONTAINING MATERIALS

Where affected by a renovation project, the asbestos containing materials (or potential asbestos containing materials) must first be removed and disposed of as asbestos waste by a qualified hazardous materials abatement contractor in accordance with the WCB Occupational Health and Safety Regulation. Disposal of asbestos containing materials must be performed in accordance with the BC Ministry of Environment and Climate Change Strategy - *Environmental Management Act* - Hazardous Waste Regulation.

### 5.2 LEAD

**Paints/Primers**
Where lead (or considered to be lead) based paints and/or primers are affected by a project, the work must be performed by a qualified contractor in accordance with the WCB Occupational Health and Safety Regulation and their 2020 publication entitled Safe Work Practices For Handling Lead.

Where the base substrate material is to be removed in conjunction with lead paint removal, the base substrate and lead based paints and/or primers should be removed intact by the contractor, in accordance with the contractor's risk assessment and site specific work procedures. The workers conducting the work and workers in close proximity to the work being performed, should be protected with personal protective equipment as determined by the contractor's risk assessment and site specific work procedures.

Lead containing paints which remain attached to wood and/or other building materials must be labelled as lead based paints (LBP) for transporting to a licensed/approved disposal site or recycling facility. A licensed/approved facility receiving the waste must be informed of the lead content of these materials and be agreeable to receiving these materials. Prior to acceptance of waste with lead paints at a licensed/ approved disposal facility, the contractor generating the waste must ensure that all waste materials containing LBP's are sampled intact, fastened directly to the base substrate, and representative of the waste stream created by demolition. The contractor shall have any representative samples analyzed utilizing a Toxicity Characteristic Leachate Procedure for lead (TCLP lead) test to determine the potential for soil and/or groundwater contamination, if deemed necessary by the site receiving the waste.

If the lead paints are to be separated or removed from the building materials by means of sanding, scraping, abrading, blasting, etc., more stringent work procedures would apply. The removed lead paints, depending on lead concentrations and leachate results, may become a Hazardous Waste and therefore must be disposed of in accordance with the BC Ministry of Environment and Climate Change Strategy - *Environmental Management Act* - Hazardous Waste Regulation.

## 5.3 MERCURY

Where affected by a renovation project, the mercury containing light tubes must first be removed, and be salvaged, recycled or disposed of, in accordance with the BC Ministry of Environment and Climate Change Strategy - *Environmental Management Act* - Hazardous Waste Regulation.

## 5.4 STORED CHEMICALS AND OTHER HAZARDOUS MATERIALS

**Stored Chemicals**
Where affected by a renovation project, stored chemicals and ozone depleting substances within refrigeration equipment must first be removed, and be recycled or disposed of, in accordance with the BC Ministry of Environment and Climate Change Strategy - *Environmental Management Act* - Hazardous Waste Regulation.

**Rodent Droppings**
Rodent droppings which can cause infectious disease and/or respiratory disease in humans should be removed as biohazardous waste by a qualified abatement contractor in accordance with the WCB Occupational Health and Safety Regulation, prior to unprotected trades performing work in or conducting selective demolition of a building. In lieu of removing droppings, workers shall wear respirators and protective clothing while in contaminated areas of a building, and while conducting selective demolition of a building.

## 5.5 SILICA

Where cementitious building materials that are suspected of containing silica in crystalline form are directly impacted by the project (i.e. drilling, cutting, abrading, etc.), the work should be performed in a controlled manner to avoid the release of crystalline silica dust. Cutting, drilling, or otherwise disturbing these building materials must be performed by a qualified contractor's trained personnel in accordance with the WCB Occupational Health and Safety Regulation.

## 6.0 OWNER'S AND ABATEMENT CONTRACTOR'S RESPONSIBILITIES

For the remediation of hazardous building materials, contract specifications, quality control, and final acceptance of the work remain the responsibility of the Owner. In order to ensure that the Owner has acted in a responsible manner, and to ensure regulatory board compliance, it is recommended that the work be performed by a qualified contractor (to be hired as prime contractor). The prime contractor is to be responsible for advising all workers of the contents of this report to assure that hazardous building materials affected by the work are handled in an approved manner and that hazardous building materials not impacted by the work are not inadvertently disturbed. As well, a copy of this report should be posted on site during the project for easy reference.

**Owner's Responsibilities**
For the remediation of hazardous building materials, contract specifications, quality control, and final acceptance of the work remain the responsibility of the Owner. In order to ensure that the Owner has acted in a responsible manner, and to ensure regulatory board compliance, it is recommended that the work and project air monitoring be performed by a qualified and properly insured (with proof of necessary asbestos inclusion rider) Hazardous Materials Abatement Contractor.

**Abatement Contractor's Responsibilities**
The Abatement Contractor upon completing the work shall have their "Qualified Person" inspect the worksite in its entirety to confirm that asbestos and other hazardous building materials have been properly removed, then promptly provide the Owner with a signed Letter of Completion.

As well, prior to transport of hazardous waste, the Abatement Contractor shall assist the Owner by completing and submitting the BC Ministry of Environment and Climate Change Strategy Waste Generator Number Registration Form (Schedule 5 Form 1), once signed by the Owner, if no BC Generator number exists. If a BC Generator number exists and requires updating for this specific project, the Abatement Contractor shall assist with completing and submitting the update.

Project Documentation should also be provided to the Owner including, but not necessarily limited to, a Notice of Project for work involving Asbestos and/or Lead Paint, Risk Assessment, Exposure Control Plan, and Site Specific Work Procedures, Worker Respirator Fit Test Forms/Logs and Training Acknowledgement Forms, Certification of DOP Testing of HEPA Filtered Equipment used on site, Air Sample Results, Material Safety Data Sheets (MSDS) for products used on site, Transportation Waybills, and Waste Manifest Forms.

## 7.0 APPROXIMATE QUANTITIES FOR HAZARDOUS MATERIALS

The following approximate quantities for hazardous materials are provided as a means to satisfy the requirements of the WCB, and are provided for reference only. Contractors shall be responsible for verifying exact quantities for the purpose of bidding the work.

| POTENTIAL ASBESTOS CONTAINING MATERIALS | APPROXIMATE QUANTITIES |
|---|---|
| Potential Asbestos Rooftop Membranes, Felts, Mastics, and Caulkings (not planned to be impacted by project) | Not Determined |
| **OTHER HAZARDOUS MATERIALS** | |
| Lead Paint Remaining Attached to Building Materials for Recycle/Disposal, Dependent on TCLP Lead Paint Testing (if deemed necessary by receiving site) | Not Determined |
| Stored Chemicals including Refrigeration Equipment | see Section 4.5 above |
| Rodent Droppings for Disposal as Biohazardous Waste | few areas |
| Mercury Containing Light Tubes | 4 tubes |

We hope you have found the above information useful. If you have any questions, or require clarification please contact this office.

Sincerely,

Scott Price, Principal
Astech Consultants Ltd.
Ref: 28167HE01.SP

# ASBESTOS BULK SAMPLE REPORT

Date: May 15, 2025

Client: **CITY OF COQUITLAM**

Location: **Mackin Park Concession Building**
**1046 Brunette Avenue**
**Coquitlam, BC**

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Comments:
1) Asbestos (bulk) by PLM analyzed as per NIOSH 9002 Issue 2.
2) Workers' Compensation Board of British Columbia (WCB) defines asbestos containing material as 0.5% or more asbestos, with the exception of Vermiculite Insulation which is defined as “any asbestos”.
3) Samples will be disposed of after 90 days, unless the Client requests otherwise.

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Sample(s) Collected on May 7, 2025

| | | | | Non-Asbestos | Asbestos |
|---|---|---|---|---|---|
| **Sample** | **Location** | **Description** | **Layer: Colour** | **% Type** | **% Type** |
| 28167 BS01 | Ground Floor - Open Area (West Wall) | Concrete Block Mortar | 1: Grey | 100% Non-Fibrous | None Detected |
| 28167 BS02 | Ground Floor - Open Area (West Wall) | Concrete Block Mortar | 1: Grey | 100% Non-Fibrous | None Detected |
| 28167 BS03 | Ground Floor - Open Area (North Wall) | Concrete Block Mortar | 1: Grey | 100% Non-Fibrous | None Detected |
| 28167 BS04 | Ground Floor - Open Area (West Wall) | Adhesive (behind Laminate Panel) | 1: Beige | 3% Cellulose<br>97% Non-Fibrous | None Detected |
| 28167 BS05 | Ground Floor - Open Area (West Wall) | Filling Compound on Concrete Block (behind Laminate Panel) | 2: White | 100% Non-Fibrous | None Detected |
| 28167 BS06 | Ground Floor - Open Area (West Wall) | Filling Compound on Concrete Block (behind Laminate Panel) | 1: White | 100% Non-Fibrous | None Detected |
| 28167 BS07 | Ground Floor - Open Area (West Wall) | Filling Compound on Concrete Block (behind Laminate Panel) | 1: White | 100% Non-Fibrous | None Detected |

Analyst(s): Yu Jin Kim

American Industrial Hygiene Association (AIHA) Bulk Asbestos Proficiency Analytical Testing (BAPAT)
Astech Consultants Ltd. Laboratory Participant ID# 200542



#101-Bldg.C-17802-66th Avenue
Cloverdale, BC, Canada V3S 7X1
Tel:604-575-1122 Fax:604-575-1152

# LEAD BULK SAMPLE REPORT

Date: May 15, 2025

Client: **CITY OF COQUITLAM**

Location: **Mackin Park Concession Building**
**1046 Brunette Avenue**
**Coquitlam, BC**

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Comments:
1) The Workers' Compensation Board of British Columbia (WCB) no longer allows reference to Health Canada's definition of a lead-containing surface coating material.
2) WCB does not define a safe level for a lead-containing surface coating material.
3) Analyzed by X-Ray Fluorescence (XRF) with direct read parts per million (PPM).
4) Sample results report lead only.
5) < means less than, > means more than.

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Sample(s) Analyzed on May 7, 2025

| Sample | Location | Description | Colour | Lead PPM |
|---|---|---|---|---|
| 28167 LS01 | Ground Floor - Open Area | Paint (on Concrete Floor) | Grey | **686 PPM** |
| 28167 LS02 | Ground Floor - Open Area (Southeast Section) | Paint (on Wood Platform) | Grey | **< 6 PPM** |
| 28167 LS03 | Ground Floor - Open Area (South Wall) | Paint (on Concrete Block) | White | **331 PPM** |
| 28167 LS04 | Ground Floor - Open Area (Centre Section) | Paint (on Wood Stud) | White | **1,122 PPM** |
| 28167 LS05 | Ground Floor - Open Area (Southwest Section) | Paint (on Wood Cabinetry) | Yellow | **< 6 PPM** |
| 28167 LS06 | Ground Floor - Open Area (Southeast Section) | Paint (on Wood Window Security Bar) | Dark Green | **14 PPM** |
| 28167 LS07 | Ground Floor - Open Area (Southeast Section) | Paint (on Exterior Metal Window Frame) | Dark Green | **39 PPM** |
| 28167 LS08 | Exterior (North Wall) | Paint (on Metal Door Frame) | Yellow | **31 PPM** |
| 28167 LS09 | Exterior (North Wall) | Paint (on Wood Soffit) | White | **< 6 PPM** |
| 28167 LS10 | Exterior (West Wall) | Paint (on Wood Window Sill) | Dark Green | **< 6 PPM** |
| 28167 LS11 | Exterior (East Wall) | Paint (on Metal Rain Water Leader) | Dark Green | **804 PPM** |



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| Sample | Location | Description | Colour | Lead PPM |
|---|---|---|---|---|
| 28167 LS12 | Exterior (North Wall) | Paint (on Concrete Block) | Dark Green | **1,209 PPM** |

Analyst(s): Scott Price

Natural Resources Canada Ressources naturelles Canada
Canada

Certified to ISO:20807; and Health Canada's and Natural Resources Canada's requirements for compliance with Health Canada Safety Code 32 & 34