



Travaux publics et  
Services gouvernementaux Canada  
District de Québec

Public Works and  
Government Services Canada  
Quebec District

SPECIFICATIONS: Architectural Specifications  
FOR TENDER

TITLE: Roof replacement  
Laurentian forestry centre



Project No.: R.078957.002

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### Plumbing

- M01 Mechanical - Plumbing – Camera – Second Floor

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 CONTEXT**

- .1 Work in cooperation with other contractors and execute Departmental Representative's instructions.
- .2 Coordinate work with other contractors. If the execution or completion of work under the contract depends on work by another contractor, immediately report any discrepancy or defect likely to interfere with the work to Departmental Representative.
- .3 There will be contractors near the work site. The Contractor must follow the work sequence provided on the plans as follows:
  - .1 Sector 2A roof work.
  - .2 Sector 2B roof work.
  - .3 Sector 3 roof work.
- .4 The Contractor must obtain authorization from the Departmental Representative prior to starting work on the different sectors.

### **1.2 QUALITY OF WORK**

- .1 Construct Work in stages to accommodate Owner's intermittent use of premises during construction.
- .2 Co-ordinate Progress Schedule and co-ordinate with Owner Occupancy during construction.
- .3 Maintain fire access/control.

### **1.3 CONTRACTOR USE OF PREMISES**

- .1 Limit use of premises for Work to allow:
  - .1 Owner occupancy.
- .2 Co-ordinate use of premises under direction of Departmental Representative.
- .3 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .4 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Departmental Representative.
- .5 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

### **1.4 OWNER OCCUPANCY**

- .1 Owner will occupy premises during entire construction period for execution of normal operations.
- .2 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.
- .3 Work period: 12 weeks.

### **1.5 TRANSPORTATION OF MATERIALS AND TOOLS**

- .1 Transport materials, tools and labour by road to Work site.

## **1.6 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING**

- .1 Execute Work with minimal interference and disturbance to normal use of premises. Arrange with Departmental Representative to facilitate execution of work.

## **1.7 EXISTING UTILITIES**

- .1 Notify Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Establish location and extent of service lines in area of work before starting Work. Notify Departmental Representative of findings.
- .3 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .4 Provide temporary services when directed by Departmental Representative to maintain critical building and tenant systems.

## **1.8 DOCUMENTS REQUIRED**

- .1 Post and maintain in visible and accessible area at job site, one copy of following documents:
  - .1 Contract Drawings.
  - .2 Specifications.
  - .3 Addenda.
  - .4 Shop Drawings, Samples.
  - .5 List of Outstanding Shop Drawings.
  - .6 Change Orders.
  - .7 Other Modifications to Contract.
  - .8 Field test records.
  - .9 Copy of Approved Work Schedule.
  - .10 Health and Safety Plan and Other Safety Related Documents.
  - .11 Other documents.

## **1.9 RIGHTS, PERMITS AND CERTIFICATES**

- .1 Contractor must obtain the necessary permits and comply with federal, provincial, municipal and other laws and regulations applicable to the work. Contractor will be liable for non-compliance with the applicable legislation.
- .2 Contractor will be responsible at own expense for security measures required by the Act Respecting Occupational Health and Safety, and related expenses.
- .3 Provide inspection certificates demonstrating compliance with authorities having jurisdiction.
- .4 Submit copy of applications to Departmental Representative.

## **1.10 DESIGNATION OF TERMS**

- .1 For the purposes of these specifications, Departmental Representative and Ministry Representative are the same person.

### **1.11 INSPECTION OF SITE**

- .1 Inspect work site to be fully familiar with the conditions and obtain the information necessary for the contract's smooth operation. Lack of information regarding the site's conditions will not under any circumstances serve as justification for additional payment.

### **1.12 ERROR AND OMISSIONS**

- .1 If the Contractor discovers discrepancies between the plans and the physical conditions of the site or errors or omissions on the plans, the Contractor must immediately inform the Departmental Representative in writing; otherwise the Contractor must proceed at his own risk until receiving approval from the Departmental Representative.

### **1.13 CLIMATIC CONDITIONS**

- .1 The Contractor may not claim additional payment for unfavourable climatic conditions including work performed in winter. Work must be planned in conjunction with the weather and include sums for work to be redone due to climatic conditions.

## **PART 2 PRODUCTS**

### **2.1 NOT USED.**

- .1 Not Used.

## **PART 3 EXECUTION**

### **3.1 NOT USED.**

- .1 Not Used.

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 RELATED REQUIREMENTS**

- .1 Not used

### **1.2 ACCESS TO WORK**

- .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 It is strictly forbidden to circulate or store materials on existing roofs to be preserved.
- .3 Contractor must provide for additional restrictions to control accesses and circulation, given the proximity of other work sites.
- .4 Most of the work is exterior work. Contractor must provide the names of workers working indoors, arrange to have them escorted at all times by a security guard and notify the Departmental Representative 48 hours in advance.

### **1.3 USE OF SITE AND FACILITIES**

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative 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 Provide and maintain portable toilets.
- .5 Closures: protect work temporarily until permanent enclosures are completed.

### **1.4 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING**

- .1 Execute work with least possible interference or disturbance to building operations, occupants and normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.

### **1.5 EXISTING SERVICES**

- .1 Construire des barrières de protection conformément aux indications aux plans afin de protéger la circulation piétonne le long de la rampe à l'avant du bâtiment, près de l'entrée principale

### **1.6 SPECIAL REQUIREMENTS**

- .1 Carry out noise generating Work Monday to Friday from 18:00 to 7:00 hours.
- .2 Submit schedule in accordance with Section 01 32 16.07 - Construction Progress Schedule - Bar (GANTT) Chart.
- .3 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .4 Keep within limits of work and avenues of ingress and egress.
- .5 Ingress and egress of Contractor vehicles at site is limited to 4 cars.

- .6 Deliver materials outside of peak traffic hours 17:00 to 07:00 and 13:00 to 15:00 unless otherwise approved by Departmental Representative.

## **1.7 BUILDING SMOKING ENVIRONMENT**

- .1 Comply with smoking restrictions. Smoking is not permitted.

## **PART 2 PRODUCTS**

### **2.1 NOT USED**

- .1 Not Used.

## **PART 3 EXECUTION**

### **3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**



## **PART 1 GENERAL**

### **1.1 REFERENCES**

- .1 Owner/Contractor Agreement.

### **1.2 APPLICATIONS FOR PROGRESS PAYMENT**

- .1 Make applications for payment on account as [provided in Agreement monthly as Work progresses.
- .2 Date applications for payment last day of agreed monthly payment period and ensure amount claimed is for value, proportionate to amount of Contract, of Work performed and Products delivered to Place of Work at that date.
- .3 Submit to Consultant, at least 14 days before first application for payment. Schedule of values for parts of Work, aggregating total amount of Contract Price, to facilitate evaluation of applications for payment.

### **1.3 SCHEDULE OF VALUES**

- .1 Provide schedule of values supported by evidence as Consultant may reasonably direct and when accepted by Consultant, be used as basis for applications for payment.
- .2 Include statement based on schedule of values with each application for payment.

### **1.4 PROGRESS PAYMENT**

- .1 Consultant will issue to Owner, no later than 10 days after receipt of an application for payment, certificate for payment in amount applied for or in such other amount as Consultant determines to be due. If Consultant amends application, Consultant will give notification in writing giving reasons for amendment.

### **1.5 SUBSTANTIAL PERFORMANCE OF WORK**

- .1 Prepare and submit to Consultant comprehensive list of items to be completed or corrected and apply for a review by Consultant to establish Substantial Performance of Work or substantial performance of designated portion of Work when Work is substantially performed if permitted by lien legislation applicable to Place of Work designated portion which Owner agrees to accept separately is substantially performed. Failure to include items on list does not alter responsibility to complete Contract.
- .2 No later than 10 days after receipt of list and application, Consultant] will review Work to verify validity of application, and no later than 7 days after completing review, will notify Contractor if Work or designated portion of Work is substantially performed.
- .3 Consultant: state date of Substantial Performance of Work or designated portion of Work in certificate.
- .4 Immediately following issuance of certificate of Substantial Performance of Work, in consultation with Consultant, establish reasonable date for finishing Work.

### **1.6 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF WORK**

- .1 After issuance of certificate of Substantial Performance of Work:
  - .1 Submit application for payment of holdback amount.

- .2 Submit sworn statement that accounts for labour, subcontracts, products, construction machinery and equipment, and other indebtedness which may have been incurred in Substantial Performance of Work and for which Owner might in be held responsible have been paid in full, except for amounts properly retained as holdback or as identified amount in dispute.
- .2 After receipt of application for payment and sworn statement, [Consultant] will issue certificate for payment of holdback amount.
- .3 Amount authorized by certificate for payment of holdback amount is due and payable on day following expiration of holdback period stipulated in lien legislation applicable to Place of Work. Where lien legislation does not exist or apply, holdback amount is due and payable in accordance with other legislation, industry practice, or provisions which may be agreed to between parties. Owner may retain out of holdback amount sums required by law to satisfy liens against Work or, if permitted by lien legislation applicable to Place of Work, other third party monetary claims against [Contractor] [Design-Builder] which are enforceable against Owner.

## **1.7 FINAL PAYMENT**

- .1 Submit application for final payment when Work is completed.
- .2 Consultant will, no later than 10 days after receipt of application for final payment, review Work to verify validity of application. [Consultant] will give notification that application is valid or give reasons why it is not valid, no later than 7 days after reviewing Work.
- .3 Consultant will issue final certificate for payment when application for final payment is found valid.

## **PART 2 PRODUCTS**

### **2.1 NOT USED**

- .1 Not Used.

## **PART 3 EXECUTION**

### **3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 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 *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. Le processus de suivi et de contrôle repose sur le calendrier d'exécution pour la réalisation et le contrôle des activités. C'est lui qui définit les décisions qui seront prises pendant toute la durée du projet.
- .3 *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.
- .4 *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.
- .5 *Milestone*: significant event in project, usually completion of major deliverable.
- .6 *Project Planning, Monitoring and Control System*: overall system operated by Contractor to enable monitoring of project work in relation to established milestones.
- .7 *Master Plan*: summary-level schedule that identifies major activities and key milestones.
- .8 *Baseline*: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
- .9 *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.

### **1.2 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.

### **1.3 SUBMITTALS**

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative within 10 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
- .3 Submit Project Schedule to Departmental Representative within 10 working days of receipt of acceptance of Master Plan.

### **1.4 MASTER PLAN**

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).

- .2 Departmental Representative will review and return revised schedules within 10 working days.
- .3 Revise impractical schedule and resubmit within 5 working days.
- .4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

## **1.5 PROJECT SCHEDULE**

- .1 Develop detailed Project Schedule derived from Master Plan.
- .2 In addition to key construction activities, ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
  - .1 Award.
  - .2 Mobilization and demobilization of Contractor.
  - .3 Shop Drawings, Samples.
  - .4 Obstruction of vehicular traffic.
  - .5 Engineer supplied equipment required dates.
  - .6 Substantial performance.
  - .7 Correction of deficiencies.
  - .8 Closeout.

## **1.6 PROJECT SCHEDULE REPORTING**

- .1 Update Project Schedule on monthly basis 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.

## **PART 2 PRODUCTS**

### **2.1 NOT USED**

- .1 NOT USED

## **PART 3 EXECUTION**

### **3.1 NOT USED**

- .1 NOT USED

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 RELATED REQUIREMENTS**

- .1 Section 01 45 00 - Quality Control.

### **1.2 ADMINISTRATIVE CONSIDERATIONS**

- .1 Submit to Departmental Representative submittals for approval no later than ten (10) business days following date of acceptance of offer 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.
  - .1 Maintain updated register of shop drawings and submit at each site meeting.
- .2 Do not proceed with Work affected by submittal until review is complete.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to Departmental Representative. 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.
  - .1 Submittals not signed, dated and identified as to specific project and not examined by Contractor will not be examined by Departmental Representative. Departmental Representative will notify Contractor in writing of non-compliance of drawings.
  - .2 Departmental Representative will deduct fee for additional Work required to compensate for Contractor's failure to examine documents.
- .6 Notify Departmental Representative 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 Departmental Representative's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .10 Keep one reviewed copy of each submission on site.

### **1.3 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 Shop drawings: submit drawings stamped and signed by professional engineer registered or licensed in Quebec, Canada.
- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

- .4 Allow ten (10) business days for Departmental Representative's review of each submission.
- .5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, containing:
  - .1 Date.
  - .2 Project title and number.
  - .3 Contractor's name and address.
  - .4 Identification and quantity of each shop drawing, product data and sample.
  - .5 Other pertinent data.
- .8 Submissions include:
  - .1 Date and revision dates.
  - .2 Project title and number.
  - .3 Contractor's name and address.
    - .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 Departmental Representative's review, distribute copies.
- .10 Submit one (1) electronic copy of shop drawings for each requirement requested in specification Sections.

- .11 Submit one (1) electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .12 Submit (1) one electronic copy of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
  - .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 three (3) years of date of contract award for project.
- .13 Submit one (1) electronic copy of certificates for requirements requested in specification Sections and as requested by Departmental Representative. 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.
  - .1 Certificates must be dated after award of project contract complete with project name.
- .14 Submit one (1) electronic copy of manufacturers instructions for requirements requested in specification Sections and as requested by Departmental Representative.
  - .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 one (1) electronic copy of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
  - .1 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .16 Submit one (1) electronic copy of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .17 Delete information not applicable to project.
- .18 Supplement standard information to provide details applicable to project.
- .19 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, electronic copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .20 The review of shop drawings by Public Works and Government Services Canada (PWGSC) is for sole purpose of ascertaining conformance with general concept.
  - .1 This review shall not mean that PWGSC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
  - .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

#### **1.4 SAMPLES:**

- .1 Submit for review samples in one (1) as requested in respective specification Sections. Label samples with origin and intended use.

- .2 Deliver samples prepaid to Departmental Representative's business address.
- .3 Notify Departmental Representative 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 Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents. Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

#### **1.5 MOCK-UPS:**

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

#### **1.6 CERTIFICATES AND TRANSCRIPTS**

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

#### **1.7 DISTRIBUTION OF DOCUMENTS**

- .1 Distribute copies of shop drawings and product descriptions with the seal of the Departmental Representative.
- .2 Distribute submittals as instructed once the Departmental Representative finished the verification.

### **PART 2 PRODUCTS**

#### **2.1 NOT USED.**

- .1 Not used.

### **PART 3 EXECUTION**

#### **3.1 NOT USED.**

- .1 Not used.

**END OF SECTION**



## **PART 1 GENERAL**

GENERAL NOTE: In this section "site" means all installations on site or taking place on site (site itself, buildings, accesses, infrastructures, parking lots, docks, etc.).

### **1.1 REFERENCE STANDARDS**

- .1 Province of Quebec
  - .1 Act Respecting Occupational Health and Safety, R.S.Q., c. S-2.1.
  - .2 Safety Code for the Construction Industry, R.S. Q., c. S-2.1, r.4.

### **1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to the Departmental Representative and CNESST the site-specific prevention program as described under COMMON PRODUCT REQUIREMENTS, at least 10 days prior to beginning of work.
- .3 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 30 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 5 days after receipt of comments from Departmental Representative. Departmental Representative reserves right to suspend Work until the content of the prevention program is satisfactory. Revise plan as appropriate and resubmit plan to Departmental Representative if the scope of work changes, if the Contractor's work methods differ from initial plans or for any new applicable condition.
- .4 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .5 Submit copies of Contractor's authorized representative's work site health and safety inspection reports weekly to Departmental Representative.
- .6 Submit a copy of inspection report, notice of corrective measures and recommendations issued by federal, provincial and territorial health and safety report to Departmental Representative within 24 hours.
- .7 Submit to Departmental Representative within 24 hours an investigation report for any accident involving injury and any incident exposing a potential hazard.

Investigation report must contain the following:

- .1 Date, time and location of accident.
- .2 Name of subcontractor involved in accident.
- .3 Number of persons involved and description of injuries.
- .4 Identification of witnesses.
- .5 Detailed description of tasks executed at time of accident.
- .6 Equipment used for tasks executed at time of accident.
- .7 Corrective measures taken immediately following accident.
- .8 Causes of accident.
- .9 Preventive accidents taken to prevent a similar accident.

- .8 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00. Contractor must keep copy of sheets on site.
- .9 Medical Surveillance: Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work. Submit additional certifications for any new site personnel to Departmental Representative.
- .10 Submit emergency response plan at the same time as the prevention program. Emergency response plan must contain the elements listed under General in this section.
- .11 Submit copy of training certificates for construction site workers to Departmental Representative, particularly for the following training (where applicable):
  - .1 First aid in the workplace and cardiopulmonary resuscitation.
  - .2 Work likely to release asbestos dust.
  - .3 Work in confined spaces.
  - .4 Lockout procedures.
  - .5 Preventive operation of forklift trucks.
  - .6 Preventive operation of aerial work platforms.
  - .7 Any other requirement of Regulations or the safety program.

Health and safety training certificates must be available at all times on site.

- .12 Engineer's compliance plans and compliance: the Contractor must submit to Departmental Representative and the *Commission des normes, de l'équité, de la santé et de la sécurité du travail* (CNESST) a copy signed and sealed by an engineer of all plans required under the Safety Code for the Construction Industry (2.1, r.4), another law, another regulation or another clause of the specifications or contract. The Contractor must also submit a compliance certificate signed by an engineer once the installation for which the plans have been drawn up is completed and prior to use of the installation. A copy of the documents must be available on site at all times.

### **1.3 NOTICE OF SITE OPENING (OUVERTURE DE CHANTIER NOTICE)**

- .1 Notice of site opening shall be submitted to the CNESST before work begins. Submit copy of the notice of opening and CNESST acknowledgement of receipt to Departmental Representative.
  - .1 When work is completed, submit copy of notice of site closing to Departmental Representative.
- .2 Contractor shall be responsible and assume the Principal Contractor role within the limits of the construction site and wherever work must be carried out as part of this project. Contractor must acknowledge this responsibility in the notice of opening submitted to the CNESST.
- .3 Contractor shall agree to install proper site separation and identification in order to maintain time and space at all times throughout life of project.

### **1.4 SAFETY ASSESSMENT**

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

### **1.5 MEETINGS**

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.
- .2 Contractor's decisional representative must attend any meetings at which site safety and health issues are to be discussed.

- .3 Contractor must set up a construction site committee if there are to be 25 workers or more at any time on the site and hold meetings as required under the Safety Code for the Construction Industry (S-2.1, r. 4). Submit copy of minutes to Departmental Representative no later than five (5) days after meeting.

## **1.6 REGULATORY REQUIREMENTS**

- .1 Do Work in accordance with Section 01 41 00 - Regulatory Requirements.
- .2 Comply with laws, regulations and standards applicable to execution of Work.
- .3 Comply with specified standards and regulations to ensure safe operations at site containing hazardous or toxic materials.
- .4 Always use most recent version of the standards referenced in the Safety Code for the Construction Industry (S-2.1, r.4), notwithstanding the date indicated in the Code.

## **1.7 COMPLIANCE REQUIREMENTS**

- .1 Comply with R.S.Q., c. S-2.1, an Act respecting Health and Safety, and c. S-2.1, r.4 Safety Code for the Construction Industry and all requirements of these specifications.

## **1.8 RESPONSABILITIES**

- .1 The Contractor must accept and assume all tasks and obligations under the Act Respecting Occupational Health and Safety (R.S.Q., chapter S-2.1) and the Safety Code for the Construction Industry (S-2.1, r.4).
- .2 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.
- .3 Contractor must clearly identify construction site boundaries with physical means and comply with applicable regulations. Submit site boundary indicators to Departmental Representative.
- .4 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

## **1.9 WORK BY EXTERNAL CONTRACTORS**

- .1 The following work will be carried out by an external contractor not employed by the Contractor:
- .2 Contractor must take necessary measures to protect health and safety of external contractors who are not bound by contract with him but that are mandated by the Departmental Representative to carry out work. External contractors are obligated to work under the authority of the Contractor. A subordination agreement must be signed by the Contractor and each external contractor and submitted to Departmental Representative prior to commencement of Work of each external contractor (see ENTENTE DE SUBORDINATION EN MATIÈRE DE SST).

## **1.10 GENERAL REQUIREMENTS**

- .1 Prepare site-specific Health and Safety Plan prior to commencement of work based on prior assessment of risks and dangers in accordance with the SAFETY ASSESSMENT and RISKS INHERENT TO WORK SITE sections. Implement program and ensure compliance until close-out is completed. At a minimum, the site-specific safety program must include:

Investigation report must contain the following:

- .1 Company safety and health policy.
- .2 Description of work stages and sequences.

- .3 A description of the work, total costs, schedule and projected workforce curve.
- .4 Flow chart of safety and health responsibility.
- .5 The physical and material layout of the site.
- .6 Risk assessment for the tasks to be carried out, including preventive measures and the procedures for applying them.
- .7 Identification of the prevention measures related to the inherent risks specific to the work site indicated under RISKS INHERENT TO THE WORK SITE:
- .8 Identification of the health and safety prevention measures for employees and public as indicated under REQUIREMENTS SPECIFIC TO HEALTH AND SAFETY OF OCCUPANTS AND PUBLIC.
- .9 Training requirements.
- .10 Procedures in case of accident/injury.
- .11 Written commitment from all parties to comply with the prevention program.
- .12 A site inspection schedule based on the preventive measures.
- .13 Emergency response plan, which must contain the following:
  - .1 Site evacuation procedure.
  - .2 Identification of resources (police, firefighters, ambulances, etc.).
  - .3 Identification of construction site supervisors.
  - .4 Identification of respondents.
  - .5 Communications flowchart.
  - .6 Training for persons in charge of the plan's application.
  - .7 Information deemed necessary based on characteristics of the work site.

Departmental Representative will provide Contractor with site evacuation plan, if any, which must be coordinated with construction site procedure and returned to Departmental Representative.
- .2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.
- .3 In addition to the prevention program, during the work, the Contractor must draw up and submit to the Departmental Representative a written procedure specific to work representing a high risk of accidents (e.g.: demolition, installation, lifting plan, closed spaces, cutting power, etc.) at the Departmental Representative's request.
- .4 Plan and organize work to eliminate source of danger of falls and safety of all persons and reduce recourse to individual safety equipment to a minimum.
- .5 Equipment, tools or protection that cannot be installed or used safely is deemed to inadequate for the work to be carried out.
- .6 All mechanical equipment (e.g.: equipment to lift persons or material, mechanical diggers, concrete pumps, concrete saws) must be inspected prior to delivery on site. The Contractor must obtain and keep on site an inspection certificate signed by a mechanic and dated less than one week before delivery of the equipment on site and submit to Departmental Representative on request.

- .7 Ensure inspections (daily, periodic, annual, etc.) required by current standards are carried out for equipment used to hoist persons or materials and provide copy of inspection certifications to Departmental Representative if requested.
- .8 The Departmental Representative may at any time order work to be suspended immediately and require an inspection by specialist of his choosing if he suspects equipment may be defective or there is risk of injury.
- .9 The Departmental Representative must be consulted for the location of gas tanks and reservoirs on site.

#### **1.11 RISKS INHERENT TO WORK SITE**

- .1 In addition to the risks of each task to be executed, the personnel in charge of work on the site may be exposed to the following inherent risks. The Contractor must include these elements in the prevention program:

Location of work, if there are:

- .1 Overhead power lines.
- .2 Underground services (electricity, gas, vapour, water, etc.).
- .3 Laboratories.
- .4 Trees and landscaping to protect.

#### **1.12 REQUIREMENTS SPECIFIC TO HEALTH AND SAFETY OF OCCUPANTS AND PUBLIC**

- .1 Area occupied by employees and the general public during the following periods: 8 a.m. to 5 p.m. during the week, even though these persons will not be allowed access to the Contractor's work site. The Contractor must take the following specific requirements into account for the protection of employees and the public.

- .1 Build a protection wall for public traffic along the main entrance.

Requirements must be included in the Contractor's prevention program and any other measures by the Contractor to protect the health and safety of employees and public on site.

#### **1.13 UNFORESEEN HAZARDS**

- .1 When a source of danger not specified in the specification and not identified during the preliminary inspection of the site emerges as a result of or during execution of the work, the Contractor must immediately stop work, set up temporary measures to protect workers and the public and notify the Departmental Representative verbally and in writing. The Contractor must then make the necessary adjustments to the prevention program in order for work to resume safely.

#### **1.14 HEALTH AND SAFETY CO-ORDINATOR**

- .1 If the site meets the requirements of section 2.5.3 of the Safety Code for the Construction Industry (2.1, r.4), the Contractor must hire a qualified person authorized to act as a security guard to work fulltime from when the work begins. This person's duties exclusively pertain to health and safety management on site. The security guard must meet the following criteria:
  - .1 Hold a security guard certificate from the CNESST for a minimum of five years.
  - .2 Have site-related working experience specific to activities associated with work similar to this project.
  - .3 Have working knowledge of occupational safety and health regulations.

- .4 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.
- .5 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
- .6 Be present at all times on site during work.
- .7 Inspect work and ensure compliance with regulatory requirements and those indicated in the contractual documents and prevent program.
- .8 Keep a daily log of interventions and submit copy to the Departmental Representative at least once a week.

Security guard certification must be submitted to Departmental Representative before work begins.

- .2 Where hiring of a security guard is not required or when the security guard is hired by the Departmental Representative, the Contractor must assign a qualified person as to supervise and oversee health and safety regardless of the size of the site or number of workers. The person must be present at all times on site and be able to take all necessary measures to ensure the health and safety of the persons and property on site and in the immediate surroundings if affected by the work. The name of the person must be submitted to Departmental Representative before work begins.

#### **1.15 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, and in consultation with Departmental Representative.
- .2 The following information and documents must be posted in a location readily accessible to all workers:
  - .1 Notice of site opening (Ouverture de Chantier Notice).
  - .2 Identification of principal Contractor.
  - .3 Company OSH policy.
  - .4 Site-specific safety program.
  - .5 Emergency plan.
  - .6 Minutes of site committee meetings.
  - .7 Names of site committee representatives.
  - .8 Names of those with first-aid training.
  - .9 Action reports and correction notices issued by the CSST.

#### **1.16 INSPECTION AND CORRECTION OF NON-COMPLIANCE**

- .1 Inspect the work site and complete the site inspection sheet and submit to Departmental Representative in accordance with ACTION AND INFORMATIONAL SUBMITTALS.
- .2 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.
- .3 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.

- .4 Work stoppage: Give the Contractor's representative full authority to order interruption and resuming of work as and when deemed necessary or desirable in the interests of safety and health. The Contractor must give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.
- .5 Departmental Representative May stop Work if non-compliance of health and safety regulations is not corrected. Without limiting the scope of the preceding sections, the Departmental Representative may at all times order work to be suspended if a risk to the health and safety of the personnel and public or environment is perceived.

#### **1.17 PREVENTION OF VIOLENCE**

- .1 Health and safety management on PWGSC work sites includes measures aimed at protecting the psychological wellbeing of any person with access to the work site. Accordingly, in addition to physical violence, verbal abuse, intimidation or harassment is not tolerated. Any person demonstrating such behaviour will be notified and/or permanently expelled from the site by the Departmental Representative.

#### **1.18 POWDER ACTUATED DEVICES**

- .1 Use of power hammers and other explosive-actuated devices must be authorized by Departmental Representative.
- .2 Any person using a power hammer shall hold a training certificate and meet all requirements of Section 7 of the Construction Safety Code (S-2.1, r. 6). 4).
- .3 Any other explosive-actuated device shall be used in accordance with the manufacturer's directions and applicable standards and regulations.

#### **1.19 USE OF PUBLIC WAYS**

- .1 Contractor must obtain from authority having jurisdiction the necessary authorizations and licenses at own expense when required to use public roads for operational purposes and to ensure safety of works, occupants or general public (e.g., use of scaffolding, cranes and hoists, digging work, etc.).
- .2 Contractor must install at own expense all signposting, barriers and other provisions required by applicable regulations to ensure safety of public and installations.

#### **1.20 LOCK-OUT PROCEDURES**

- .1 Contractor must submit general lock-out procedure to Departmental Representative and implement for all work performed on electrically powered equipment.
- .2 Supervisory staff and employees involved in work requiring lock-out must have lock-out training given by recognized organization; Contractor must submit training certificates to Departmental Representative.
- .3 Prior to undertaking lock-out of equipment in an occupied site, Contractor must coordinate work with site representative if cutting power has an impact on site operations or occupants.
- .4 Contractor must identify qualified person to be responsible for lock-out procedure and ensure that person prepares lock-out report for each piece of equipment to be locked-out. Lock-out report must be submitted to Departmental Representative at least 48 hours prior to beginning of Work; Departmental Representative must have report site representative if work is carried out in existing building. Lock-out report must include the following information:
  - .5 Description of work.
  - .6 Identification, description and location of circuit and equipment to lock-out.

- .7 Identification of energy sources for equipment.
- .8 Identification of power cut-off location.
- .9 Sequence of lock-out and release of residual energy and lock-out sequence.
- .10 List of necessary lock-out material.
- .11 Zero-Energy inspection method.
- .12 Name and signature of person who wrote the report.
  - .1 At Departmental Representative's request, the Contractor must include all information on the site representative's form.
- .13 At lock-out time, the person responsible must date the form and ensure each worker involved in the work on the locked out circuit/equipment has added their name and signed.

## **1.21 ELECTRICAL WORK**

- .1 Contractor must ensure that all electrical work is carried out by employees qualified in accordance with provincial qualification and professional training regulations.
- .2 Contractor must comply with requirements of CSA Z462 *Workplace Electrical Safety*.
- .3 Electrical power must be turned off prior to working on an electrical appliance unless the appliance may be unplugged.
- .4 Contractor must comply with all requirements of the Lock-out section.
- .5 Contractor must notify Departmental Representative in writing of work that is impossible to do with the power off and receive authorization. Contractor must demonstrate to Departmental Representative that it is impossible to do work with the power turned off and provide all information to complete and obtain a live-line work permit (work method, evaluation of electrical arc, safety perimeter, safety equipment, etc.) prior to beginning work, except for exceptions provided for under CSA Z462 *Workplace Electrical Safety*.
- .6 Live-line work permit must contain the following:
  - .1 Description of circuit, appliance and location.
  - .2 Justification for the live-line work.
  - .3 Description of safety practices.
  - .4 Conclusions of electrical shock hazard analysis.
  - .5 Identification of safety perimeter for electrical shock hazard.
  - .6 Conclusions of electrical arc hazard analysis.
  - .7 Identification of safety perimeter for electrical arc hazard.
  - .8 Description of individual safety protection required.
  - .9 Description of means to restrict access to non-qualified persons.
  - .10 Proof that an information meeting was held.
  - .11 signed approval of live-line work (by person in authority or Owner).
- .7 If for operational purposes of the site occupants the site representative requires the Contractor to perform live-line work, the Contractor must submit the information required to obtain a live-line work permit (work method, evaluation of electrical arc, safety perimeter, safety equipment, etc.) and have it signed by site representative prior to beginning work.



## **1.22 PREVENTION OF FALLS**

- .1 Plan and organize work to eliminate source of danger of falls and safety of all persons and reduce recourse to individual safety equipment to a minimum. When individual safety equipment is required, workers must use a safety harness in accordance with CAN - CSA- Z-259.10 - M90. Safety belt is not allowed as protection against falls.
- .2 All persons using lifting platforms (scissor lifts, telescopic, articulated, rotating boom, etc.) must have relevant training.
- .3 Safety harness is obligatory on all lifting platforms with extendable, articulated or rotating masts.
- .4 All openings in floor or roof must have guard rail or be covered with cover attached to floor and able to withstand loads regardless of size of opening and height of fall it represents.
- .5 All persons working less than two metres from an area with a risk of fall of three metres and more must use a safety harness in accordance with regulation requirements unless there is a guard rail or other equivalent means to ensure safety.
- .6 In addition to regulation requirements, the Departmental Representative may require the installation of a guard rail or use of a safety harness in certain situations representing a risk of a fall under three metres.

## **1.23 SCAFFOLDING**

- .1 In addition to Construction Safety Code requirements, the Contractor must comply with the following when using scaffolding:
  - .1 Foundations.
    - .1 Scaffolding must be installed on solid foundations to prevent slipping or tipping.
    - .2 Contractor must submit a load analysis and plans signed and sealed by an engineer to Departmental Representative to install scaffolding on a roof, overhangs, awning or mansard and obtain Departmental Representative's authorization prior to beginning work.
  - .2 Assembly, bracing and anchors.
    - .1 All scaffolding must be assembled, braced and anchored in accordance with manufacturer's instructions and provisions of the Construction Safety Code.
    - .2 Where scaffolding components must be removed (e.g., cross-ties), the Contractor must submit to the Departmental Representative prior to assembly a procedures signed and sealed by an engineer confirming that the scaffolding and assembly allow for work to be carried out safely in consideration of the loads.
    - .3 The Contractor must submit to the Departmental Representative prior to assembly an assembly plan signed and sealed by an engineer for scaffolding structures with spans exceeding three metres.
  - .3 Protection against falls during assembly.
    - .1 At all times during assembly workers must be protected against falls higher than three metres.
  - .4 Floors.
    - .1 Scaffolding platforms must be designed and installed in accordance with the provisions of the Construction Safety Code.
    - .2 Planks must be approved and stamped in accordance with section 3.9.8. Of the Construction Safety Code.

- .3 Scaffolding with four or more sections (or six metres) must have full platform covering entire surface every three metres or fraction of three metres and floor elements must not be moved to create intermediate levels.
- .5 Guard rails.
  - .1 A guard rail must be installed at all levels.
  - .2 Bracing is not allowed as a substitute for guard rails.
  - .3 If floors are not full, guard rails must be installed adjacent to floor to ensure there is no space between floor and guard rail.
  - .4 Scaffolding with four section (or six metres) or more requiring full floors, guard rails must be installed at each level at the beginning of the work and remain in place until the end of the work.
- .6 Access.
  - .1 Contractor must ensure that access to scaffolding does not jeopardize the safety of workers.
  - .2 Scaffolding with planks require ladders to be installed clear of the planks.
  - .3 Notwithstanding the provisions of the Construction Safety Code, stairs must be installed on all scaffolding with six or more levels and six or more sections (or nine metres).
- .7 Protection of public and occupants.
  - .1 When scaffolding is installed in public areas, the Contractor must take measures to prevent access by the public to the scaffolding and, if applicable, work area or storage area in proximity to scaffolding.
  - .2 The Contractor must install covered passageways, nets and other measures to protect workers, the public and occupants from falling objects. Protection measures must be approved by Departmental Representative.
- .8 Engineer plans.
  - .1 In addition to requirements of the Construction Safety Code, the Departmental Representative reserves the right to require engineer plans for other types of scaffolding configurations.
  - .2 A plan signed and sealed by an engineer is required for scaffolding with tarps, screens and other wind protection devices.
  - .3 A compliance certificate signed by an engineer is required in all cases where an engineer plan is required prior to use. A copy of the documents must be available on site at all times.

#### **1.24 LIFTING WITH HOISTS OR CRANES**

- .1 Unless indicated otherwise, the Contractor must prepare a lifting plan and submit to Departmental Representative for all lifting procedures using a hoist or crane within five (5) days of beginning of operations. The lifting plan must contain the information listed in this section.
- .2 The lifting plan must be signed and sealed by an engineer for the following lifting operations:
  - .1 lifting concrete panels.
  - .2 Lifting mechanical/electrical equipment onto a roof or floors of a building.
  - .3 Lifting loads over public areas.

- .4 Lifting large size or heavy loads.
- .5 All lifting operations as required by Departmental Representative.
- .3 In addition to the requirements above, the Contractor must plan lifting operations to avoid loads passing over occupied areas on the site. Where impossible to do otherwise, the lifting plan must be signed and sealed by an Engineer and guarantee the safety of occupants of the zone; the plan must be approved by the Departmental Representative. The Departmental Representative may if deemed necessary require work to be done evenings and weekends.
- .4 As soon as work starts, the Contractor must submit to Departmental Representative the list of lifting plans for the entire construction work period. The list must be kept up to date if changes are made during the work.
- .5 In addition to the mechanical inspection certificate, all cranes and hoists have the annual inspection certificate on board and the crane log.
- .6 Lifting zone must be barred off to prevent access by unauthorized persons.
- .7 The Contractor must carefully inspect all lifting accessories and straps and dispose of damaged items.
- .8 Compressed gas tanks must be lifted with a specially designed basket.

#### **MINIMUM REQUIREMENTS OF LIFTING PLAN**

- .1 Sketch indicating crane location, surrounding installations, zone affected by lifting operations, traffic areas, safety perimeter, etc.
- .2 Weight of loads.
- .3 Size of loads.
- .4 List of lifting accessories and weight of each.
- .5 Total weight lifted.
- .6 Maximum height of obstacles.
- .7 Clearance of loads above roof (when lifting materials onto roof).
- .8 Use of guide wires.
- .9 Type of crane.
- .10 Capacity of crane.
- .11 Boom length.
- .12 Boom angle.
- .13 Radius of boom.
- .14 Deployment of stabilizers.
- .15 Percentage of crane capacity used.
- .16 Confirmation that lifting equipment has been inspected.
- .17 Identification of crane operator with signatures and date

## 1.25 Hotwork

Hotwork refers to all work involving an open flame or producing heat or sparks including: riveting, welding, cutting, grinding, burning, heating, etc.

- .1 Contractor must submit a hotwork permit at the beginning of each work shift issued by the site supervisor.
- .2 A functional portable extinguisher must be available and easily accessible within 5 metres of any open flame or source of intense heat.
- .3 The Contractor must designate a person to supervise continuously for fire risks for a minimum of one (1) hour after each hotwork procedure. The person must sign the permit section and submit to the site supervisor after one hour.
- .4 When hotwork is carried out where there is combustible material or walls, ceilings or floors covered in combustible materials, a final inspection of the work area must be provided every four (4) hours after work ends. Unless indicated otherwise by the Departmental Representative, the Contractor must designate a person to supervise.
- .5 Welding and cutting

In addition to the requirements above, the Contractor must meet the following requirements:

- .1 Welding and cutting work must be carried out in accordance with Construction Safety Code, S-2.1, r.4 and CSA W117.2 Safety in Welding, Cutting and Allied Processes.
- .2 Use an air extraction system with filters for welding and cutting work indoors.
- .3 Stop any activity that produces gas, vapours, or inflammable or combustible dust near welding and cutting work.
- .4 Store compressed gas tanks on fireproof surface in well-ventilated area.
- .5 Store oxygen tanks minimum 6 metres away from inflammable gas (e.g., acetylene) or any combustible material such as oil or grease, unless separated by partition made of incombustible material as specified in Section 3.13.4 of Safety Code for the Construction Industry, S-2.1, r.4.
- .6 Store tanks away from heat sources.
- .7 Do not store tanks near stairs, exits, hallways or elevators.
- .8 Do not put acetylene in contact with metals including silver, mercury, copper or alloys with more than 65% copper to avoid risk of explosion.
- .9 Inspect arc welding equipment to ensure required power supply and grounding.
- .10 Ensure electric welding equipment cables are not damaged.
- .11 Place welding material on flat surface protected from bad weather.
- .12 Use fire-retardant tarps when welding work is superimposed or there is a risk of sparks.
- .13 Remove or protect inflammable or combustible materials closer than 15 metres from welding work.
- .14 Never weld or cut on closed containers.
- .15 Do not cut, weld or use exposed flame on containers, reservoirs, pipes or other container containing a substance of residue of inflammable or explosive products unless:
  - .1 They have been cleaned and air samples indicate absence of explosive vapours; and
- .16 Measures have been taken to ensure safety of workers.

## **1.26 ROOF WORK**

- .1 Protection against falls during assembly.
  - .1 Guard rails must in place at all times; however, a warning line is allowed to identify work areas provided that all requirements of sections 2.9.4 and 2.9.4.1 of the Construction Safety Code are met.
  - .2 Guard rails must remain in place until the end of the project. The Departmental Representative may authorize dismantling when it is confirmed that all work, inspections and corrections have been carried out.
  - .3 A safety harness must be worn during installation of the guard rails.
  - .4 A safety harness must be worn for installation and modifications to parapets and flashings, if guard rails must be moved during the work.
  - .5 A safety harness must be worn when receiving materials or signalling crane operator near the edge.
  - .6 A safety harness must be worn for all work performed at the edge of a roof where general safety measures are inadequate.
  - .7 The Contractor must provide an attachment system in compliance with Section 2.10.12 of the Safety Code for the Construction Industry (R.S.Q., S-2.1, r.4) for each different work area or sector.
- .2 Lifting material.
  - .1 The Contractor must submit to the Departmental Representative an installation procedure recommended by the manufacturer or an installation procedure signed and sealed by the engineer. The installation procedure must take in to account the maximum allowed loads, number, weight and location of counterweights and other details affecting the capacity and stability of the equipment.
  - .2 The Contractor must carefully inspect all lifting accessories and straps and dispose of damaged items.
  - .3 Compressed gas tanks must be lifted with a specially designed basket.
  - .4 The Contractor must comply with requirements of the section LIFTING WITH HOISTS OR CRANES.
- .3 Protection against burns.
  - .1 Workers exposed to kettles must wear long sleeves and safety glasses and face visors to load kettles.
  - .2 Workers exposed to bitumen and other hot liquids must wear gloves, long sleeves and safety glasses.
- .4 Protection against fires.
  - .1 Use and storage of propane tanks must comply with CAN/CGA-B149.2-05, Propane Storage and Handling Code. Tanks must be stored outdoors in secure location, safe from unauthorized handling or movement of vehicles and equipment unless protected with barriers or equivalent protection.
  - .2 Quantity of propane on roof must not exceed quantity required for day's work and tanks must be tied upright in appropriate container.
  - .3 All hotwork (burning, heating, riveting, welding, cutting, grinding, etc.) must comply with section on hotwork.

- .5 Waste material management.
  - .1 Lightweight material and sheet materials on roof must be kept in containers or solidly attached. Departmental Representative may forbid storage of materials on roof in the event of non-compliance.
  - .2 Waste must be removed from roof using a garbage chute or in appropriate containers; the Contractor must put means in place to prevent waste from being carried away in the wind.
  - .3 All waste must be removed from the roof at the end of each work day.
  - .4 Unless authorized by Departmental Representative, all waste bins must be placed at least 3 metres away from building structures.
- .6 Protection of occupants and public.
  - .1 The Contractor must install covered passageways, nets and other measures to protect workers, the public and occupants from falling objects. Protection measures must be approved by Departmental Representative.
  - .2 A safety perimeter must be installed on the ground under the work area to protect workers, public and occupants.
  - .3 Work area on the ground, material handling area and the area where the kettle is installed must be clearly barricaded to prevent access by occupants and the public.
  - .4 Prior to installing equipment that can potentially emit gas or vapours, the Contractor must obtain authorization from the site supervisor. The site supervisor must ensure that there is no risk of infiltration into the building.

## **1.27 WORK NEAR OVERHEAD POWER LINES**

- .1 Where there are overhead power lines in the work area, and the Contractor elects to apply paragraph b) of section 5.2.2 of the Safety Code for the Construction Industry (2.1, r.4), a copy of the agreement with the power company and a copy of the work procedure required under section 5.2.2 b), must be submitted to the Departmental Representative prior to beginning work related to these documents.

## 1.28 Subordination agreement

Project: \_\_\_\_\_ Address: \_\_\_\_\_

### EXTERNAL CONTRACTOR

I hereby agree to submit to the authority of (name of General Contractor) \_\_\_\_\_, who is the General Contractor for the project indicated above for the duration of our work on the construction site. Accordingly, I confirm having read the General Contractor's prevention plan and agree to:

- Inform my employees about the content of the General Contractor's prevention program and comply with its content at all times;
- Provide the prevention program specific to our activities for this project;
- Inform the General Contractor of my work on the construction site and obtain his consent prior to beginning work.
- Follow health and safety guidelines given by the General Contractor's representative on site and as needed assist with training activities and health and safety meetings they organize.

Name of representative: \_\_\_\_\_

Name of company: \_\_\_\_\_

Description of work to be performed on the construction site: \_\_\_\_\_

Approximate dates of work (start-finish): \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

### GENERAL CONTRACTOR

I hereby agree to allow the company (name of external contractor) \_\_\_\_\_ to perform work for the project indicated above and as General Contractor to take the necessary measures to protect the health and safety of the workers on site. In the event that the Contractor repeatedly refuses or fails to comply with my instructions I agree to inform the Departmental Representative and provide documented proof of my actions.

Name of representative: \_\_\_\_\_

Name of General Contractor's company: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Give completed and signed copy to Departmental Representative.

## **PART 1 GENERAL**

### **1.1 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 humans; or degrade environment aesthetically, culturally and/or historically.
- .2 *Environmental Protection*: prevention/control of pollution and habitat or environment disruption during construction. Prevention/control of pollution and damage to the environment includes protection of soils, water, air, biological and cultural resources; it also includes visual aesthetic, noise, solid, chemical, gaseous and liquid waste, radiant energy from radioactive materials and other pollutants.

### **1.2 FIRES**

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

### **1.3 DISPOSAL OF WASTES**

- .1 Burning rubbish and construction waste materials is not permitted on site.
- .2 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.

### **1.4 DRAINAGE**

- .1 Develop and submit erosion and Sediment Control Plan (ESC) identifying type and location of erosion and sediment controls provided. Plan to include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.
- .2 Storm Water Pollution Prevention Plan (SWPPP) to be substituted for erosion and sediment control plan.
- .3 Provide temporary drainage and pumping required to keep excavations and site free from water.
- .4 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.
- .5 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

### **1.5 SITE CLEARING AND PLANT PROTECTION**

- .1 Protect trees and plants on site and adjacent properties as indicated. Replace at own expense vegetation damaged during work with identical plants of the same size.
- .2 Protect trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective jute covering. Protect trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m minimum.
- .3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .4 Minimize stripping of topsoil and vegetation.



## **1.6 POLLUTION CONTROL**

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.
- .5 Provide dust control daily on existing public roads used by Contractors and subcontractors.

## **1.7 NOTIFICATION**

- .1 Departmental Representative 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 Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.
- .3 Departmental Representative 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.

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 GENERAL**

- .1 Contractor shall manage his operations so that safety and security of the public and of site workers always take precedence over cost and scheduling considerations.
- .2 The Contractor shall have a representative, competent to decide on any action needed, on site at all times when work is being done.
- .3 In addition to complying with prevailing regulations on minimum first line treatment and first aid standards, the Contractor shall ensure that there is a person qualified to provide first aid on site whenever workers are present, including any hours worked overtime or on evening or night shifts. The first-aider must be located close to the employees and be accessible to them.
- .4 The Contractor shall take all necessary measures to keep the worksite clean and in good order throughout the course of the work.

### **1.2 REFERENCES AND CODES**

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

### **1.3 HAZARDOUS MATERIAL DISCOVERY**

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

### **1.4 BUILDING SMOKING ENVIRONMENT**

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

## **PART 2 PRODUCTS**

### **2.1 NOT USED.**

- .1 Not used.

**PART 3    EXECUTION**

**3.1    NOT USED.**

.1    Not used.

**END OF SECTION**

## **PARTIE 1 - GENERAL**

### **1.1 DEFINITIONS:**

- .1 Allow Departmental Representative 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. Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative or law of Place of Work.
- .2 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.
- .3 Departmental Representative 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, Departmental Representative shall pay cost of examination and replacement.
- .4 Contractor must refer to Section 1.11 of Section 07 52 00 – Modified Bituminous Membrane Roofing.
- .5 Work adjacent to curtain walls, glazing and skylights must be performed by specialized contractor. The following information must be included and submitted to the Departmental Representative:
  - .1 Proof of qualifications.
  - .2 Certificate of experience.
  - .3 List of 5 similar projects.

### **1.2 INDEPENDENT INSPECTION AGENCIES**

- .1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and reinspection.

### **1.3 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.

### **1.4 PROCEDURE**

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

- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

#### **1.5 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 Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.

#### **1.6 REPORTS**

- .1 Submit 4 copies of inspection and test reports to Departmental Representative.
- .2 Provide copies to subcontractor of work being inspected or tested.

#### **1.7 TESTS AND MIX DESIGNS**

- .1 Furnish test results and mix designs as requested.

#### **1.8 MOCK-UPS**

- .1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.
- .2 Construct in locations as specified in specific Section or acceptable to Departmental Representative.
- .3 Prepare mock-ups for Departmental Representative review with reasonable promptness and in orderly sequence, to not cause delays in Work.
- .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .5 If requested, Departmental Representative will assist in preparing schedule fixing dates for preparation.
- .6 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

#### **1.9 MILL TESTS**

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

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 INSTALLATION AND REMOVAL**

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

### **1.2 WATER SUPPLY**

- .1 Provide continuous supply of potable water required for Work.

### **1.3 TEMPORARY POWER AND LIGHT**

- .1 Contractor will provide electrical power.

### **1.4 FIRE SYSTEMS**

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

## **PART 2 PRODUCTS**

### **2.1 NOT USED**

- .1 Not used.

## **PART 3 EXECUTION**

### **3.1 NOT USED.**

- .1 Not used.

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 Reference Standards:**

- .1 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.
  - .2 CGSB 1.59-1.5997, Alkyd Exterior Gloss Enamel.
- .2 Canadian Standards Association (CSA International)
  - .1 CSAA23.1.1/A23.2F04-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - .2 CSA0121FM1978(C2003), Douglas Fir Plywood.
  - .3 CAN/CSA-S269.2-M1987(R2003), Access Scaffolding for Construction Purposes.
  - .4 CAN/CSA-Z321-96(R2001), Signs and Symbols for the Occupational Environment.

### **1.2 ACTION AND INFORMATIONAL SUBMITTALS**

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

### **1.3 CONSTRUCTION SITE ENCLOSURE**

- .1 Prepare site plan indicating proposed location and dimensions of area to be fenced, 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 Provide construction facilities in order to execute work expeditiously.
- .4 Remove from site all such work after use.

### **1.4 SCAFFOLDING**

- .1 Scaffolding in accordance with CAN/CSA-S269.2.
- .2 Provide and maintain scaffolding, ramps, ladders, swing staging, platforms and temporary stairs.

### **1.5 HOISTING**

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

### **1.6 EQUIPMENT, TOOL AND MATERIALS STORAGE**

- .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials. Prendre les arrangements financiers nécessaires avec les Sous-traitants pour l'utilisation du matériel de levage.
- .2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.
- .3 Do not store materials on roofs that are not within the work zone.

## **1.7 CONSTRUCTION SIGNAGE**

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

## **1.8 FIELD OFFICE**

- .1 Provide office heated to 22 degrees C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.
- .2 Provide marked and fully stocked first-aid case in a readily available location.
- .3 Subcontractors to provide their own offices as necessary. Direct location of these offices.
- .4 Maintain site clean at all times to the satisfaction of the Departmental Representative.

## **1.9 SANITARY FACILITIES**

- .1 Departmental Representative will assign sanitary facilities for use by Contractor's personnel. Keep facilities clean.

## **1.10 WASTE CONTAINERS**

- .1 Locate containers inside construction site enclosure.
- .2 Landfill and transportation costs will be born by Contractor.

## **PART 2 PRODUCTS**

### **2.1 NOT USED**

- .1 NOT USED

## **PART 3 EXECUTION**

### **3.1 NOT USED**

- .1 NOT USED

**END OF SECTION**



## **PART 1 GENERAL**

### **1.1 INSTALLATION AND REMOVAL**

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

### **1.2 CONSTRUCTION SITE ENCLOSURE**

- .1 Departmental Representative reserves right to modify construction site enclosure as required for duration of project and cost will be born by Contractor.
- .2 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

### **1.3 GUARD RAILS AND BARRICADES**

- .1 Provide secure, rigid guard rails and barricades on the roofs.
- .2 Provide as required by governing authorities as indicated.

### **1.4 ACCESS TO SITE**

- .1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.
- .2 Clean accesses to construction site where used by Contractor's equipment.
- .3 Protect (paved) accesses from damage and repair at own expense if damage occurs.

### **1.5 FIRE ROUTES**

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

### **1.6 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY**

- .1 Protect surrounding private and public property from damage during performance of Work.
- .2 Be responsible for damage incurred.

### **1.7 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.

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 REFERENCES**

- .1 Within text of each specifications section, reference may be made to reference standards. Se conformer à ces normes selon les prescriptions du devis.
- .2 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .3 Cost for such testing will be born by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.

### **1.2 QUALITY**

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 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.
- .3 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

### **1.3 AVAILABILITY**

- .1 Take note of delivery requirements immediately after signature of the contract and provide for delays. Notify Departmental Representative about potential delays to allow for substituting products or to make necessary corrections in advance to avoid work slowdowns.
- .2 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

### **1.4 STORAGE, HANDLING AND PROTECTION**

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.

- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials, lumber and panels 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 Departmental Representative.
- .9 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

#### **1.5 TRANSPORTATION**

- .1 Pay costs of transportation of products required in performance of Work.

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

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

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

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Departmental Representative 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 Departmental Representative, whose decision is final.

#### **1.8 CO-ORDINATION**

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

#### **1.9 CONCEALMENT**

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

### **1.10 REMEDIAL WORK**

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

### **1.11 LOCATION OF FIXTURES**

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

### **1.12 FASTENINGS**

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

### **1.13 FASTENINGS - EQUIPMENT**

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

### **1.14 PROTECTION OF WORK IN PROGRESS**

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

### **1.15 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, and/or building occupants.
- .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.

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 ACTION AND INFORMATIONAL SUBMITTALS**

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

### **1.2 PRODUCTS**

- .1 Required for original installation.
- .2 Submit request for substitution.
  - .1 Submit requests for substitution at time of call for tenders only.

### **1.3 PREPARATION**

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

#### **1.4 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 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .6 Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Departmental Representative.
- .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 Effectuer les percements de façon à ce que les rives soient propres, droites et lisses. Couper les surfaces finies existantes telles que le béton, la maçonnerie, le bois ou les métaux selon des méthodes qui permettent d'obtenir des lignes droites situées à un endroit de division naturelle. 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. Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.
- .13 Holes and drilled holes 150 mm or bigger must be performed by general contractor.
- .14 Holes and drilled holes less than 150 mm must be performed by subcontractor.

#### **1.5 REMOVAL OF EXISTING WORK**

- .1 As needed to enable work or to install new work:
  - .1 repair or remove dangerous, unhygienic, infected components.
  - .2 remove abandoned or useless components.
  - .3 remove items that are not salvaged such as furniture and equipment acknowledged by the Department and Departmental Representative as being abandoned, debris such as rotten wood, useless rusted metals, deteriorated concrete, waste and stone.
  - .4 remove existing finish section to connect to new work.

#### **1.6 SALVAGING EXISTING PRODUCTS**

- .1 When prescribed, in various specification sections, that products must be salvaged from demolition work to be reused, the Contractor shall carefully remove, clean and store in an area designated by the Departmental Representative.
- .2 Keep products to be salvaged in sufficient quantities to repair existing products, particularly if these products are not available on the market.

- .3 Use of salvaged products is restricted, to be used only for repairs or modifications to work in place to ensure uniformity of colour and quality of products.
- .4 Salvaged products to be reused must be carefully selected according to their quality, wear, finish and the work to be matched.
- .5 The Contractor is entirely responsible for the method used to salvage products that must be reused. Demolition work must be adapted according to the products to be salvaged.
- .6 The Departmental Representative may in addition to what is prescribed in the specification section require the use of salvaged products, if:
  - .1 During the work it is observed that the product "as existing" is no longer available, or
  - .2 The colour, finish or size of the new product differs from the existing product.
- .7 Pay particular attention to the removal and storage of products that must be salvaged in order to avoid damaging them and keeping them intact until they are reused
- .8 Clean salvaged products to remove foreign matter such as mortar, plaster, adhesive, nails, earth, and paint, then store them temporarily in an area determined by the Departmental Representative. Do not incorporate or reuse salvaged products without having them inspected and approved by the Departmental Representative immediately before they are reinstalled

#### **1.7 REPAIRS AND ALTERATIONS**

- .1 Cut, adjust and seal any work to execute in order to adjust precisely and so that the work in question can be connected to any other work.
- .2 Patch, repair, extend and redo work of all existing work and work that is unstuck, dislocated, weakened, discoloured or that exposes other defects or imperfections.
- .3 When the addition of new work leads to modifications to existing work, execute piercing, sealing and any other work to be redone to enable existing work to be returned to its existing state.
- .4 Make all required openings in existing walls, floors and ceilings for penetration of electrical and mechanical Work.
- .5 Make alterations to walls, floors and ceilings and all exterior and interior surfaces affected by the Work to obtain a complete finish.
- .6 Make gradual, clean and careful transition between existing work that will remain and new work. Repairs must be invisible at a distance of 2 metres with 20/20 vision.

#### **1.8 COORDINATION OF EXISTING BASIC WORK**

- .1 Consolidate, reinforce and properly anchor existing basic work that will remain and that must receive the finish work. Existing basic work must be solid, stable and designed to support loads imposed by new work and prevent any movement that may damage finish work.

#### **1.9 FILLING OPENINGS IN EXISTING WORKS THAT MUST REMAIN VISIBLE**

- .1 Unless indicated otherwise, do retouching, filling, covering, sealing, filling holes, depressions, channels, grooves and other openings in existing work that must remain visible. Use products that are identical to existing and carry out to match to adjacent materials.

#### **1.10 EXISTING CONCEALED WORKS THAT ARE EXPOSED**

- .1 Remove any newly exposed surfaces and that must remain exposed, foreign objects such as nails, anchors and other projecting items that are no longer required as well as mortar, plaster, adhesive, paint and other substances that mar the uniform appearance of the surfaces.

#### **1.11 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste for reuse.

**END OF SECTION**



## **PART 1 GENERAL**

### **1.1 PROJECT CLEANLINESS**

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors.
- .2 Do not burn waste materials on site.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Provide on-site containers for collection of waste materials and debris.
- .5 Provide and use marked separate bins for recycling. Refer to Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .6 Dispose of waste materials and debris off site.

### **1.2 FINAL CLEANING**

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris other than that caused by Owner or other Contractors.
- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .8 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .9 Remove dirt and other disfiguration from exterior surfaces.
- .10 Clean and sweep roofs and gutters.
- .11 Sweep and wash clean paved areas.
- .12 Clean roofs, downspouts, and drainage systems.

### **1.3 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

## **PART 2 PRODUCTS**

### **2.1 NOT USED.**

- .1 Not used.

**PART 3     EXECUTION**

**3.1     NOT USED.**

.1     Not used.

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 WASTE MANAGEMENT GOALS**

- .1 Prior to start of Work conduct meeting with Departmental Representative to review and discuss PWGSC's waste management goal.
- .2 PWGSC's waste management goal: to divert total Project Waste from landfill sites. Prior to project completion provide Departmental Representative documentation certifying that waste management, recycling, reuse of recyclable and reusable materials have been extensively practiced.
- .3 Exercise maximum control over solid construction waste.
- .4 Protect environment and prevent pollution and environmental impacts.

### **1.2 DEFINITIONS**

- .1 Class III non-hazardous waste: construction renovation and demolition waste.
- .2 Inert fill and waste: exclusively asphalt and concrete.
- .3 Waste Source Separation Program (WSSP): on site separation to ensure waste designated for reuse and recycling will be sorted into appropriate categories.
- .4 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.
- .5 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
- .6 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.
- .7 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.
- .8 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
- .9 Separate Condition: refers to waste sorted into individual types.
- .10 Source Separation: act of keeping different types of waste materials separate beginning from the point they became waste.
- .11 Waste Management Co-ordinator (WMC): contractor representative responsible for supervising waste management activities as well as co-ordinating required submittal and reporting requirements.

### **1.3 DOCUMENTS**

- .1 Post and maintain in visible and accessible area at job site, one copy of following documents:
  - .1 Waste Source Separation Program.

#### **1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare and submit following prior to project start-up:
- .3 One (1) copy of description of Waste Source Separation Program (WSSP).
- .4 Submit, prior to final payment, summary of waste salvaged for reuse, recycling or disposal.
  - .1 Failure to submit summary could result in holdback of final payment.
  - .2 Provide receipts, scale tickets, waybills, waste disposal receipts that confirm quantities and types of materials reused, recycled or disposed of.
  - .3 For each type of waste material generated by the project and reused, recycled or sold, indicate quantity in tonnes of the number, type, size and destination.
  - .4 For each type of waste material generated by the project and disposed of in a landfill or incinerated, indicate quantity in tonnes and name of landfill or transfer station.

#### **1.5 WASTE SOURCE SEPARATION PROGRAM (WSSP)**

- .1 Prepare WSSP prior to project start-up.
- .2 Implement WSSP for all waste generated by the project following methods authorized by the Departmental Representative.
- .3 Provide sufficient on-site facilities and containers for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.
- .4 Provide containers for reusable and recyclable waste materials.
- .5 Place containers in areas to facilitate disposal of waste materials and minimize impacts on work.
- .6 Locate separated materials in area which minimizes material damage.
- .7 Collect and store waste material on site and separate prior to removal from site.
  - .1 Salvaged materials are to be transported off site to approved and/or authorized recycling facilities or to users of material for recycling.

#### **1.6 STORAGE, HANDLING AND PROTECTION**

- .1 Store, materials to be reused, recycled and salvaged in locations as directed by Departmental Representative.
- .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 and salvaged materials from movement or damage.
- .6 Support affected structures. If safety of building is endangered, cease operations and immediately notify Departmental Representative.
- .7 Separate and store materials produced during project in designated areas.
- .8 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated processing facilities.
  - .1 On-site source separation is recommended.

- .2 Provide waybills for separated materials.

## **1.7 DISPOSAL OF WASTES**

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste, volatile materials, mineral spirits, oil, paint thinner into waterways, storm, or sanitary sewers.
- .3 Keep records of construction waste including:
  - .1 Number and size of bins.
  - .2 Waste type of each bin.
  - .3 Total tonnage generated.
  - .4 Tonnage reused or recycled.
  - .5 Reused or recycled waste destination.
- .4 Remove materials on-site as Work progresses.
- .5 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in the waste audit.

## **1.8 USE OF SITE AND FACILITIES**

- .1 Execute Work with minimal interference and disturbance to normal use of premises.
- .2 Maintain security measures established by existing facility.

## **1.9 SCHEDULING**

- .1 Co-ordinate Work with other activities at site to ensure timely and orderly progress of Work.

## **PART 2 PRODUCTS**

### **2.1 Not used.**

- .1 Not used.

## **PART 3 EXECUTION**

### **3.1 GENERAL**

- .1 Do Work in compliance with WSSP.
- .2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

### **3.2 CLEAN-UP**

- .1 Remove tools and waste upon completion of work. Leave Work area clean and in orderly condition.

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 INSPECTION AND DECLARATION OF SUBSTANTIAL COMPLETION**

- .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 Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
  - .2 Request Departmental Representative's inspection.
- .2 Departmental Representative's inspection: Departmental Representative and Contractor to inspect Work and identify defects and deficiencies. Contractor to correct Work as directed.
- .3 Interim acceptance of Work: Submit written certificate that the following tasks have been performed:
  - .1 Work: completed and inspected for compliance with Contract Documents.
  - .2 Defects: corrected and deficiencies completed.
  - .3 Equipment and systems: tested, adjusted, balanced and fully operational.
  - .4 Operation of systems: demonstrated to Owner's personnel.
  - .5 Work: complete and ready for final inspection.
- .4 Final acceptance of Work: When completion tasks are done, request final inspection of Work by Departmental Representative and Contractor.
  - .1 Superintendant to initial and return list of deficiencies to Departmental Representatives upon completion of corrective work. Payment will not be made until Departmental Representative has received the list, duly completed, confirming that the deficiencies have been corrected.
  - .2 When Work incomplete according to Departmental Representative, complete outstanding items and request re-inspection.
    - .1 Final acceptance is conditional upon one inspection only by Departmental Representative. Contractor will assume cost of second inspection and subsequent inspections.

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit instructions prepared by competent persons with the required knowledge of operation and maintenance of products.
- .3 Copies will be returned upon final completion of Work with Departmental Representative's comments.
- .4 Review documents before resubmitting.
- .5 Two (2) weeks prior to Substantial Performance of the Work, submit to the Departmental Representative four (4) final copies of operating and maintenance manuals in [French.
- .6 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.
- .7 Provide evidence, if requested, for type, source and quality of products supplied.
- .8 Defective products will be rejected and replaced at no additional cost even if inspected.
- .9 Pay transportation costs.

### **1.2 OPERATING AND MAINTENANCE MANUAL**

- .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 system, 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.

### **1.3 CONTENT OF EACH VOLUME**

- .1 Table of Contents for Each Volume: provide title of project.
  - .1 Date of submission of documents.
  - .2 Addresses, and telephone numbers of Departmental Representative and Contractor with name of responsible parties.
  - .3 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
  - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

- .3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information. Delete irrelevant information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

#### **1.4 AS -BUILT DOCUMENTS AND SAMPLES**

- .1 Maintain, in addition to requirements in General Conditions, at site for Departmental Representative, 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 Departmental Representative.

#### **1.5 SITE CONDITIONS**

- .1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Departmental Representative.
- .2 Use 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 depths of elements of foundation in relation to finish first floor datum.
  - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
  - .4 Field changes of dimension and detail.



- .5 Changes made by change orders.
- .6 Details not on original Contract Drawings.
- .7 References to related shop drawings and modifications.
- .5 Specifications: mark each item to record actual construction, including:
  - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
  - .2 Changes made by Addenda and change orders.
- .6 Other documents:
  - .1 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records required by individual specifications sections.

## **1.6 MATERIALS AND FINISHES**

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

## **1.7 STORAGE, HANDLING AND PROTECTION**

- .1 Store components subject to damage from weather in weatherproof enclosures.
- .2 Store paints and freezable materials in a heated and ventilated room.
- .3 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.

## **1.8 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 Departmental Representative approval.
- .3 Warranty management plan to include required actions and documents to assure that Departmental Representative 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 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
  - .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
  - .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
  - .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within [ten] days after completion of applicable item of work.

- .4 Verify that documents are in proper form, contain full information, and are notarized.
- .5 Co-execute submittals when required.
- .6 Retain warranties and bonds until time specified for submittal.
- .6 Leave date of beginning of time of warranty until Date of Substantial Performance is determined
- .7 Conduct joint 9 month warranty inspection, measured from time of acceptance, by Departmental Representative.
- .8 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 and vapour barrier systems.
  - .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.
  - .4 Contractor's plans for attendance at 9-month post-construction warranty inspections.
  - .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.
- .9 Respond in timely manner to oral or written notification of required construction warranty repair work.
- .10 Written verification to follow oral instructions. Failure to respond will be cause for the Owner to proceed with action against Contractor.

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 SECTION INCLUDES:**

- .1 This section describes the methods and procedures for partial demolition of Work.

### **1.2 RELATED REQUIREMENTS**

- .1 Section 01 35 29.06 - Health and Safety
- .2 Section 01 73 00 - Execution Requirements
- .3 Section 01 74 21 - Construction/Demolition Waste Management and Disposal

### **1.3 REFERENCE STANDARDS:**

- .1 CSA International
  - .1 CSA S350 FM 1980 (R1998), Code of Practice for Safety in Demolition of Structures.

### **1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit detailed plan indicating components to demolish and shoring.
- .3 Submit detailed waste reduction plan in accordance with Section 01 74 21 – Waste Management and Disposal prior to starting work and include the following information.
  - .1 Type and quantities of materials to reuse, recycle and dispose of in percentages.
  - .2 Selective demolition work schedule.
  - .3 Number and location of sorting bins.
  - .4 Waste collection timetable.
  - .5 Name and address of trucking companies, and waste processing facilities and organizations.

### **1.5 WASTE MANAGEMENT AND DISPOSAL**

- .1 Sort waste for reuse and recycling in accordance with Section 01 74 21 - Waste Management and Disposal.

### **1.6 SCOPE OF WORK**

- .1 Indication on plans of work to demolish is for indicative purposes only and must be considered as restrictive or limiting.
- .2 Carefully study drawings of all specializations involved to determine the exact scope of the work.
- .3 The plans must serve as a guide to Contractor who with specialized contractors is responsible for establishing the scope and extent of the demolition required to complete the work to reflect the plans.
- .4 Proceed with caution to avoid damage to the work to be conserved, to minimize work to be redone and never leave building components unprotected.

## **1.7 EXISTING CONDITIONS**

- .1 If material resembling asbestos applied with pressure or a trowel or yet other materials designated and inventoried as hazardous is discovered during execution of the work, suspend work, take appropriate precautions and immediately inform Departmental Representative.
  - .1 Do not resume work before receiving written instructions from the Departmental Representative.
- .2 Notify Departmental Representative before barring access to building or cutting services.

## **PART 2 PRODUCTS**

### **2.1 Not used.**

- .1 Not used.

## **PART 3 EXECUTION**

### **3.1 PREPARATION**

- .1 Inspect site with Departmental Representative and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.
- .2 Locate and protect utilities. Preserve active utilities traversing site in operating condition.
- .3 Notify and obtain approval of utility companies before starting demolition.
- .4 Disconnect, cut or redirect existing utility lines on the site that hinder execution of the work in compliance with relevant authorities. Locate lines already abandoned on the site and indicate (horizontal and vertical plans) on the drawings after execution. Properly support, brace and maintain in place any lines that are encountered.
  - .1 Immediately inform the Departmental Representative and the utility company concerned of any damage caused to a utility line to be kept.
  - .2 Immediately notify the Departmental Representative of the discovery of any uninventoried utility line and await written instructions concerning measures to take in this regard.

### **3.2 PROTECTION**

- .1 Do Work in accordance with Section 01 35 29.06 – Health and safety.
- .2 Take necessary measures to prevent moving, crushing or damaging utility lines and adjacent work and building components to be preserved. Shore and brace work as needed.
- .3 As far as possible limit dust and noise produced by the work as well as inconveniences caused to the occupants of the site.
- .4 Protect appliances, building's electrical and mechanical installations and utility lines.
- .5 Provide dust screens, buckets, guard rails, supports and other necessary protective devices.

### **3.3 DEMOLITION, SALVAGE AND EVACUATION OFF SITE**

- .1 Dismantle existing building components that must be removed to enable construction of new work. Sort materials into distinct piles according to what will be recycled or reused.
- .2 Refer to demolition prescriptions and drawings to know what materials will be salvaged for reuse.

- .3 Remove components to be reused and stored according to Departmental Representative's instructions and return to original place in compliance with relevant specification sections.
- .4 Reshape edging of building's partially demolished components according to limits specified by the Departmental Representative in order to facilitate installation of new components.
- .5 Unless otherwise indicated, remove materials to appropriate recycling installations or organizations that will reuse them in accordance with requirements of relevant authorities.

### **3.4 HIDDEN OR UNKNOWN DEFECTS**

- .1 The Contractor conducts all required verifications to avoid cutting water, gas, electricity or telephone lines or other similar services. The Contractor must consult without being limited to the following.
  - .1 Existing mechanical, electrical and telephone plans as well as those of the Departmental Representative for new work.
  - .2 Information from the Department or maintenance staff who have specific knowledge of the site, and
  - .3 Suppliers or companies, the Department, if they have knowledge of the exact location of their supply lines at the work location.
  - .4 In the absence of specific information, the Contractor must use a detector to locate the lines in slabs or walls.
  - .5 If the Contractor fails to conduct all the verifications, any service that is cut will be his responsibility and he will be held responsible for the cost of repairs, damage or additional degradation caused to the building.
- .6 The Contractor cannot be held responsible for cutting or piercing a hidden line if he has carried out all the required verifications and provided all the proof to the Departmental Representative:
  - .1 Not specified in the Departmental Representative's drawings and specifications and unable to provide the relevant information.
  - .2 The Department is unable to provided details on the location of the lines.
  - .3 The companies or their technical departments cannot locate their services.
  - .4 No detection test has been conducted using an appropriate appliance and despite all these precautions remains unable to determine if one or more lines remain hidden.
- .7 In such a case, costs will be charged to the Department and will be included as an amendment to the specifications if the Departmental Representative concludes that conditions are considerably different and this would result in an increase in the cost of the work for the Departmental Representative.

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 RELATED REQUIREMENTS**

- .1 Section 07 52 00 - Modified bituminous membrane roofing
- .2 Section 07 62 00 - Sheet Metal Flashing and Trim.
- .3 Section 07 92 00 - Joint Sealants.

### **1.2 REFERENCES**

- .1 American Society for Testing and Materials International, (ASTM).
  - .1 ASTM C36/C36M03, Specification for Gypsum Wallboard.
- .2 Canadian Standards Association (CSA International).
  - .1 CSA B1111974-1974(R2003), Wire Nails, Spikes and Staples.
  - .2 CAN/CSA G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .3 FM1978(C2003), Douglas Fir Plywood.
  - .4 CSA O141F05, Softwood Lumber.
  - .5 CSA O151F04, Canadian Softwood Plywood.
- .3 Forest Stewardship Council (FSC).
  - .1 FSC-STD-01-001-2004, FSC Principle and Criteria for Forest Stewardship.
  - .2 FSC-STD-20-002- 2004, Structure and Content of Forest Stewardship Standards V2-1.
  - .3 FSC certified organizations.
- .4 National Lumber Grades Authority (NLGA).
  - .1 Standard Grading Rules for Canadian Lumber 2005.
- .5 South Coast Air Quality Management District (SCAQMD), California State.
  - .1 SCAQMD Rule 1113-04, Architectural Coatings.
  - .2 SCAQMD Rule 1168-05, Adhesives and Sealants Applications.

### **1.3 ACTION AND INFORMATIONAL SUBMITTALS**

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

### **1.4 QUALITY ASSURANCE SUBMITTALS**

- .1 Lumber by grade stamp of 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, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

- .3 Storage and Handling Requirements
  - .1 Store materials in clean dry location in accordance with manufacturer's recommendations.
  - .2 Store and protect wood from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, packaging materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

## **PART 2 PRODUCTS**

### **2.1 FRAMING STRUCTURAL AND PANEL MATERIALS**

- .1 Lumber: softwood, S4S, moisture content 18% (S-dry) or less in accordance with following standards:
  - .1 CSA O141.
  - .2 NLGA Standard Grading Rules for Canadian Lumber.
  - .3 Forest Stewardship Council (FSC) certified.
- .2 Framing and board lumber: in accordance with NBC, except as follows:
  - .1 Spruce, construction No. 1 grade.
  - .2 Forest Stewardship Council (FSC) certified.
- .3 Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers:
  - .1 S2S is acceptable for secondary elements:
  - .2 Board sizes: "Standard" or better grade.
  - .3 "Standard" light framing or better grade.
  - .4 Post and timbers sizes: "Standard" or better grade.
  - .5 Forest Stewardship Council (FSC) certified.
- .4 Metal framing.
  - .1 Non-load bearing channel stud framing: to ASTM C645, indicated stud size, roll formed from 0.91 mm thickness hot dipped galvanized steel sheet (20 gauge), for screw attachment of support panels and knockout service holes at 460 mm.
    - .1 Floor and ceiling tracks: to ASTM C645, in widths to suit stud sizes, 32 mm flange height and 50 mm high.
    - .2 Metal channel stiffener: 38 mm x 12 mm cold rolled galvanized steel 1.9 mm thick, hot-dipped.
  - .2 Z and J metal furring channels: indicated size, to ASTM C645, cold-rolled, hot dipped galvanized steel sheet, 0.91 mm thick (20 gauge).
  - .3 Steel components: to CSA S136, Type 304 steel, to ASTM A653M.
  - .4 Reinforcing straps: steel sheet 300 mm x 1.5 mm (16 gauge).
  - .5 Screws: type S and S-12, self-tapping and self-drilling for metal sheet, suitable length, anti-corrosion zinc coating 0.008 mm thickness.

- .6 Anchors: concrete expansion shields or other suitable penetrating fasteners.
- .7 Bolts, nuts, washers: hot dipped galvanized to CAN/CSA-G164 with 380 g/m<sup>2</sup> zinc coating.
- .8 Insulating strip: rubberized, moisture resistant 3 mm thick cork foam strip, 12 mm wide, with self sticking adhesive on one face, lengths as required.

## **2.2 PANELS**

- .1 Douglas fir plywood (DFP): to CSA O121, standard construction. Standard grade, exterior, G1S.
  - .1 Forest Stewardship Council (FSC) certified.
- .2 Canadian softwood plywood (CSP): to CSA O151, standard construction, G1S.
  - .1 Forest Stewardship Council (FSC) certified.

## **2.3 ACCESSORIES**

- .1 Sealant: in accordance with Section 07 92 00 - Joint Sealants and regulation no. 1168 of SCAQMD Adhesives and Sealants Applications.
  - .1 Maximum VOC limit [250] g/L.
- .2 Nails, spikes and staples: to CSA B111.
- .3 Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and washers.
- .4 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.

## **2.4 FASTENER FINISHES**

- .1 Galvanizing: to ASTM CSAG164, use galvanized fasteners for exterior work and interior highly humid areas and treated lumber or fire-retardant.

## **2.5 WOOD PRESERVATIVE**

- .1 SCAQMD Rule 1113, Architectural Coatings.
- .2 Maximum VOC limit 350 g/L.

# **PART 3 EXECUTION**

## **3.1 PREPARATION**

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

## **3.2 INSTALLATION**

- .1 Install members true to line, levels and elevations, square and plumb.



- .2 Construct continuous members from pieces of longest practical length.
- .3 Install spanning members with "crown-edge" up.
- .4 Install roof sheathing in accordance with requirements of NBC.
- .5 Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding electrical equipment mounting boards, and other work as required.
- .6 Install wood cants, fascia backing, nailers, curbs and other wood supports as required and secure using galvanized steel fasteners.

### **3.3 ASSEMBLY**

- .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.

### **3.4 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
- .2 Leave Work area clean at end of each day.
- .3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .4 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .5 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

### **3.5 PROTECTION**

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

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 RELATED REQUIREMENTS**

- .1 Section 02 41 17 – Selective site demolition.
- .2 Section 06 10 00 – Rough carpentry.
- .3 Section 07 62 00 - Sheet Metal Flashing and Trim.
- .4 Section 07 92 00 - Joint Sealants.

### **1.2 REFERENCE STANDARDS**

- .1 ASTM International Inc.
  - .1 ASTM C726-05, Standard Specification for Mineral Fiber Roof Insulation Board.
  - .2 ASTM C728-05, Standard Specification for Perlite Thermal Insulation Board.
  - .3 ASTM C1177/C1177M-06-08, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
  - .4 ASTM C1396/C1396M-11, Standard Specification for Gypsum Board.
  - .5 ASTM D41-05, Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
  - .6 ASTM D312-00(2006), Standard Specification for Asphalt Used in Roofing.
  - .7 ASTM D448-03a, Standard Classification for Sizes of Aggregate for Road and Bridge Construction.
  - .8 ASTM D2178-04, Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.
  - .9 ASTM D6162-00a, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fibre Reinforcements.
  - .10 ASTM D6163-00e1, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fibre Reinforcements.
  - .11 ASTM D6164-05, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.
  - .12 ASTM D6222-02e1, Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using Polyester Reinforcement.
  - .13 ASTM D6223-02e1, Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcement.
  - .14 ASTM D6509-00, Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcement.
- .2 Canadian General Standards Board (CGSB).
  - .1 CGSB 37-GP-9Ma-83, Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and Waterproofing.
  - .2 CGSB 37-GP-56M-80b(A1985), Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing.

- .3 CAN/CGSB-51.33-33-M89, Vapour Barrier Sheet, Excluding Polyethylene, for Use in Building Construction.
- .3 Canadian Roofing Contractors Association (CRCA).
  - .1 Roofing Specifications Manual, 1997. CRCA.
- .4 Canadian Standards Association (CSA International).
  - .1 CSA A123.21-F04, Standard test method for the dynamic wind uplift resistance of membrane-roofing systems.
  - .2 CSA A123-05, Asphalt Saturated Organic Roofing Felt.
  - .3 CSA A123.4-F04, Asphalt for Constructing Built-Up Roof Coverings and Waterproofing Systems.
  - .4 CSA A231.1-06, Precast Concrete Paving Slabs.
  - .5 CSA O121-F08(O121-F08), Douglas Fir Plywood.
  - .6 .5 CSA O151-F04, Canadian Softwood Plywood.
- .5 Factory Mutual (FM Global).
  - .1 FM Approvals - Roofing Products.
- .6 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .7 Underwriters Laboratories of Canada (ULC).
  - .1 CAN/ULC-S701-05-01, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.
  - .2 CAN/ULC-S702-2, Standard for Thermal Insulation, Mineral Fibre, for Buildings.
  - .3 CAN/ULC-S704-03-01, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.
  - .4 CAN/ULC-S706-02, Standard for Wood Fibre Insulating Boards for Buildings.

### **1.3 ADMINISTRATIVE**

- .1 Convene meeting one (1) week prior to beginning of work Departmental Representative, in accordance with Section 01 32 16.07 - Construction Progress Schedule – Bar (GANTT) charts to:
  - .1 Verify project requirements.
  - .2 Work and roofing support.
  - .3 Co-ordinate with other building subtrades.
  - .4 Review manufacturer's installation instructions and warranty requirements.

### **1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit two (2) of the most recent copies of product data sheets and include product characteristics, performance criteria, physical size, finish and limitations.

- .2 Submit two (2) copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements 01 35 43 - Environmental Procedures. Submit material safety data sheets including VOC content for the following products:
  - .1 Primaries.
  - .2 Asphalt.
  - .3 Sealants.
  - .4 Filter fabric.
- .3 Submit required shop drawings.
  - .1 Indicate flashing and control joints.
  - .2 Indicate placement of insulation.
- .4 Sample: submit two (2) 2.2 kilogram containers of roofing granules and 304.8 mm long insulation.
- .5 Manufacturer's certificate: Submit certificate showing compliance with specified requirements.
- .6 Test and Evaluation Reports: Submit test reports from approved independent testing laboratories, certifying compliance with specifications.
- .7 Manufacturer's application instructions: Indicate precautions for bonding membrane.
- .8 Manufacturer's Field Reports: to Section 01 45 00 - Quality Control.
- .9 Submit reports indicating methods, ambient temperature and wind velocity during application.
- .10 Submit document showing wind resistance for roofing system has been tested to FM 4470.

### **1.5 QUALITY ASSURANCE SUBMITTALS**

- .1 Installer qualifications: company with minimum five (5) years experience in installation of bitumen modified membrane and approved by epoxy flooring manufacturer, with documented experience.
- .2 Contractor and subcontractors must be a member in good standing of the Association des Maîtres couvreurs du Québec (AMCQ) and submit written confirmation to Architect prior to beginning roofing work.
- .3 Ensure Work is of highest standard for this type of work. Journeymen: qualified journeymen and work executed in compliance with plans and specifications, and manufacturer's specifications and recommendations.

### **1.6 FIRE SYSTEMS**

- .1 Portable extinguishers:
  - .1 Portable extinguishers: keep on roof per torch, one auxiliary extinguisher and one permanent pressure extinguisher, rechargeable, equipped with adjustable hose.
  - .2 ULC labelled for A, B and C class protection.
  - .3 Size 14 kg or as indicated on roof per torch applicator, within 6 m of torch applicator.
- .2 Maintain fire watch for two (2) hours after each day's roofing operations cease.

### **1.7 DELIVERY, STORAGE AND HANDLING**

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

- .1 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of bitumen, backup material, primer, sealant and caulking.
- .2 Provide and maintain dry, off-ground weatherproof storage.
- .3 Store rolls of felt and membrane in upright position. Store membrane rolls with salvage edge up.
- .4 Remove only in quantities required for same day use.
- .5 Place plywood runways over completed Work to enable movement of material and other traffic.
- .6 Store sealants at +5 degrees C minimum.
- .7 Store insulation protected from daylight and weather and deleterious materials.
- .3 Waste management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .1 Collect and separate for disposal paper, plastic, corrugated cardboard and packaging material in accordance with Waste Management Plan (WMP).
  - .2 Fold up metal and plastic banding, flatten and place in designated area for recycling.

## **1.8 ENVIRONMENTAL REQUIREMENTS**

- .1 Ambient Conditions:
  - .1 Do not install waterproofing when temperature remains below -18 degrees C for torch application, or -5 degrees C for mop application.
  - .2 Minimum temperature for solvent-based adhesive is -5 degrees C.
- .2 Install waterproofing on dry deck, free of snow and ice. Use only dry materials and apply only during weather that will not introduce moisture into waterproofing system.

## **1.9 TEMPORARY SEAL**

- .1 Ensure roof remains sealed at each work interruption under all conditions (snow, rain, strike, end of workday, etc.).
- .2 Protect temporary roofing materials in place and interior spaces to prevent water infiltration.

## **1.10 WARRANTY**

- .1 For Work of this Section 07 52 00 – Modified Bituminous Membrane Roofing, the 12-month warranty period is extended to 120 months. All Work under this Section is covered by a 10-year warranty provided by the General Contractor and the manufacturer of the materials.
- .2 The warranty includes installation of the Work by the General Contractor and the roofing contractor. The warranty includes materials provided by the General Contractor, the roofing contractor and the manufacturer. The warranty covers without being limited to all components penetrating the roofs (drains, vents and facilities for the installation of electrical and mechanical equipment, etc.) as well as penetrations without boxes.

## **1.11 INSPECTION**

- .1 Ensure surveillance throughout work described in this section, including installation of flashing and counter flashing by Architect and laboratory technician (permanent supervisor) mandated by Architect.

- .2 Provide advance notice to supervisor to ensure presence when roofers being work. Do not install membrane in the supervisor's absence (supervising laboratory).
- .3 Laboratory supervisor has the authority to stop and suspend work under repairs have been carried out as indicated.
- .4 Ensure inspection of sealing work by manufacturer and Architect.
- .5 To comply with 10-year warranty, roofing contractor must notify manufacturer's representative prior to starting work. Daily supervision by manufacturer's representative is required and document visits.

## **PART 2 PRODUCTS**

### **2.1 DESIGN CRITERIA**

- .1 Compatibility between components of roofing system is essential. Provide written declaration to Departmental Representative stating that materials and components, as assembled in system, meet this requirement.
- .2 Roofing System: to CSA A123.21 for wind uplift resistance.

### **2.2 SUPPORT PANELS**

- .1 Lightweight concrete panel: To ASTM D1037, ASTM E84 and ULC S-102, 13 mm thick.
- .2 Plywood.
  - .1 To CSA O121, CSA O151, thickness as indicated on plans.
  - .2 To Section 06 10 00 - Rough Carpentry.
- .3 Asphalt panel with 5 mm integrated underlay: bitumen modified SBS membrane, non-woven polyester reinforcing, factory laminated to asphalt impregnated panel. Thermofused plastic film covered surface. 5 mm thick.

### **2.3 PRIMER**

- .1 Primer for thermofused membrane:
  - .1 Primer made of bitumen, volatile solvents and high bond adhesive resins. Used as primer to improve adherence of thermofused sealing membranes.
- .2 Primer for self-adhering membrane:
  - .1 Primer made of synthetic SBS rubber, volatile solvents and high bond adhesive resins. Used as primer to improve adherence of self-adhering sealing membranes.

### **2.4 VAPOUR BARRIER**

- .1 Non-woven polyester reinforcing and SBS modified bitumen.
  - .1 Components:
    - .1 Reinforcing: Non-woven polyester.
    - .2 Elastomeric bitumen: Selected bitumen and SBS polymer mix.
  - .2 Characteristics:
    - .1 Thickness: 3.5 mm.
    - .2 Upper face: Sand.

- .3 Underface: thermally fused thermoplastic film.
- .4 Strain energy (kN/m): Longitud. = 9.0 – Transv. < 7.0
- .5 Tensile strength: Longitud. = 17.0 – Transv. < 12.5
- .6 Ultimate elongation (%): Longitud. = 60.0 – Transv. < 65.0
- .7 Cold bending (°C): -30.
- .8 Softening point: ≥ 110 °C
- .9 Static puncture resistance (N): ≥ 400.
- .10 Water vapour permeance (ng/Pa·s·m<sup>2</sup>): 0.21.
- .3 Prefabricated membrane, to CAN/CGSB-37.56-M, 9th edition.

## 2.5 MEMBRANE

- .1 Base sheet and parapet membrane: Bitumin modified SBS membrane, non-woven polyester reinforcing. Thermofused plastic film, both sides. Surface marked with three lines to facilitate alignment of rolls.

- .1 To: ONGC 37.56-M (9th edition).

.2 Minimum requirements:	Longitudinal	Transversal
.1 Strain energy (kN/m):	9.0	7.0
.2 Tensile strength (kN/m)	17.0	12.5
.3 Elongation at break (%)	60	65
.4 Tear resistance (N)	60	
.5 Static puncture resistance (N): 400		
.6 Dimensional stability	-0.3	0.3
.7 Creep resistance (°C)	≥ 105	
.8 Cold bending -30 °C	No cracking	
.9 Joint strength (kN/m) Initial	23.5	
	5 days at 50 °C	24.0
	90 days at 70 °C	24.0

- .2 Cap sheet: Bitumen modified SBS membrane, non-woven polyester reinforcing. Surface protected by coloured granules, underface covered with thermofusible plastic film. Grey granules.

- .1 To: ONGC 37.56-M (9th edition).

.2 Minimum requirements:	Longitudinal	Transversal
.1 Strain energy (kN/m):	10	10
.2 Tensile strength (kN/m)	17	16
.3 Elongation at break (%)	60	65
.4 Tear resistance (N)	75	
.5 Static puncture resistance (N): 420		
.6 Dimensional stability	-0.8	-0.2

- |    |                           |               |
|----|---------------------------|---------------|
| .7 | Creep resistance (°C)     | ≥ 110         |
| .8 | Cold bending at -30 °C    | No cracking   |
| .9 | Lap joint strength (kN/m) | Pass > 4 kN/m |

## **2.6 ADHESIVE**

- .1 Two-component low expansion urethane adhesive, quick cure, no temperature limit.

## **2.7 ASPHALT**

- .1 Asphalt: to CAN/CSA A123.4, ASTM D312, Type 2.

## **2.8 POLYISOCYANURATE INSULATION**

- .1 Rigid, polyisocyanurate, closed cell board, CAN/ULC-S704, Type 2, Class 2, thickness as specified on plans. Bonded in foaming process to universal fibre glass.
  - .1 Dimensions: 1,220 mm x 1,220 mm.
  - .2 Variation in dimensional stability (ASTM D 2126): >2%.
  - .3 Water vapour permeance: <57.5 ng/Pa•s•m<sup>2</sup>. ASTM E 96 (< 1 perm).
  - .4 Temperature range: -73°C to 93°C (-100°F to 200°F).
  - .5 Tensile Strength: 35 kPa (730 lb/in<sup>2</sup>) ASTM D 1623.
  - .6 Thickness: as indicated.
- .1 RSI: 1 / 25.4 mm.

## **2.9 SEALANTS**

- .1 Sealants: Multi-purpose solvent-based mastic, containing SBS modified bitumen fibres.
- .2 Sealant: Single-compound polyester reinforced bitumen/polyurethane resin. Refer to Section 07 92 00 - Joint Sealants.

## **2.10 RUNWAYS**

- .1 Bitumen modified SBS membrane, non-woven polyester reinforcing, to protect runway membrane from traffic. Surface protected by red granules, underface covered with thermofusible plastic film.
- .2 To: ONGC 37.56-M (9th edition).

## **2.11 MILLWORK**

- .1 In accordance with Section 06 10 00 - Rough Carpentry.

## **2.12 REINFORCING BAR**

- .1 Extruded aluminum 2.5 mm reinforcing bar with 305 mm c/c.
  - .1 Located at base of parapets.

## **2.13 ROOF DRAINS AND OTHER ACCESSORIES**

- .1 Roof drain:
  - .1 Screen with hinge and self-locking screw.
  - .2 Drain (1.47 mm copper pipe) and base (0.7 mm copper saucer)



- .3 Copper sediment trap.
- .4 Stainless steel anchor hardware.
- .5 Aluminum 1.6 mm lock ring and collar.
- .6 Drain diameter: 75mm.
- .7 Reference product: RD-28C model by Thaler or acceptable substitute.
- .2 Insulated jack stack:
  - .1 Metal pipe with integrated mounting plate, mechanically attached removable cap.
  - .2 Urethane insulation.
  - .3 EPDM base joint.
  - .4 Height: 305 mm.
  - .5 Reference product: SJ-26 model by Thaler or acceptable substitute.
- .3 Insulated roof support (lifeline):
  - .1 Metal pipe with integrated mounting plate, cap and eye.
  - .2 Urethane insulation.
  - .3 EPDM base joint.
  - .4 HSS height: 356 mm, diameter: 113 mm. Thickness: 6 mm.
  - .5 Ring: 50 mm interior diameter.
  - .6 Attachment bolt: 12 x 305 x 305 mm.
  - .7 Tensile force: 0° (44.5) and 90° (11.2).
  - .8 Reference product: ARS-302 model by Thaler or acceptable substitute.
- .4 Preformed polyester blocks adaptable to different configurations:
  - .1 Sealant and water reactive elastomeric sealant, single compound polyether resin, to bond blocks to each other and substrate.
  - .2 Water reactive elastomeric sealing mastic, single compound polyether resin.

## **PART 3 EXECUTION**

### **3.1 QUALITY OF WORK**

- .1 Do examination, preparation and roofing Work in accordance with Roofing Manufacturer's Specification Manual, CRCA Roofing Specification Manual, particularly for fire safety precautions, and to FM and ULC specifications.
- .2 Assembly, component and material connections will be made in consideration of appropriate design loads, with reversible mechanical attachments.
- .3 Apply primer in accordance with manufacturer's recommendations.

### **3.2 ROOFING SUPPORT INSPECTION**

- .1 Examination of existing conditions:

- .1 Inspect with Departmental Representative conditions of all deck types including parapets, construction joints, roof drains, plumbing vents and ventilation outlets to determine readiness to proceed.
- .2 Examination
  - .1 Prior to starting Work, ensure:
    - .1 Substrate is solid, level, dry, free of snow, ice and frost, sweep dust and debris; do not use calcium or salt to remove ice and snow;
    - .2 Walls and appliance frames are in place;
    - .3 Roof drains have been installed at proper elevations relative to finished roof surface.
    - .4 Plywood and lumber nailer plates have been installed to deck, walls and parapets as indicated.
- .3 Do not install materials when it is raining or snowing.

### **3.3 PROTECTION OF IN-PLACE CONDITIONS**

- .1 Cover walls, walks, slopped roofs and adjacent work where materials hoisted or used.
- .2 Use warning signs and barriers. Maintain in good order until completion of Work.
- .3 Clean off drips and smears of bituminous material immediately.
- .4 Dispose of rain water off roof and away from face of building until roof drains or hoppers installed and connected.
- .5 Protect roof from traffic and damage. Comply with precautions deemed necessary by Departmental Representative.
- .6 At end of each day's work or when stoppage occurs due to inclement weather, provide protection for completed Work and materials out of storage.
- .7 Metal connectors and decking will be treated with rust proofing or galvanization.

### **3.4 CONTINUITY OF WORK**

- .1 Install roofing continuously as surfaces are ready and weather is appropriate.
- .2 Complete one roof section the same day. Install temporary protection if weather prevents same day installation; ensure there is no water or snow infiltration and damage, particularly to insulation.

### **3.5 SEALING SYSTEM INSTALLATION ON EXISTING SLAB (ADHESIVE ASSEMBLY)**

- .1 Vapour barrier installation:
  - .1 Mechanically remove existing liquid membrane to ensure uniform surface.
  - .2 Inspect surfaces prior to application of components in accordance with section 3.2.
- .2 Vapour barrier installation:
  - .1 Apply synthetic SBS rubber primer: (Porous surfaces: 0.3 to 0.5 litre/m<sup>2</sup>, smooth supports: 0.1 to 0.25 litre/m<sup>2</sup>). Cover prepared surfaces with membrane the same day. Otherwise, prime surfaces again.
  - .2 Prior to installation of welded membranes apply thermofusible membrane primer at a rate of 0.15 to 0.20 litre/m<sup>2</sup>.

- .3 Cover all interior and exterior angles with 150 mm wide membrane strip centred on corner. Apply directly to substrate, removing space between substrate and membrane.
- .4 Weld membrane using propane gas torch.
- .5 Lap each strip by 50 mm laterally and transversally.
- .6 Trowel, level and seal joints and edges.
- .7 Patch damaged surfaces and holes using appropriate membrane. Weld patch to extend damaged area by minimum 100 mm.
- .8 Carefully examine membrane at the end of each day and prior to installation of insulation.
- .9 Install insulation as soon as possible after Departmental Representative's inspection.
- .10 Burn off plastic film prior to installation of sprayed polyurethane insulation or bonding insulation to membrane.
- .3 Full bond insulation adhesive installation:
  - .1 Glue insulation to vapour barrier, with low expansion urethane based dual compound, adhesive. Follow manufacturer's recommendations.
  - .2 Stagger panels in parallel rows; panels must be jointed and tight.
  - .3 Cut panels to required length at the end of the row.
  - .4 Apply adhesive in continuous strips at 300 mm centre.
- .4 Full bond lightweight concrete panel, adhesive installation:
  - .1 Adhesive bond:
    - .1 Glue concrete panels with specified adhesive applied in beads spaced on upper face, perimeters and corners. Install perimeters and corners in accordance with FM requirements as indicated in PDPDS 1-29.
- .5 Base coat installation:
  - .1 Ensure primer is dry prior to installation of base coat.
  - .2 At transverse laps, cut corner of area to be covered with following roll.
  - .3 Lap each strip laterally by 50 mm, following the marking.
  - .4 Torch weld base coat directly to substrate from bottom to top.
  - .5 Application to be free of blisters, wrinkles and fishmouths.
- .6 Cap sheet installation:
  - .1 Starting at low point on roof, perpendicular to slope, unroll cap sheet, align and reroll from both ends.
  - .2 Unroll and torch cap sheet onto base sheet taking care not to burn membrane or its reinforcement.
  - .3 Lap sheets 75 mm minimum for side laps and 150 mm minimum for end laps. Offset joints in cap sheet 300 mm minimum from those in base sheet.
  - .4 Application to be free of blisters, fishmouths and wrinkles.
  - .5 Remove excess bitumen at joints. Apply granules as needed.
  - .6 Apply membrane as recommended by manufacturer.

.7 Flashings:

- .1 Complete installation of flashing base sheet stripping prior to installing membrane cap sheet.
- .2 Torch weld sheet onto substrate in 1 metre wide strips.
- .3 Lap flashing base sheet to membrane base sheet minimum 150 mm and seal by torch welding.
- .4 Lap flashing cap sheet to membrane cap sheet 250 mm minimum and torch weld.
- .5 Provide 75 mm minimum side lap and seal.
- .6 Properly secure flashings to their support, without sags, blisters, fishmouths or wrinkles.
- .7 Do work in accordance with Section 07 62 00 - Sheet Metal Flashing and Trim.

.8 Roof penetrations:

- .1 Install roof drain pans, vent stack covers and other roof penetration flashings and seal to membrane in accordance with manufacturer's recommendations and details.
- .2 Unroll and torch base sheet onto substrate taking care not to burn membrane or its reinforcement or substrate.
- .3 Lap sheets 75 mm minimum for side and 150 mm minimum for end laps.
- .4 Application to be free of blisters, wrinkles and fishmouths.

### **3.6 WALKWAYS**

- .1 Install additional walkway membrane in accordance with manufacturer's instructions as indicated.
  - .1 Apply primer to cap sheet membrane and torch apply. Ensure selvage edge is removed.

### **3.7 FIELD QUALITY CONTROL**

- .1 EXAMINATION
  - .1 Inspection and testing of roofing application will be carried out by testing laboratory designated by Departmental Representative.
  - .2 Departmental Representative will pay for tests as specified in Section 01 45 00 - Quality Control.
  - .3 Inspection and testing of roofing application will be carried out by testing laboratory designated by Departmental Representative.

### **3.8 CLEAN-UP**

- .1 Remove bituminous markings from finished surfaces.
- .2 In areas where finished surfaces are soiled caused by work of this section, consult manufacturer of surfaces for cleaning advice and complying with their documented instructions.
- .3 Repair or replace defaced or disfigured finishes caused by work of this section.
- .4 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .1 Place materials defined as hazardous or toxic waste in designated containers.
  - .2 Clearly label location of salvaged material's storage areas and provide barriers and security devices.

- .3 Ensure emptied containers are sealed and stored safely.
- .4 Divert unused granule materials to a certified hazardous materials site approved by the Project Manager's representative.
- .5 Divert unused paints and sealants to a certified hazardous materials site approved by the Departmental Representative.
- .6 Do not dispose of unused sealing products into waterways, storm or sanitary sewers, lake or other area representing a health and environmental risk.
- .7 Divert unused adhesives to a certified hazardous materials site approved by the Project Manager's representative.
- .8 Divert unused sealants to a certified hazardous materials site approved by the Project Manager's representative.
- .9 Divert unused bitumen products to a certified hazardous materials site approved by the Project Manager's representative.

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 RELATED REQUIREMENTS**

- .1 Section 07 52 00 – Modified Bituminous Membrane Roofing.
- .2 Section 07 92 00 - Joint Sealants.

### **1.2 REFERENCE STANDARDS**

- .1 The Aluminum Association Inc. (AAI)
  - .1 AAI-Aluminum Sheet Metal Work in Building Construction-2002.
  - .2 AAI DAF45-03-03, Designation System for Aluminum Finishes.
- .2 American Society for Testing and Materials International (ASTM).
  - .1 ASTM A167-99-99(2004), Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
  - .2 ASTM A240/A240M-07e1, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
  - .3 ASTM A606-04-04, Standard Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance.
  - .4 ASTM A653/A653M-07-10, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - .5 ASTM A792/A792M-06a, Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
  - .6 ASTM B32-04-08, Standard Specification for Solder Metal.
  - .7 ASTM B370-03-11, Standard Specification for Copper Sheet and Strip for Building Construction.
  - .8 ASTM D523-89-1999, Standard Test Method for Specular Gloss.
  - .9 ASTM D822-01-01(2006), Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.
- .3 Canadian Roofing Contractors Association (CRCA).
  - .1 Roofing Specifications Manual 1997].
- .4 Canadian General Standards Board (CGSB).
  - .1 CAN/CGSB-51.32- 32-M77, Sheathing, Membrane, Breather Type.
  - .2 CAN/CGSB-93.1 1-M85, Sheet Aluminum Alloy, Prefinished, Residential.
- .5 Canadian Standards Association (CSA International).
  - .1 CSA A123.3-05, Asphalt Saturated Organic Roofing Felt.
  - .2 AAMA/WDMA/CSA 101/I.S.2/A440-2008-2008, Standard/Specification for Windows, Doors, and Unit Skylights.
  - .3 CSA B1111974-74(R2003), Wire Nails, Spikes and Staples.

### **1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:

- .1 Provide shop drawings: in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Samples:
  - .1 Submit duplicate 50 x 50 mm samples of each type of sheet metal material, finishes and colours.
- .4 Quality assurance submittals: submit following in accordance with Section 01 45 00 - Quality Control.

#### **1.4 QUALITY ASSURANCE SUBMITTALS**

- .1 Pre-Installation Meetings: convene pre-installation meeting one (1) week prior to beginning of work under this section, with Architect in accordance with Project Schedule to examine the following:
  - .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.

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

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Waste Management and Disposal.
  - .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
  - .2 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard and packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan (WMP).
  - .3 Place materials defined as hazardous or toxic waste in designated containers.
  - .4 Ensure emptied containers are sealed and stored safely for disposal away from children.
  - .5 Divert unused metal elements to a metal recycling facility approved by the Departmental Representative.
  - .6 Divert unused paints and sealants to a certified hazardous materials site approved by the Departmental Representative.
  - .7 Do not dispose of unused paints sealants into waterways, storm or sanitary sewers, lakes or other area representing a health and environmental risk.
  - .8 Fold up metal and plastic banding, flatten and place in designated area for recycling.

#### **1.6 WARRANTY**

- .1 Provide written warranty, signed and countersigned by Contractor and subcontractors, certifying work and materials in this section are guaranteed, free of defects, for a period of five (5) years from the date of final acceptance of the Work.
- .2 Warranty must provide for continuous inspection of Work from beginning to end.

### **PART 2 PRODUCTS**

#### **2.1 SHEET METAL**

- .1 Zinc coated steel sheet: 0.85mm thickness, commercial quality to ASTM A653/A653M, with Z275 designation zinc coating.

- .2 Stainless steel sheet: 1.2 mm thick to ASTM A167, as existing.
- .3 Colours: as adjacent cladding and approved by Departmental Representative.

## **2.2 COMPONENTS**

- .1 Isolation coating: alkali resistant bituminous paint.
- .2 Plastic cement: to CAN/CGSB 37.5.
- .3 Undercoat for metallic flashings: asphalt laminated 3.6 to 4.5 kg. kraft paper.
- .4 Sealants: in accordance with Section 07 92 00 - Joint Sealants.
- .5 Plastic cement: to CAN/37-GP-5M.5.
- .6 Cleats: of same material, and temper as sheet metal, minimum 50 mm wide. Thickness same as sheet metal being secured.
- .7 Flux: rosin, cut hydrochloric acid, or commercial preparation suitable for materials to be soldered.
- .8 Cleats: of same material, and temper as sheet metal, minimum 50]mm wide. Thickness[same as sheet metal being secured.
- .9 Fasteners: of same material as sheet metal, to CSA B111, ring thread flat head roofing nails of length and thickness suitable for metal flashing application.
- .10 Washers: of same material as sheet metal, 1 mm thick with rubber packings.
- .11 PVC spacers (Duro 70).

## **2.3 FABRICATION**

- .1 Fabricate metal flashings and other sheet metal work in accordance with applicable CRCA 'FL' series details and as indicated.
- .2 Fabricate aluminum flashings and other sheet aluminum work in accordance with AAI-Aluminum Sheet Metal Work in Building Construction.
- .3 Form pieces in 2,400 mm maximum lengths.
  - .1 Make allowance for expansion at joints.
- .4 Hem exposed edges on underside 12 mm.
  - .1 Mitre and seal corners with sealant.
- .5 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.
- .6 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.

## **2.4 REGLETS AND CAP FLASHINGS**

- .1 Form metal cap flashing for base flashings with 1 mm thick metal sheet in accordance with details and drawings.
  - .1 Provide slotted fixing holes and steel/plastic washer fasteners.
  - .2 Cover face and ends with plastic tape.

## **2.5 STAINLESS STEEL FLASHING PRIMER**

- .2 Primer made of synthetic SBS rubber, volatile solvents and high bond adhesive resins.



## **PART 3 EXECUTION**

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

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

### **3.2 INSTALLATION**

- .1 Install sheet metal work in accordance with CRCA FL series details and Aluminium Sheet Metal Work in Building Construction (1971) and as indicated on drawings.
- .2 Used concealed fasteners; otherwise have fasteners approved prior to installation.
- .3 Provide underlay under sheet metal.
  - .1 Secure in place and lap joints 100 mm.
- .4 Counterflash bituminous flashings at intersections of roof with vertical surfaces and curbs.
- .5 Lock end joints and caulk with sealant.
- .6 Install pans, where shown around items projecting through roof membrane.

### **3.3 FIELD QUALITY CONTROL**

- .1 Manufacturer's Field Services:
  - .1 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.

### **3.4 CLEAN-UP**

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.
- .3 Leave work areas clean, free from grease, finger marks and stains.

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 RELATED REQUIREMENTS**

- .1 Section 06 10 00 – Rough carpentry.
- .2 Section 07 52 00 - Modified Bituminous Membrane Roofing.
- .3 Section 07 62 00 - Sheet Metal Flashing and Trim.

### **1.2 REFERENCE STANDARDS**

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM C919-02, Standard Practice for Use of Sealants in Acoustical Applications.
- .2 Canadian General Standards Board (CGSB).
  - .1 CGSB 19-GP-5M-1984, Sealing Compound, One Component, Acrylic Base, Solvent Curing (Issue of 1976 reaffirmed, incorporating Amendment No. 1).
  - .2 CAN/CGSB-19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.
  - .3 CGSB 19-GP-14M-1984, Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing (Reaffirmation of April 1976).
  - .4 CAN/CGSB-19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.
  - .5 CAN/CGSB-19.24-M90, Multi-component, Chemical Curing Sealing Compound.
- .3 Department of Justice Canada (Jus).
  - .1 Canadian Environmental Protection Act (CEPA), 1999.
- .4 General Services Administration (GSA) - Federal Specifications (FS).
  - .1 FS-SS-S-200-E(2)1993, Sealants, Joint, Two-Component, Jet-Blast-Resistant, Cold Applied, for Portland Cement Concrete Pavement.
- .5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .6 Transport Canada (TC).
  - .1 Transportation of Dangerous Goods Act, 1992.

### **1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Manufacturer's product to describe:
  - .1 Caulking compound.
  - .2 Primers.
  - .3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.
- .3 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Submit 2 samples of each type of material and colour.

- .5 Cured samples of exposed sealants for each colour where required to match adjacent material.
- .6 Submit in accordance with Section 01 33 00 -Submittal Procedures.
  - .1 Submit instructions to include installation instructions for each product used.

#### **1.4 QUALITY ASSURANCE SUBMITTALS/MOCK-UPS**

- .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
- .2 Include location, size, shape and depth of joints, including backup material, primer, sealant and caulking.
- .3 Mock-up will be used:
  - .1 To judge workmanship, substrate preparation, operation of equipment and material application.
- .4 Construct mock-ups at indicated areas.
- .5 Allow 24 hours for inspection of mock-up by Departmental Representative before proceeding with sealant work.
- .6 When accepted, mock-up will demonstrate minimum standard for Work. Approved mock-up may remain as part of finished Work.

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

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver and store in original condition with manufacturer's seal and labels intact. Protect materials against water, damp and frost; do not store directly on ground or floor.

#### **1.6 WASTE MANAGEMENT AND DISPOSAL:**

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard and packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
- .4 Place materials defined as hazardous or toxic waste in designated containers.
- .5 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal, regulations.
- .6 Do not dispose of unused sealing products into waterways, storm or sanitary sewers, lake or other area representing a health and environmental risk.
- .7 Divert unused sealants to a certified hazardous materials site approved by the Project Manager's representative.
- .8 Do not recycle empty plastic sealant containers. Separate from plastics to be recycled.
- .9 Fold up metal and plastic banding, flatten and place in designated area for recycling.

#### **1.7 SITE CONDITIONS**

- .1 ENVIRONMENTAL REQUIREMENTS
  - .1 Proceed with installation of joint sealants only when:

- .1 Ambient and substrate temperature conditions are within limits permitted by joint sealant manufacturer or are above 4.4 degrees C.
  - .2 Surfaces are damp.
- .2 Joint-Width Conditions:
  - .1 Proceed with installation of joint sealants only where joint widths are more than those allowed by joint sealant manufacturer for applications indicated.
- .3 Joint-Substrate Conditions:
  - .1 Proceed with installation of joint sealants only after contaminants capable of interfering with adhesion are removed from joint substrates.

## **1.8 ENVIRONMENTAL REQUIREMENTS**

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Health Canada.
- .2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.
- .3 Ventilate area of work as directed by Departmental Representative by use of approved portable supply and exhaust fans.

## **PART 2 PRODUCTS**

### **2.1 SEALANTS:**

- .1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.
- .2 When low toxicity caulks are not possible, confine usage to areas which off gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off gas time.
- .3 Where sealants are qualified with primers use only these primers.

### **2.2 COLOUR**

- .1 Match joint colour to siding.

### **2.3 PRODUCTS**

- .1 Hybrid polyurethane sealing mastic, low modulus, fast cure, silane end-capped.
  - .1 Non-sagging to ASTM C639.
  - .2 Indentation hardness, ASTM C661, value: 25.
  - .3 Anticipated movement: 35%.
  - .4 Colour: to match adjacent cladding.
  - .5 Location: Around exterior wall openings (stone, coping joints and coping-to-facade joints) and finish.
- .2 Elastomeric one-compound sealing compound, silicone base.

- .1 To ASTM C920.
- .2 Colour: black.
- .3 Location: Glazing seal.
- .3 Preformed compressible and non-compressible back-up materials:
  - .1 Polyethylene, urethane, neoprene or vinyl foam:
    - .1 Extruded cell foam backer rod.
    - .2 Size: oversize 30 to 50%.
  - .2 Neoprene or butyl rubber:
    - .1 Round solid rod, Shore A hardness 70.
  - .3 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<sup>3</sup> density, or neoprene foam backer, size as recommended by manufacturer.
  - .4 Bond breaker tape:
    - .1 Polyethylene bond breaker tape which will not bond to sealant.

## **2.4 JOINT CLEANER**

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

## **PART 3 EXECUTION**

### **3.1 PROTECTION**

- .1 Protect work from other trades against staining and other contamination.

### **3.2 SURFACE PREPARATION**

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

### **3.3 PRIMING**

- .1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

- .2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

### **3.4 BACKUP MATERIAL**

- .1 Apply bond breaker tape where required to manufacturer's instructions.
- .2 Install joint filler to achieve correct joint depth and shape, with approximately 30 to 50% compression.

### **3.5 MIXING**

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

### **3.6 INSTALLATION**

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

**END OF SECTION**