



## CANMET EXPERIMENTAL MINE VAL D'OR

### REPAIRS TO THE ROOFS OF THE SECONDARY BUILDING AND THE MECHANICAL WORKSHOP

Artcad Project: 15068-0  
NRCan Project: QCL-5-38099



## BID SOLICITATION SPECIFICATIONS

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**PART 1 – GENERAL**

1.1 Related sections

- .1 This section contains general information that may be related to all of the sections of this bid solicitation document.

1.2 Work that the contract documents concern

- .1 The work that this contract concerns is limited to repairs carried out on the secondary building and the mechanical workshop of NRCan's CANMET experimental mine at 1 Chemin Peter-Ferderber in Val d'Or.

1.3 Work coordination

- .1 During the work, the Departmental Representative may authorize other contractors or workers to go into or work in proximity to areas covered by this contract.
- .2 The contractor must coordinate own work and own signage so as not to be in conflict with other contractors or workers.

1.4 Work execution order

- .1 Coordinate the work schedule in accordance with occupancy of the premises by Natural Resources Canada during the construction work period.
- .2 Carry out the work in stages to allow for continuous use of the premises by Natural Resources Canada. Keep traffic routes on the site open at all times.
- .3 Maintain access for firefighting purposes and provide means to put out fires.
- .4 To meet project completion deadlines, the contractor must provide necessary work teams.

1.5 Use of  
premises by  
the contractor

- .1 Use of the premises is limited to areas required for access and storage in order to facilitate:
  - a) occupancy of the premises by Natural Resources Canada;
  - b) execution of the work by other contractors.
- .2 Coordinate use of the premises in accordance with the Departmental Representative's instructions.
- .3 Find and pay the costs of additional work or storage areas needed to carry out the work under the terms of this contract.
- .4 Remove or make changes to the existing structure in order to avoid damaging parts thereof that must remain in place.
- .5 Repair or replace portions of the existing structure that have been altered during construction operations in order to match existing or adjoining structures, as directed by Departmental Representative.
- .6 Upon completion of the work, the existing structure must be equivalent or superior to its former condition prior to the commencement of work.

1.6 Owner  
occupancy

- .1 Natural Resources Canada will occupy the premises during the entire construction period and continue its regular operations.
- .2 Co-operate with the Departmental Representative in scheduling work so as to minimize conflict and facilitate the use of the premises by NRCan.

1.7 Alterations,  
additions or  
repairs to existing  
building

- .1 Execute the work with the least possible interference or disturbance to building operations, occupants, the public and normal use of the premises. Arrange with the Departmental Representative to facilitate the execution of the work.

1.8 Existing  
utilities

- .1 Prior to shutting off utilities, notify the Departmental Representative at least 48 hours in advance, as well as the utility companies concerned, and obtain necessary authorizations.

- .2 Where the work involves connecting to existing services, give the Departmental Representative 48 hours advance notice for necessary interruption of mechanical or electrical service. Keep duration of interruptions to a minimum. Carry out work at times as directed by local competent authorities with minimum disturbance to pedestrians and vehicular traffic.

Submit schedule to and obtain approval from the Departmental Representative for any shutdown 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 the Departmental Representative in order to maintain critical building and tenant systems.
- .5 Where unknown systems are encountered, notify the Departmental Representative immediately and confirm findings in writing.

Protect, relocate or maintain operational systems in service.

1.9 Required  
documents

- .1 Keep on the worksite a copy of each of the following documents:
- a) Contract drawings;
  - b) Specifications;
  - c) Addenda;
  - d) Reviewed shop drawings;
  - e) List of shops drawings not reviewed;
  - f) Change Orders;
  - g) Other modifications to the contract;
  - h) On-site test reports;
  - i) Copy of the approved work schedule;
  - j) Occupational Health and Safety Plan and other safety-related documents;
  - k) Schedule;
  - l) Other documents as specified.

### **1.1 Payment for the Work**

Considering the estimated duration of the Work, one single payment will be made and this payment shall be made pursuant to invoicing generated after the declaration by the consultant of substantial completion of the Work. The holdback and sums retained for deficiencies shall be paid after the correction of these deficiencies to the satisfaction of the ministerial representative.

### **1.2 Daily rate for work executed in winter conditions**

Considering winter conditions, which may arrive sooner or later than average, the contractor shall include in his offer a daily rate for work executed in winter conditions. This rate shall include all the measures and costs necessary for the execution of the Work in these conditions.

### **1.1 Particular Requirements**

1. The contractor will not be permitted to access the testing sector (hydrogen tests) situated outside of the main building. During the tests, the jobsite must be completely evacuated. The dates of these tests will be communicated by the ministerial representative.
2. Contractor's work hours : Monday to Friday from 7:30 to 16:00.
3. The contractor shall not access NRCan's buildings without having first obtained the ministerial representative's authorization.



## **PART 1 – GENERAL**

This section is in addition to all the clauses of the contract, all the general clauses of the architectural estimate and the clauses of the owner.

### 1.1 Related sections

- .1 All the sections of the specifications.

### 1.2 Considerations of an administrative nature

- .1 As soon as possible and in accordance with a predetermined sequence, in order to avoid delaying the completion of the work, submit all of the required documents and samples to the professional for approval.
- .2 Do not undertake any work for which the submission of documents and samples is required before the verification of all items submitted has been fully completed.
- .3 The characteristics specified in the shop drawings, technical data sheets and samples of products and work shall be provided in metric units.
- .4 When the items are not produced or manufactured in metric units or the characteristics are not provided in I.S. units, the converted values may be accepted.
- .5 Examine the documents and samples before giving them to the professional. Any documents or samples that have not been stamped, signed, dated and identified in relation to the particular project will be returned without being examined and will be deemed to have been rejected.
- .6 Provide the Departmental Representative with written notice, at the time of submitting the documents and samples, of any discrepancies they may have in relation to the requirements of the contractual documents, and provide reasons for the same.
- .7 Ensure the accuracy of the measures that are taken on site with respect to any adjacent structures that are affected by the work.
- .8 Keep a verified copy of each submitted document on the worksite.

1.3 Shop  
drawings and  
technical data  
sheets

- .1 The expression "shop drawings" means the drawings, diagrams, illustrations, tables, production or performance graphs, brochures and other documents that the contractor must provide to show part of the specific work in detail.
- .2 The shop drawings must show the materials to be used and the methods for construction, monitoring or anchoring that are to be used, and they must include installation diagrams, details on connections, relevant explanatory notes and any other information that is necessary to carry out the work. When any structures or items are linked or connected to other structures or other items, the drawings must show that the specifications have been coordinated, regardless of the section under which the adjacent structures or items are to be supplied and installed. Make references to the specifications and pre-project drawings.
- .3 Allow the Departmental Representative seven working days to examine each set of submitted documents.
- .4 Any modifications made to the shop drawings by the Departmental Representative should not result in varying the contract price. If that is the case, nonetheless, advise the Departmental Representative in writing before beginning the work.
- .5 Make any changes requested by the professional to the shop drawings in accordance with the requirements of the contractual documents. When submitting the drawings again, advise the Departmental Representative of any modifications that have been made in addition to the required modifications, in writing.
- .6 The submitted documents must be accompanied by a cover letter or an email that includes the following information:
  - a) the date;
  - b) the name and number of the project;
  - c) the name and address of the contractor;
  - d) the name of each drawing, technical data sheet and sample as well as the submitted number;
  - e) any other relevant information.

- .7 The submitted documents must include or indicate the following:
- a) the date of preparation and the dates of revisions;
  - b) the name and number of the project;
  - c) the name and address of the following:
    - the subcontractor;
    - the supplier;
    - the manufacturer.
- .8 The submitted documents must also include the contractor's stamp, signed by its authorized representative, certifying that the submitted documents have been approved, that the measures taken on site have been verified and that everything complies with the requirements of the contractual documents.
- .9 The submitted documents must provide the relevant details related to the portions of work in question:
- a) the materials and the manufacturing details;
  - b) the disposition or configuration, along with the dimensions, including those measured on site, and the ranges and clearances;
  - c) the details concerning installation or calibration;
  - d) the characteristics, such as power, flow or capacity;
  - e) the performance characteristics;
  - f) the reference standards;
  - g) the operational mass;
  - h) the wiring diagrams;
  - i) the single-line diagrams and the schematic diagrams;
  - j) the links with adjacent structures;
  - k) the proportion of asbestos (must be less than 0.1%).
- .10 Distribute samples of the shop drawings and technical data sheets once the Departmental Representative has finished checking them.
- .11 If no shop drawings are required because of the use of a standard manufactured product, submit one electronic copy of the technical data sheets or the documentation provided by the manufacturer as set out in the technical sections of the specifications and required by the Departmental Representative.
- .12 Submit an electronic copy of the reports on the tests stipulated in the technical sections of the specifications and required by the Departmental Representative.
- a) The report signed by the official representative of the testing laboratory must certify that any materials, products or systems identical to those proposed as part of the work have been approved in accordance with the stipulated requirements.
  - b) The tests must have been carried out during the year prior to the date on which the contract was awarded.

- .13 Submit an electronic copy of the certificates stipulated in the technical sections of the specifications and required by the Departmental Representative.
- a) The documents, printed on the manufacturer's official letterhead and signed by a representative of the manufacturer, must certify that the products, materials and systems that have been supplied comply with the stipulations in the specifications.
  - b) The certificates must be effective from a date ulterior to the awarding of the contract and shall indicate the name of the project.
- .14 Submit one electronic copy of the manufacturer's instructions stipulated in the technical sections of the specifications and required by the Departmental Representative.
- a) Pre-printed documents describing the method for installing the products, materials and systems, including specific notices and data sheets setting out the rates of impedance, risks and the safety measures that must be provided.
- .15 Submit an electronic copy of the reports on the checks conducted on site by the manufacturer, as stipulated in the technical sections of the specifications and required by the professional.
- a) Reports on tests and checks that were conducted by the manufacturer's representative in order to confirm the compliance of the products, materials or systems that have been installed in accordance with the manufacturer's instructions.
- .16 Submit one electronic copy of the operating and maintenance sheets stipulated in the technical sections of the specifications and required by the Departmental Representative.
- .17 Remove any information that does not apply to the work.
- .18 In addition to the usual information, provide any additional details concerning the work.
- .19 Once the shop drawings have been checked by the Departmental Representative and no error or omission has been detected or they only contain minor corrections, the printed copies will be returned and the shaping and installation work may then begin. If the shop drawings have been rejected, then the copy or copies with comments will be returned and the corrected shop drawings must once again be submitted in accordance with the instructions set out above, before the shaping and installation work may be commenced.

1.4 Samples of  
products

- .1 Submit two samples of products for examination purposes, in accordance with the stipulations of the technical sections of the specifications. Label the samples, indicating their origin and their intended use.
- .2 Send the samples to the professional, with postage paid by the contractor.
- .3 Notify the Departmental Representative in writing, at the time any samples of products are submitted, of any discrepancies they contain as compared with the requirements in the contractual documents.
- .4 When the colour, pattern or texture has been specifically stipulated, submit the whole necessary range of samples.
- .5 Any modifications made to the samples by the contractor should not result in varying the contract price. If that is nonetheless the case, advise the professional in writing before starting the work.
- .6 Make any modifications to the samples that are required by the professional, while complying with the requirements in the contractual documents.
- .7 The samples that have been examined and approved will become the reference standard on the basis of which the quality of materials and the quality of the building of the finished and installed structures will be evaluated.

1.6 Samples of  
structures

- .1 Provide the samples of structures as required under the stipulations of division 01.

## PART 1 – GENERAL

### 1.1 Contents of section

- .1 The contractor must manage his activities in such a way as to ensure that the health and safety of the public and of workers on the worksite and the protection of the environment always take precedence over any factors related to costs or the work timetable.
- .2 The prevention program has been attached to this section. The contractor must fill out the identified sections of the NRCan program before it can begin any work.
- .3 When there is work to be done, the contractor must have a responsible representative of his company on site at all times who may make decisions concerning any actions to be taken with regard to health and safety.
- .4 In addition to the *First Aid Minimum Standards Regulation*, the contractor must ensure that a first aid worker is at the worksite at all times when any workers are present, including, as applicable, when any work is being done on an overtime basis or on an evening or night shift. The first aid worker must be close by and accessible to the employees.
- .5 The contractor must take all necessary steps to keep the worksite clean and well organized throughout the duration of the work.
- .6 Definitions for this contract :
  - “Construction JSBA” means Joint Sector-Based Construction Association on Occupational Health and Safety.
  - “Worksite” means the worksite allocated to the contractor for work execution.
  - “CSST” means Commission de la Santé et Sécurité au Travail.
  - “Contractor” (1) means any person who takes part in a contract; (2) any person who undertakes to perform work or supply materials in accordance with a contract. All general provisions of this contract must be integrated into all related contracts, with the exception of contracts allocated solely for supplying tools and materials in accordance with this contract (GC1 reference in this contract).
  - “Property” means the workshop and the secondary building located at 1 Peter Ferderber in Val d’Or, Quebec, Canada.
  - “Incident” means any event which has caused or may cause significant injury or property damages.
  - “Project Owner” means Natural Resources Canada.
  - “Principal Contractor” means the Contractor, for the purposes of the application of An Act respecting occupational health and safety.

- “Project Owner’s Safety Program Framework” means the safety program framework developed by the Project Owner. It includes Section I “Project Owner’s Safety Program”, and Section II “Contractor’s Safety Program.”
- “Contractor’s Safety Program” means Section II of the Project Owner’s Safety Program Framework, including the subcontractors’ program which must be sent to the Project Owner by the established deadline, as per the requirements of the Project Owner’s Safety Program Framework. The Contractor’s Safety Program must follow the template appearing in the Project Owner’s Safety Program Framework and describe, among other things, the work to be executed, work safety planning, special work methods, worker training, etc.
- “Contractor’s Representative” means a person named by the Contractor, who is present at the worksite full time, and who is responsible for health and safety matters on the worksite.
- “Departmental Representative” means the agent or employee of Her Majesty who is designated pursuant to the Articles of Agreement as well as any person specially authorized by the Departmental Representative to fulfill, in his or her name, any function which has been conferred upon said representative, provided that this special authorization has been reported in writing to the Project Owner.
- “ESDC” means Employment and Social Development Canada.
- “NRCan” means Natural Resources Canada.
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#### 1.2 References

- .1 *Canada Labour Code, Part II, Canada Occupational Health and Safety Regulations (COHSR).*
- .2 Workplace Hazardous Materials Information System (WHMIS)/Health Canada, Data Sheet (DS).
- .3 *Act Respecting Occupational Health and Safety, R.S.Q. Chapter S-2.1.*
- .4 *Safety Code for the Construction Industry, R.S.Q. S-2.1, r.6.*
- .5 Canadian Standards Association (CSA).

1.3 Documents  
and samples to  
be submitted

- .1 Provide the Departmental Representative with the specific prevention program for the worksite, as described in section 1.8, at least 20 days prior to the beginning of the work, using the template provided by NRCan. The contractor must then update its prevention program if the schedule of work is different than its initial plans. Once the Departmental Representative has received the program and at any time during the work, he or she may require that modifications or additions be made to the program in order to more accurately reflect the reality of the worksite. The contractor must then make the required corrections before beginning the work. The Departmental Representative may, even before the beginning of the work, refuse to allow the contractor access to the worksite if the contractor has provided an incomplete or inadequate prevention program.
- .2 Provide the Departmental Representative with a weekly report of the daily inspections conducted on the worksite.
- .3 Provide the Departmental Representative with a copy of any inspection report, notice of corrections or recommendations that have been made by the federal or provincial inspectors, within 24 hours.
- .4 Provide the Departmental Representative with an investigation report concerning any accident that has resulted in injury and concerning any incident that sheds lights on a potential of risk, within 24.
- .5 At least three days before they are delivered to the worksite, provide the Departmental Representative with all data sheets concerning the control products used on the worksite.
- .6 Provide the Departmental Representative with copies of the training certificates that are required in order to apply the prevention program, and in particular:
  - a) General health and safety course for construction sites.
  - b) First aid in the workplace and cardiopulmonary resuscitation.
  - c) Work that might produce asbestos dust.
  - d) Work in an enclosed space.
  - e) Lockout procedures.
  - f) Wearing and adjusting individual safety equipment.
  - g) Driving power lift trucks.
  - h) Safe operation of scissor lifts.
  - i) And any other training required by regulation or by the prevention program.



- .7 Medical examinations: when medical examinations are required under any statute, regulation, guideline, specifications or prevention program, the contractor must:
- a) Before beginning the work, provide the Departmental Representative with written proof of medical examinations of his surveillance personnel and of all the employees referred to in the first paragraph of this section who will be present at the opening of the worksite.
  - b) Then, as the work proceeds, provide written proof of medical examinations of any persons who subsequently begin to work on the worksite and who are referred to in the first paragraph of this section, as they arrive.
- .8 Emergency procedure: the emergency procedure will be provided by the contractor.
- .9 Notice of opening of the worksite: the notice of the opening of the worksite will be sent to the CSST by the contractor and the contractor must post a copy of that notice in a prominent place at the worksite.
- .10 Work permits: the contractor must obtain all the municipal, provincial and federal permits that are required in accordance with the requirements of the contract. A copy of all permit applications and permits must be sent to the Departmental Representative as soon as possible.
- .11 Engineer's plans and certificates of compliance: the contractor must send copies that have been signed and sealed by the engineer to the CSST and the Departmental Representative of all plans and certificates of compliance that are required under the *Safety Code for the Construction Industry* (S-2.1, r. 6) or any other statute, regulation or clause of the estimate or of the contract. A copy of these documents must be available at the worksite at all times.

1.4 Evaluation  
of risk

- .1 The contractor must identify any dangers related to each of the tasks carried out on the worksite.
- .2 The contractor must plan and organize the work in such a way as to ensure that dangers are eliminated at their source and to promote the protection of everyone, thereby keeping the use of individual safety equipment down to a minimum. When individual protection against falls is required, the workers must use a safety harness in accordance with the CAN/CSA-Z-259.10-M90 standard. Safety belts must not be used to protect against falls. Use lifelines with a snap hook and cable sling when required.
- .3 Any equipment, tool or means of protection that cannot be installed or used without compromising the health and safety of workers or of the public shall be deemed inadequate for the work that is to be done.

- .4 All mechanical equipment must be inspected before being delivered to the worksite. Before using any mechanical equipment, the contractor must provide the Departmental Representative with a certificate of compliance, signed by a qualified mechanic.
- .5 If the Departmental Representative suspects that there is some defect or risk of an accident, he or she may, at any time, order the immediate deactivation of the equipment and require a second inspection by a specialist of his or her choice.

#### 1.5 Meetings

- .1 A representative who can make decisions on behalf of the contractor must attend all meetings concerning issues involving health and safety on the worksite.
- .2 The contractor must set up a worksite committee and hold meetings as required by the *Safety Code for the Construction Industry*.

#### 1.6 Requirements by regulatory authorities

- .1 Comply with all statutes, regulations and standards that are applicable to carrying out the work.
- .2 Follow the prescribed standards and regulations in order to ensure the normal progress of the work on any land that is contaminated by dangerous or toxic materials.
- .3 Notwithstanding the date of publication of the standards referred to in the *Safety Code for the Construction Industry*, the version in effect at the time that it is being applied must always be used.

#### 1.7 Specific conditions for the worksite

- .1 On the worksite, the contractor must take the following specific details into account and address them when developing its prevention program:
  - a) For the roofing work, the contractor must make use of a guardrail, as specified in the *Safety Code for the Construction Industry* (S-2.1, r. 6, section 2.9.2);

- b) Any waste disposal chute must be authorized by the PWGSC Departmental Representative for the project before being installed. The contractor must make sure that the following are done:
- I. Submit plans and the certificate of compliance prior to its use (*Safety Code for the Construction Industry*).
  - II. Make the waste disposal chute impervious.
  - III. Every time the waste container is removed or when it is full, each access to the chute must be locked. The contractor's superintendent will be responsible for the key to the locks.
  - IV. At the end of the worksite and after the chute has been removed, clean the wall and windows that have been soiled by the removal of waste.
  - V. At the end of the work, return the site to its original condition.

1.8 Managing  
health and  
safety

- .1 The contractor must accept and assume all the tasks and obligations for which the Principal Contractor is held responsible 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.6).
- .2 The contractor must develop a prevention program following the template that is part of NRCan's prevention program, with the objective of eliminating any danger to the health, safety and physical integrity of workers on the construction project, from the outset. This document must be based upon the identification of risks and applied from the beginning of the project to the last stage of demobilization. This program must also take into account the information included in clause 1.7 of this document, the Contracting Authority's prevention program and the *Act Respecting Occupational Health and Safety* (R.S.Q., chapter S-2.1) and the rules adopted under that statute. This program must take into account all of the stages of the work and all work done by subcontractors. It must be provided to the Departmental Representative.
- .3 Furthermore, the contractor promises to comply, and to ensure compliance by its employees and agents, with the provisions of the Contracting Authority's prevention program, including the section in its own prevention program. The contractor must provide the Departmental Representative with a document that certifies that he is aware of the prevention program and accepts the requirements set out therein, within ten days at the latest after the contract has been awarded.
- .4 In addition to the prevention program, the contractor must produce a precise working plan of its future activities every two weeks covering that period, using the model provided in the Principal Contractor's framework prevention program, and provide it to the Departmental Representative at each worksite meeting.

1.9 The  
contractor's  
representative

- .1 Regardless of the size of the worksite or the number of workers on the site, the contractor must appoint a qualified individual to act as supervisor and to be responsible for health and safety.
- .2 Take all the steps necessary to ensure that all the requirements concerning health and safety contained in the contractual documents, federal regulations, provincial regulations, the standards that are applicable and the specific prevention program for the worksite are being adhered to, and comply with any order or notice of correction issued by the Commission de la santé et de la sécurité du travail, without delay.
- .3 Take all the steps necessary to keep the worksite clean and well organized for the duration of the work.

1.10 Communications  
and posting

- .1 Take all the steps necessary to ensure the efficient sharing of information concerning health and safety on the worksite. As soon as the workers arrive at the worksite, they must all be informed about the specific details of the prevention program, their obligations and their rights at an introductory session that will be provided by the contractor. The contractor must insist on the fact that the workers have the right to refuse to carry out any work if they believe that the work could compromise their health or safety or the health or safety of other people on the worksite. He must provide a registry of the information that is provided on the worksite with the signature of all the workers to whom the said information has been provided, and keep it up to date.
- .2 The following information and documents must be posted in a place that is easily accessible for the workers:
  - a) Notice of opening of the worksite;
  - b) Name of the contractor;
  - c) The company's OHS policies;
  - d) Prevention programs (the Project Principal Contractor's guideline including the section from the Contractor's program);
  - e) Emergency plans;
  - f) Data sheets on all the control products used at the worksite;
  - g) Minutes of meetings of the worksite committee;
  - h) Names of representatives of the worksite committee;
  - i) Standards for first aid workers;
  - j) Intervention and correction reports issued by the CSST.

1.11 Unforeseen occurrences

- .1 When a source of danger that is not specified in the specifications and was not identifiable during the preliminary inspection of the worksite arises as a result of or during the performance of the work, the contractor must immediately stop the work, organize temporary protective measures for the workers and the public and notify the Departmental Representative both verbally and in writing. The contractor must then make the necessary changes to the prevention program so that the work may resume in a safe manner.

1.12 Inspection of work areas and addressing any dangerous situations

- .1 Inspect the work areas and fill out the inspection grid for the worksite at least once a day, and provide the Departmental Representative with a report on those inspections at least once a week or more frequently in accordance with request made by the Departmental Representative.
- .2 Take the necessary steps, as soon as possible, to correct any violations of the statutes or regulations and any dangerous situations that have been identified by a government inspector, by the Departmental Representative or his or her agents, by the health and safety specialist or during periodic inspections.
- .3 Provide the Departmental Representative with written confirmation of all measures that have been taken to address any violations or dangerous situations.
- .4 Suspending the work: allow the contractor's representative all the necessary authority to suspend and to resume the work when he or she deems it necessary or desirable to do so for reasons of health and safety. He or she must ensure that the health and safety of the public and of the personnel working on the worksite as well as the protection of the environment always take precedence over factors related to cost and to the work timetable.
- .5 Without limiting the scope of clauses 1.8 and 1.9, the Departmental Representative may order the stopping of the work at any time if, in his or her opinion, there is a danger or risk to the health or safety of the personnel working on the worksite or of the public, or to the environment.

CANMET EXPERIMENTAL MINE, VAL D'OR - REROOFING OF THE  
SECONDARY BUILDING AND MECHANICAL SHOP

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NATURAL RESOURCES CANADA SAFETY PROGRAM  
FRAMEWORK

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Version I

Canada 

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## **SECTION I**

### **PROJECT OWNER'S SAFETY PROGRAM**

## 1. GLOSSARY

“**Construction JSBA**” means Joint Sector-Based Construction Association on Occupational Health and Safety.

“**Worksite**” means the worksite allocated to the contractor for work execution.

“**CSST**” means *Commission de la Santé et Sécurité au Travail*.

“**Contractor**” (1) means any person who takes part in a contract; (2) any person who undertakes to perform work or supply materials in accordance with a contract. All general provisions of this contract must be integrated into all related contracts, with the exception of contracts allocated solely for supplying tools and materials in accordance with this contract (GC1 reference in this contract).

“**Property**” means the workshop and the secondary building located at 1 Peter Ferderber in Val d’Or, Quebec, Canada.

“**Incident**” means any event which has caused or may cause significant injury or property damages.

“**Project Owner**” means Natural Resources Canada.

“**Principal Contractor**” means the Contractor, for the purposes of the application of *An Act respecting occupational health and safety*.

“**Project Owner’s Safety Program Framework**” means the safety program framework developed by the Project Owner. It includes Section I “Project Owner’s Safety Program”, and Section II “Contractor’s Safety Program.”

**“Contractor’s Safety Program”** means Section II of the Project Owner’s Safety Program Framework, including the subcontractors’ program which must be sent to the Project Owner by the established deadline, as per the requirements of the Project Owner’s Safety Program Framework. The Contractor’s Safety Program must follow the template appearing in the Project Owner’s Safety Program Framework and describe, among other things, the work to be executed, work safety planning, special work methods, worker training, etc.

**“Contractor’s Representative”** means a person named by the Contractor, who is present at the worksite full time, and who is responsible for health and safety matters on the worksite.

**“Departmental Representative”** means the agent or employee of Her Majesty who is designated pursuant to the Articles of Agreement as well as any person specially authorized by the Departmental Representative to fulfill, in his or her name, any function which has been conferred upon said representative, provided that this special authorization has been reported in writing to the Project Owner.

**“ESDC”** means Employment and Social Development Canada.

**“NRCan”** means Natural Resources Canada.

## **2. INTRODUCTION**

A safety program is a key step in incorporating occupational health and safety into construction sites. Acting as the Project Owner in this instance, Natural Resources Canada is responsible for all work carried out therein, and as such, a copy of the Project Owner's Safety Program Framework is distributed to each Contractor.

Natural Resources Canada will ensure that all contract requirements as well as applicable laws and regulations are followed and respected by all stakeholders on the worksite. In the event of a discrepancy between requirements drawn from a law, a regulation, a safety program or contract documents, the strictest requirement shall apply.

The safety program aims to prevent any and all harm to workers' health and physical integrity. In order to do so, it is imperative that all parties commit to this objective.

### **3. ROLES AND RESPONSIBILITIES OF THE STAKEHOLDERS**

#### **3.1 Natural Resources Canada (NRCan)**

NRCan's role includes:

- Developing the Project Owner's Safety Program Framework, including the section comprising the Contractor's Safety Program;
- Sending any and all emergency procedures for the property to the Contractor;
- Assessing the Contractor's Safety Program. If needed, requesting any amendments and corrections from the Contractor before said Contractor and any subcontractors begin any work;
- Ensuring that the Contractor and subcontractors working on the site commit in writing to respecting the Project Owner's Safety Program Framework, including the section comprising the Contractor's Safety Program. Sending the signed program to the Principal Contractor in order for it to be forwarded to the CSST;
- Ensuring that the Contractor and subcontractors respect the project specifications, all applicable laws and regulations pertaining to health and safety, and the Project Owner's Safety Program Framework, including the section comprising the Contractor's Safety Program;
- Advising the Contractor of any amendment or update made to the Project Owner's Safety Program Framework;
- Receiving from the Contractor (when applicable) temporary work plans and specifications bearing the seal of an engineer, and verifying their application;
- Receiving from the Contractor weekly worksite inspection reports;
- Receiving a copy of the minutes of every meeting of the Worksite Committee;
- Ensuring the Contractor's investigation report has been received within 24 hours of an accident;
- Advising the ESDC without delay of any serious accident occurring at the worksite;

- Ensuring that the Contractor submits a remedial plan after any marked increase in violations, accidents or hazardous situations is noted.

### 3.2 Contractor

The Contractor has both legal and contractual obligations. The Contractor must therefore develop a safety program aiming to eliminate any risk of accidents or occupational diseases. This document must take into account the phases and types of work to be carried out. Therefore, the Contractor must:

- Prepare the Contractor's Safety Program section;
- If required by *An Act respecting occupational health and safety*, submit the safety program to the CSST at least 10 days prior to beginning any work. (Number of workers expected to be on site at the same time, or other requirement as per *An Act respecting occupational health and safety*, etc.);
- Submit the safety program to the Construction JSBA at least 10 days prior to beginning any work;
- Send a notice of start of construction to the CSST at least 10 days prior to beginning any work and submit a copy of said notice to the Contractor's Representative, who will ensure it is posted at the worksite;
- Send a construction site closure notice to the CSST at least 10 days prior to the planned completion the work on the site;
- Complete the Contractor's Safety Program using the model included herein and send it to the Departmental Representative (10) days prior to beginning any work. Worksite access will only be authorized after the Contractor's and the subcontractors' programs have been authorized by the Departmental Representative. The Contractor's Safety Program must also take into account the contractual elements specified herein, as well as the requirements stipulated in *An Act Respecting Occupational Health and Safety* (CQLR, chapter S-2.1) and in any regulations adopted pursuant to said act;
- As required by the Departmental Representative and before beginning any work, amend the Contractor's Safety Program and those of any subcontractors in order to ensure compliance. The Project Owner and Departmental Representative will not be held liable for any delays resulting from ensuring compliance to this requirement;
- Commit in writing to respect the Project Owner's Safety Program Framework, including the section comprising the Contractor's Safety Program;

- In the event that the Contractor or subcontractors do not respect the safety rules established by said safety programs (Project Owner's Safety Program Framework and Contractor's Safety Program), the Project Owner or his Representative may request in writing that the Contractor rectify the situation within a specific timeframe. If the Contractor fails to comply with such notice, the Project Owner or his Representative may have the necessary work carried out at the Contractor's expense;
- Ensure that all workers have received the training required as per the specifications, namely courses on *Santé et sécurité générale pour les chantiers de construction*, the Workplace Hazardous Materials Information System (WHMIS), lockout procedure, and the safe operation of aerial platforms;
- Ensure the implementation of the safety measures established in the aforementioned safety programs and advise the Departmental Representative of the methods used to control the application of said programs. In the event that the Contractor or subcontractors do not respect these safety measures, the Departmental Representative may have the necessary work carried out at the Contractor's expense;
- As soon as work has begun, name a representative for the Contractor to be present at the worksite full time to ensure health and safety, and provide the Departmental Representative the name of said Contractor's Representative. This person must be present at the worksite during any overtime, evening or night work, as well as any high-risk work or work involving more than one team;
- Before any work has begun, send the CSST and the Departmental Representative all certificates of compliance and plans, which must bear the seal of an engineer, as required by regulations, contract documents and the Project Owner's Safety Program Framework. A copy of such documents must be kept at the worksite;
- Ensure the required number of first-aid workers are present and keep the registry of first-aid workers up to date. At least one first-aid worker must be available at all times during work hours, including any and all overtime, evening and night work. The first-aid worker must be nearby and accessible to employees;
- Supply a first-aid kit on the premises allocated to the Contractor and keep it organized. If a first-aid worker intervenes at the worksite, he or she must describe the care given in a first-aid registry and immediately send the information to the Contractor's Representative;
- Supply and update a notice board regarding occupational health and safety in the workers' dining area; e.g., the Project Owner's Safety Program Framework, the Contractor's Safety Program, the name of the Contractor's Representative, remedial orders from the CSST and any other safety-related document must be posted on the notice board;

- For every worker who has access to the worksite, supply a photocopy of the certificate of completion of the *Santé et sécurité générale sur les chantiers de construction* course (offered by the Construction JSBA) or the qualification certificate mentioning that the aforementioned course was completed, as well as any other certificate required in relation to the work to be executed by the worker in question and as per contract documents;
- Form a Worksite (Safety) Committee as soon as work is begun and hold a first meeting of said Committee as soon as a minimum of 25 workers are present on site;
- Assign the Contractor's Representative to attend all Worksite (Safety) Committee meetings and follow up on all decisions made during said meetings;
- Ensure that every subcontractor holds "safety breaks" with his or her workers on a weekly basis and sends the Project Owner's Representative the minutes of all such meeting, signed by all attendees;
- Follow up on decisions made by Worksite (Safety) Committees and the Departmental Representative;
- Establish an efficient, permanent or intermittent, monitoring mechanism for all workers who may have to carry out work alone or in isolated areas;
- Supply the Departmental Representative with a current certificate of compliance for all motorized equipment being brought onto the worksite;
- Continuously update log books for cranes and any other equipment as required by regulations;
- Ensure that workers (in the context of their work activities) use the personal protection equipment and means stipulated in the Contractor's Safety Program and the Project Owner's Safety Program Framework (which includes the section comprising the Contractor's Safety Program);
- Obtain the Departmental Representative's authorization in writing for any amendment to a work procedure included in the Contractor's Safety Program;
- Notify the Departmental Representative and obtain his or her consent regarding any overtime work done by the Contractor's teams or the implementation of a new work team;
- Ensure that the Contractor's Representative investigates any accident which occurs during the execution of the Contractor's contract and sends the investigation report to the Departmental Representative within 24 hours;



- In the event of a serious accident occurring during the execution of the Contractor's contract, notify by the fastest communication means possible both the CSST and the Departmental Representative, and send both parties a written investigation report regarding the accident in question;
- Submit a remedial plan to the Departmental Representative after any marked increase in violations, accidents or hazardous situations is noted;
- Immediately inform the Departmental Representative in writing of any notice or report issued by the CSST. Within 24 hours, submit a copy of any such documents received.

### **3.3 Contractor's Representative**

The role of Contractor's Representative's is to ensure health and safety at the worksite, and he or she must follow up with the Departmental Representative regarding any observation made on site.

The Contractor's Representative's role includes:

- Overseeing the implementation of the Project Owner's Safety Program Framework;
- Ensuring that the Contractor and all subcontractors respect the Project Owner's Safety Program Framework;
- Inspecting the worksite daily and documenting inspections in writing, ordering the implementation of any measures necessary to ensure the health and safety of workers and following up on said measures;
- Submitting to the Departmental Representative on a daily basis a detailed report of any interventions made, including inspection reports;
- Analyzing and verifying hazardous situations for workers;
- Establishing procedures for high-risk work;
- Ordering work be interrupted, either partially or entirely, upon the Departmental Representative's request, or when a situation so requires;
- Taking all necessary measures to keep the worksite clean and well organized throughout the execution of the contract;
- On a biweekly basis, preparing a specific work plan including all activities to be carried out over the next two weeks (following the model presented in the Project Owner's

Safety Program Framework), and submitting the plan to the Departmental Representative at every worksite meeting;

- At least 5 days in advance, sending the Departmental Representative the lifting plans required for lifting operations (using the template included in the present Project Owner's Safety Program Framework);
- Requesting the inspection certificate for all heavy equipment, aerial platforms and lift trucks before they are brought onto the site and sending all certificates to the Departmental Representative;
- Checking log books for cranes on a weekly basis;
- Ensuring that a member of management and a representative of each subcontractor's employees attend all meetings of the Worksite (Safety) Committee;
- Attending and contributing to all meetings of the Worksite (Safety) Committee;
- Taking part in all safety-related meetings;
- As needed, acting as a consultant during "safety breaks" held by subcontractors;
- Being present at the worksite during regular work hours, as well as during any overtime or night work and any high-risk work or work involving more than one team;
- Complying without delay with any order (remedial or otherwise) issued by the CSST.
- In the event of an accident/incident, investigating the event in conjunction with the employer and the superintendent of the company in question, and sending the investigation report to the Departmental Representative within 24 hours of the event.

### **3.4 Subcontractor**

The subcontractor must:

- Comply with all rules and obligations applicable to the Contractor, just as any other employer.

### **3.5 Supplier**

The supplier must:

- Comply with all rules and obligations applicable to the Contractor (just as any other employer) when delivering/assembling his or her own products and equipment at the worksite;
- Ensure that any dangerous substance supplied is labelled in compliance with Section 67 of *An Act Respecting Occupational Health and Safety*.

### **3.6 Worker**

The worker must:

- Sign an undertaking stipulating that he or she will respect the Project Owner's Safety Program Framework, including the section comprising the Contractor's Safety Program;
- Respect the preventive measures included in the Project Owner's Safety Program Framework, including the section comprising the Contractor's Safety Program, and in all applicable laws and regulations;
- Take note of all information received (welcome meeting, postings, newsletters, etc.);
- Collaborate with the Worksite Committee to implement the Project Owner's Safety Program Framework, including the section comprising the Contractor's Safety Program;
- Respect his or her own health, safety and physical integrity, and that of all people present at the worksite or within the vicinity;
- Upon arriving at the worksite, supply a photocopy of the certificate of completion of the *Santé et sécurité générale sur les chantiers de construction* course (offered by the Construction JSBA) or the qualification certificate mentioning that the aforementioned course was completed, as well as any other certificate required in relation to the work to be executed by the worker in question and as per contract documents;

- Immediately advise his or her employer of any product spilled into the environment;
- Consult with his or her immediate supervisor (as needed) regarding the interpretation of a provision and/or directive related to worksite health and safety;
- If applicable, take part in training and information sessions at the worksite, and sign the registry to document his or her presence at said sessions;
- Advise his or her immediate supervisor of any incident or hazard which may or has caused injury or property damages;
- Use the protective equipment and devices at his or her disposal and keep his or her work space clean and organized;
- Attend “safety breaks” and sign the minutes;
- Observe hazard symbols;
- Advise the first-aid station of any injury or ailment;
- Refuse to carry out a task if unaware of the risks involved;
- Refuse to carry out a dangerous task.

### **3.7 Worksite Committee**

The Contractor will establish a Worksite (Safety) Committee as soon as work has begun and the Committee’s first meeting will be held as soon as a minimum of 25 workers are present on site. This Committee will come under the Contractor’s responsibility and will be chaired by Contractor’s Representative.

The Worksite Committee must include the following:

- The Contractor’s Representative;
- A decision-level representative of each subcontractor;
- A representative of every representative association (union, labour union, association) which has at least one member employed by an employer at the worksite.

The Worksite Committee must:

- Hold a meeting at least once every two (2) weeks;
- Send its members the meeting agenda at least forty-eight (48) hours before the meeting;
- Encourage collaboration between employers and workers, as well as coordinate preventive measures as well as the implementation of the Project Owner's Safety Program Framework, including the section comprising the Contractor's Safety Program;
- Ensure the implementation of the Project Owner's Safety Program Framework, including the section comprising the Contractor's Safety Program;
- Receive the suggestions and complaints of workers, their representatives, unions, labour unions, associations, employers and the Project Owner with regards to occupational health and safety;
- Receive and examine notices and inspection reports issued by the CSST regarding the worksite;
- Receive and analyze statistics regarding accidents;
- In accordance with the law, send the CSST the information it requests;
- Prepare the minutes of each meeting, post them on the various bulletin boards and distribute them within forty-eight (48) hours of the meeting;
  - To the members of the Worksite Committee;
  - To the Departmental Representative;
  - To the Safety Officer;
  - To the Property Coordinator.

## **4. PROJECT DESCRIPTION**

### **CANMET EXPERIMENTAL MINE, VAL D'OR – REROOFING OF THE SECONDARY BUILDING AND MECHANICAL SHOP**

The complex located at 1 chemin Peter-Ferderber in Val-d'Or (15 km south of the city), was originally built for purposes related to the operation of a mine and was acquired by the federal government in 1991.

The work mentioned in this contract is limited to the reroofing of the secondary building and the mechanical shop.

According to the information at our disposal, the secondary building (ground area of 140 m<sup>2</sup>) is over 35 years old and the mechanical shop (ground area of 797 m<sup>2</sup>) is over 50 years old. The secondary building comprises classrooms, as well as research and storage areas. The mechanical shop serves as maintenance workshops for rolling stock, storage facilities for mining equipment and drying facilities. It also contains the main electrical room.

The roofs of both buildings subject to this request are made of stapled galvanized steel sheets, the inner surface of which has been sprayed with urethane (50 mm).

## **5. WORK SYSTEM**

The Contractor must ensure and uphold the following:

- 1 That the Tobacco Act is respected.
- 2 That no alcoholic beverages or illegal substances are brought to the worksite or consumed therein and that no person under the influence of such substances is allowed access to the site.
- 3 It is prohibited to leave empty bottles or any other trash anywhere on the worksite.
- 4 The Contractor may not, under any circumstances, use any of the existing equipment on the site.
- 5 The Contractor must comply with all other internal regulations, as established by the Departmental Representative.

## 6. SPECIAL HEALTH AND SAFETY REQUIREMENTS

### 6.1 General health and safety obligations

#### 1.1 GENERAL CONDITIONS

- .1 The Contractor must manage work operations so as to prioritize the health and safety of the public and worksite personnel as well as the protection of the environment over costs and work schedule.
- .2 The Contractor must complete the sections which have been identified in the Project Owner's Safety Program Framework before beginning any work.
- .3 The Contractor must have at all times a representative of his or her company on site when work is being carried out, who must have the capacity and authority to decide how to proceed in health and safety matters.
- .4 Furthermore, as per the First-aid Minimum Standards Regulation, the Contractor must make sure that at least one first-aid worker is present at the worksite at all times when there are workers on site, including during any overtime, evening or night shifts (as applicable). The first-aid worker must be nearby and accessible to employees.
- .5 The Contractor must take all necessary measures to keep the worksite clean and well organized throughout the execution of the contract.
- .6 Definitions for the purposes of the present contract:
  - .1 **“Construction JSBA”** means Joint Sector-Based Construction Association on Occupational Health and Safety.
  - .2 **“Worksite”** means the worksite allocated to the contractor for work execution.
  - .3 **“CSST”** means the *Commission de la santé et sécurité au travail*.



- .4     **“Contractor”** (1) means any person who takes part in a contract. (2) any person who undertakes to perform work or supply materials in accordance with a contract. All general provisions of this contract must be integrated into all related contracts, with the exception of contracts allocated solely for the purpose of supplying tools and materials in accordance with this contract (GC1 reference in this contract).
- .7     **“Property”** means the workshop and NRCan’s secondary building (CANMETMINING) located at 1 Peter Ferderber in Val d’Or, Quebec, Canada.
- .8     **“Incident”** means any event which has caused or may cause significant injury or property damages.
- .9     **“Principal Contractor”** means the Contractor, for the purposes of the application of An Act respecting occupational health and safety.
- .10    **“Project Owner”** means Natural Resources Canada (NRCan).
- .11    **“Project Owner’s Safety Program Framework”** means the safety program framework developed by the Project Owner.
- .12    **“Contractor’s Representative”** means a person named by the Contractor, who is present at the worksite full time, and who is responsible for health and safety matters on the worksite.
- .13    **“Departmental Representative”** means the agent or employee of Her Majesty who is designated pursuant to the Articles of Agreement as well as any person specifically authorized by the Departmental Representative to fulfill, in his or her name, any function which has been conferred on said Representative, provided that this special authorization has been reported in writing to the Project Owner.
- .14    **“ESDC”** means Employment and Social Development Canada.
- .15    **“NRCan”** means Natural Resources Canada.

## 1.2 REFERENCES

- .1 Canada Labour Code, Section II, Canada Occupational Health and Safety Regulations.
- .2 Canadian Standards Association (CSA)
- .3 Workplace Hazardous Materials Information System (WHMIS)  
/Health Canada
- .4 An Act Respecting Occupational Health and Safety, CQLR, Chapter S-2.1
- .5 Safety Code for the Construction Industry, S-2.1, r. 4.
- .6 Regulation Respecting Occupational Health and Safety (ROHS)

### 1.3 TRANSMISSION OF DOCUMENTS

- .1 Transmit documents as required pursuant to Section 013300 (Documents and samples to be submitted).
- .2 Submit the safety program specific to the worksite (as per Section 1.8) to the Departmental Representative at least 20 days prior to beginning any work, according to the template provided by NRCan. The Contractor must then update his or her safety program if work progress differs from initial forecasts. After receiving the program and at any time during execution of the work, the Departmental Representative may request that the program be modified or completed so as to better capture the reality of the worksite. The Contractor must then amend the program as needed before any work has begun. Even before any work has begun, the Departmental Representative can refuse the Contractor access to the worksite if the Contractor's Safety Program is incomplete or inadequate.
- .3 Submit a weekly report to the Departmental Representative on the daily inspections of the worksite.
- .4 Send the Departmental Representative a copy of any inspection report, remedial order or recommendation issued by federal or provincial inspectors, within 24 hours.
- .5 Send the Departmental Representative an investigation report regarding any accident resulting in injury and any incident which brings to light a potential hazard, within 24 hours.
- .6 Send the Departmental Representative the material safety data sheets for all controlled products to be used at the worksite at least three days before the products arrive on site, in order for the Departmental Representative to step in prior to their arrival.
- .7 Send the Departmental Representative copies of the training certificates required for the application of the safety program, namely:
  - *Santé et sécurité générale pour les chantiers de construction*;
  - First aid in the workplace and cardio-pulmonary resuscitation;
  - Work likely to emit asbestos dust;
  - Work in confined spaces;
  - Lockout procedure;
  - Wearing and adjusting personal protection equipment;
  - Lift truck operation;
  - Safe operation – aerial platforms;
  - And any other training required pursuant to regulations or the safety program.

- .8 Medical tests: When medical tests are required according to a law, regulation, instruction, specification or safety program, the Contractor must:
- Prior to start-up, submit to the Departmental Representative the medical exam certificates for all supervisory staff and employees subject to the first paragraph of this section and who will be on duty when the worksite opens.
  - Submit, progressively and without delay, proofs of medical exams for all people who have recently arrived at the worksite and to whom the first paragraph of this section is applicable.
- .9 Emergency procedure: The emergency procedure is specified by the Contractor.
- .10 Notice of start of construction: The notice of start of construction is sent to the CSST by the Contractor. The Contractor must then post a copy of said notice in clear view at the worksite.
- .11 Permits: Obtain all required municipal, provincial and federal permits pursuant to the provisions of the contract. Send a copy of each permit request and permit received to the Departmental Representative without delay.
- .12 Engineer's plans and certificates of compliance: Submit to the CSST and Departmental Representative copies, duly signed by an engineer and bearing his or her seal, of all plans and certificates of compliance required as per the Safety Code for the Construction Industry (S-2.1, r. 4), or any other legislation, regulation, or another provision of the specifications or contract. A copy of these documents must be available at all times at the worksite.
- .13 Certificate of compliance issued by the CSST: The certificate of compliance is a document issued by the CSST, confirming that the Contractor is in good standing with the CSST, i.e., that said Contractor has paid all dues as per a given contract. This document must be provided to the Departmental Representative at the end of the work.

#### **1.4 RISK ASSESSMENT**

1. The Contractor shall identify all hazards inherent to each task to be carried out at the worksite.

1. The Contractor shall plan and organize work so as to eliminate hazards at their source or to promote the safety of everyone on site and thereby minimize reliance on personal protection equipment. Where personal protection against falls is required, workers shall use a safety harness that complies with the CAN/CSA-Z-259.10-M90 standard. Use lifelines (safety lines equipped with a carabiner and anchor sling, as needed). Safety belts must not be used as protection against falls.
2. Any equipment, tool or protective gear which cannot be installed, fitted or used without compromising the health or safety of workers or the public shall be deemed inadequate for the work to be executed.
3. All mechanical equipment shall be inspected before delivery to the worksite. Before using any mechanical equipment, the Contractor is required to submit to the Departmental Representative a certificate of compliance signed by a qualified mechanic. The Departmental Representative may at any time, if a defect or a risk of accident is suspected, order the immediate shutdown of equipment and require a new inspection by a specialist of the Departmental Representative's own choosing.

#### **1.5 HEALTH AND SAFETY MEETINGS**

1. The Contractor's decision-making representative shall attend all meetings at which worksite safety and health issues are to be discussed.
2. The Contractor must create a Worksite Committee and convene meetings in accordance with the Safety Code for the Construction Industry.

#### **1.6 REGULATORY REQUIREMENTS**

1. Comply with all legislation, regulations and standards applicable to the worksite and its related activities.
2. If applicable, comply with specified standards and regulations to ensure safe operations at sites containing, or contaminated by, hazardous or toxic materials.
3. Regardless of the publication date shown in the Safety Code for the Construction Industry, always use the most recent version thereof.

## **1.7 WORKSITE-SPECIFIC CONDITIONS**

1. The following specifications must be considered by the Contractor at the worksite and in developing their safety program:
  - For roof work, the Contractor must install guard-rails as per Section 2.9.2 of the Safety Code for the Construction Industry (S-2.1, r. 4);
  - The waste chute must be approved by the Departmental Representative before being installed. The Contractor must ensure the following:
    1. Plans and certificates of compliance are to be submitted before the waste chute is used (Safety Code for the Construction Industry);
    2. The waste chute must be sealed against fluids;
  - Every time the waste container is lifted and when it is full, all openings to the chute must be padlocked. The Contractor's superintendent will be responsible for padlock keys.
  - The wall and any windows which are dirtied during the removal of debris at the end of work and after the removal of the chute must be cleaned;
  - The site must be restored to its original state after the work has been completed.

## **1.8 HEALTH AND SAFETY MANAGEMENT**

1. Acknowledge and assume all the tasks and obligations under the terms of *An Act Respecting Occupational Health and Safety* (CQLR, Chapter S-2.1) and the Safety Code for the Construction Industry (S-2.1, r. 4).
2. The Contractor shall develop their prevention program in accordance with the model presented in the Project Owner's Safety Program Framework and with a view to eliminating at the source any dangers to the health, safety or physical integrity of construction workers. This document must be based on the hazards identified and applied from the start of project work until the last stage of close-out is completed. Such document shall also take into consideration the relevant provisions of Section 013530 of the contract, the information appearing in Article 1.6, the Project Owner's Safety Program Framework, the Act Respecting Occupational Health and Safety (R.S.Q., Chapter S-2.1) and the Regulations enacted thereunder. The safety program must take into account every phase of the work to be carried out by the Contractor and its subcontractors, and must be submitted to all parties concerned, in accordance with the provisions set forth in Article 1.3.
3. The Contractor shall commit in writing to respect the Project Owner's Safety Program Framework, including their own Safety Program, and to ensure that employees and representatives also act accordingly. The Contractor shall provide to the Project Owner or his Representative written confirmation of having read and accepted the provisions of the Project Owner's Safety Program Framework, within ten (10) days at the latest after the contract is awarded.

4. In addition to the safety program, the Contractor must prepare, on a biweekly basis, a specific work plan including all activities to be carried out over the next two weeks (following the model presented in the Project Owner's Safety Program Framework), and submitting the plan to the Departmental Representative at every worksite meeting.

## **1.9 CONTRACTOR'S REPRESENTATIVE**

1. Regardless of the size of the site or the number of employees present, the Contractor shall designate one individual as the supervisor and person responsible for occupational health and safety matters. The Contractor shall take all necessary measures to ensure the health and safety of persons and property at the site and in the immediate vicinity that could be affected by the work being performed. The Contractor's Representative's tasks are defined in Section 4 of the Project Owner's Safety Program Framework.
2. The Contractor shall take all necessary measures to enforce and ensure compliance with the health and safety requirements set out in the contract documents, federal and provincial regulations, applicable standards and the site-specific prevention program, and comply promptly with any order or remedial notice issued by the *Commission de la santé et de la sécurité du travail*.
3. The Contractor shall take all necessary measures to keep the worksite clean and well organized throughout the execution of the contract.

## **1.10 COMMUNICATION AND SIGNAGE**

1. The Contractor shall make all the necessary arrangements to ensure effective communication of safety and health information at the worksite. As they arrive at the worksite, all workers must be informed of their rights and obligations pertaining to the worksite safety program. The Contractor shall draw attention to workers' right to refuse to perform work which they feel may threaten their own health, safety or physical integrity or that of other persons at the worksite. The Contractor shall keep and update a written record of all information transmitted with signatures of all workers so informed.
2. The following information and documents must be posted in a location readily accessible to all workers:
  - .1 Notice of start of construction;
  - .2 Identification of Principal Contractor;
  - .3 Company's OHS policy;
  - .4 Safety program (Project Owner's Safety Program Framework, including the section comprising the Contractor's Safety Program);
  - .5 Emergency plan;
  - .6 Data sheets for all hazardous materials used at the worksite;
  - .7 Minutes of Worksite Committee meetings;
  - .8 Names of Worksite Committee representatives;
  - .9 Names of first-aid workers;
  - .10 Action and remedial reports issued by the CSST.

## **1.11 UNFORESEEN EVENTS**

1. In the event that a source of danger not defined in the specifications nor identified in the preliminary worksite inspection arises as a result of or in the course of the work, the Contractor shall immediately suspend work, take appropriate temporary measures to protect workers and the public and notify the Departmental Representative both verbally and in writing. The Contractor must notify or update the worksite-specific safety program in order to resume work under safe conditions.

## **1.12 INSPECTION OF WORKSITE AND CORRECTIONS OF HAZARDOUS SITUATIONS**

- .1 Inspect work areas and complete the worksite inspection schedule at least once a day, and submit a report of these inspections to the Departmental Representative at least once a week or more frequently, as requested by the Departmental Representative.
- .2 Immediately take all necessary measures to correct any violation of legislative or regulatory requirements or hazards identified by a government inspector, the Departmental Representative or his or her representatives, the health and safety specialist or during routine inspections.
- .3 Submit to the Departmental Representative written confirmation of all measures taken to correct violations and hazardous situations.
- .4 Give the Contractor's Representative full authority to order any interruption and to resume work as when deemed necessary or desirable in the interests of safety and health. This person should always act so that the safety and health of the public and site workers, and environmental protection take precedence over cost and scheduling considerations.
- .5 Without limiting the scope of Sections 1.8 and 1.9, the Departmental Representative may order cessation of work if, in his/her view, there is any hazard or threat to the safety or health of site personnel, the public, or to the environment.



### **1.13 STUD GUNS AND OTHER EXPLOSIVE-ACTUATED DEVICES**

The use of stud guns and other explosive-actuated devices must be authorized by the Departmental Representative.

1. Any person using a stud gun shall hold a training certificate and meet all requirements of Section 7 of the Safety Code for the Construction Industry (S-2.1, r. 4).
2. Any other explosive-actuated device shall be used in accordance with the manufacturer's directions and applicable standards and regulations.

### **1.14 ADDITIONAL REQUIREMENTS**

- .1 Besides the requirements of this section (01 35 29.6), the Contractor shall comply with all requirements included in the Project Owner's Safety Program Framework.

### **1.15 Personal hygiene**

1. Do not eat, drink, or smoke in dusty areas.
2. Wash hands and face before drinking, eating or smoking.

## 6.2 ROOFING WORK

### PROTECTION AGAINST FALLS FROM HEIGHTS

#### **Guardrails:**

- The installation of guardrails is mandatory. NRCan may set out restrictions regarding anchoring, in which case the Contractor must ensure that guardrails also meet all requirements of Section 3.8 of the Safety Code for the Construction Industry (S-2.1, r. 4).
- The Contractor agrees that guardrails will remain in place until the end of the project. The Departmental Representative will authorize the removal of guardrails after having confirmed that all required work, inspections and corrections have been carried out.

#### **Harnesses:**

- It is mandatory to wear a safety harness when installing guardrails.
- Lifelines must be used when using a safety harness (safety lines equipped with a carabiner and anchor sling, as needed).
- It is mandatory to wear a safety harness when installing or modifying parapets and flashing, if the guardrails need to be temporarily moved.
- It is mandatory to wear a safety harness when receiving materials and signaling to the crane operator close to a drop in height.
- It is mandatory to wear a safety harness for any work performed close to a drop in height, where collective protection measures are inadequate.
- The Contractor shall submit a separate anchoring method for the emergency cable system, in accordance to Section 2.10.12 of the Safety Code for the Construction Industry (S-2.1, r. 4), for every sector or work area.

#### **Portable ladders:**

- Commercially manufactured portable ladders shall meet the standards set out in CSA Standard CAN3-Z11-M81, *Portable Ladders*, the English version of which is dated September, 1981, as amended in March, 1983 and the French version of which is dated August, 1982, as amended in June, 1983.

- Subject to subsection (3), every portable ladder shall, while being used,
  - a) be placed on a firm footing;
  - b) be secured in such a manner that it cannot be dislodged accidentally from its position.
- In cases where a portable ladder cannot be securely fastened in place because of the nature of the location or of the work being done, it shall, while being used, be sloped so that the base of the ladder is not less than one-quarter and not more than one-third of the length of the ladder from a point directly below the top of the ladder and at the same level as the base.
- Every portable ladder that provides access from one level to another shall extend at least three rungs above the higher level.
- Metal or wire-bound portable ladders shall not be used where there is a risk that they may come into contact with any live electrical circuit or equipment.
- No employee shall work from any of the three top rungs of any single or extension portable ladder or from either of the two top steps of any step ladder.

**Scaffolding:**

- Scaffolding platforms shall be inspected and assembled in accordance with the provisions of the Safety Code for the Construction Industry (L.R.Q.,S-2.1, r. 4).
- Wherever required, plans and certificates of compliance shall be submitted to the Departmental Representative before work begins.
- During scaffolding assembly, the Contractor must protect all workers against falls as per Section 3.9.4.5 of the Safety Code for the Construction Industry (S-2.1, r. 4).

**LIFTING MATERIALS**

- The Contractor shall provide the Departmental Representative with a mechanical service inspection certificate for each lifting device. Inspections must be carried out just prior to the delivery of the equipment to the worksite.
- For all winch installations, the Contractor shall provide the Departmental Representative with the installation method recommended by the manufacturer. If unavailable, the Contractor shall then provide an installation procedure signed by an engineer and bearing his or her seal. The installation procedure must take into account

the load bearing capacity, the amount, weight and location of counterweights and any other detail that may affect the capacity and stability of the device.

- In addition to the mechanical service inspection certificate, all cranes and crane-trucks must have aboard their annual inspection certificate and crane log book.
- Lifting devices shall be positioned in such a way that loads are not carried **over** workers, occupants or the public.
- The entire lifting area shall be closed off to prevent unauthorized people from entering it.
- The Contractor shall obtain, at his own expense, all of the permits required in the event that the public road must be temporarily closed off in order to meet the requirement stipulated in the preceding paragraph or for any other reason pertaining to the safety of workers, occupants or the public.
- The Contractor shall carefully inspect all of the slings and lifting accessories and make sure that those in poor condition are destroyed or scrapped.
- Compressed-gas cylinders shall be lifted with a basket specially designed for this purpose.

## **PROTECTION AGAINST BURNS**

- Individuals assigned to boilers shall wear long sleeves, safety glasses and a face shield when filling the boilers.
- Individuals working with asphalt or other hot liquids shall wear gloves, long sleeves and safety glasses.
- Where boilers are present, two full ABC fire extinguishers (minimum 10 lbs) are mandatory and they must have been verified within the previous year by a person qualified to do so.

## FIRE PROTECTION

- Work on construction sites must be carried out in compliance with **Fire Commissioner of Canada Standard CI 301, Standard for Construction Operations, June 1982**. This standard is available at the following website:

[http://www.hrsdc.gc.ca/fra/travail/protection\\_incendies/politiques\\_normes/commissaire/301/page00.shtml](http://www.hrsdc.gc.ca/fra/travail/protection_incendies/politiques_normes/commissaire/301/page00.shtml)

- At the beginning of each shift on every site, the Contractor shall obtain a Hot Work Permit issued by the person in charge of the work location.
- A working portable fire extinguisher suitable to the fire risk shall be available and easily accessible within a 5 m radius from any flame, spark source or intense heat.
- An individual shall be appointed to go on rounds (fire) for a period of 30 minutes after the end of the shift. This individual shall countersign the permit and give it to the person in charge of the worksite (or the individual he/she appoints) after the 30-minute period.
- The storage of propane cylinders shall comply with the **CAN/CSA-B149.2-F00 Propane Storage and Handling Code** and meet the specific conditions outlined in this document. The cylinders shall be stored outdoors, in a safe place, away from any unauthorized handling, in a storage cabinet specially designed for this purpose. The cylinders shall be securely kept upright and locked at all times in a place where no vehicles are allowed, unless the cylinders are protected by bars or the equivalent.
- When a compressed gas cylinder is not in use, (S-2.1, r. 4, section 3.13.7):
  - a) it shall be held in place upright, with the valves on top; and
  - b) the protective cap shall be in place.

In the case of 100-lbs propane tanks, the valve must be closed off by a brass cap and the tank must be secured to a specially-designed trolley that is equipped with a retention mechanism.

- Compressed gas, fuel tanks or containers must be stored at least 10 m from any building.
- The number of propane cylinders on the roof shall not exceed the number of cylinders necessary for a day's work, and cylinders shall at all times be secured upright or held in a cart designed for this purpose.

- All of the cylinders used or stored on the worksite shall be equipped with a collar designed to protect the valve.
- Filling the cylinders on the worksite is forbidden, unless a procedure compliant with the CAN/CSA B149.2 standard is approved and authorized by the Departmental Representative.

## **MATERIAL AND WASTE MANAGEMENT**

- On the roof, any materials that are light or in sheets shall be kept in containers or be securely fastened. In the event of any violation, however minor it may be, the Departmental Representative may prohibit the storage of materials on the roof. The preceding paragraph also applies to waste.
- Waste shall be discarded as produced using a waste chute or appropriate containers.
- All waste must be removed from the roof at the end of shifts.
- Unless otherwise authorized by the Departmental Representative, all waste bins must be placed at least 3 m from any structure or building.

## **GENERAL PROTECTION AND WORKSITE ORGANIZATION**

- Regardless of the circumstances and the nature of the work, individuals with access to the worksite must wear protective footwear and hard hats. The Contractor shall provide chin cups or ratchet suspension helmets to workers who must bend over or crouch down.
- Covered passageways shall be set up to protect all entrances and exits.
- A safety perimeter on the ground must be placed under the work zone in order to protect the public and the occupants.
- The ground worksite, material handling area and boiler area shall be clearly sealed off to prevent occupants or the public from accessing the site and areas.
- Before installing any device that may emit gas or fumes, the Contractor shall receive authorization from the person in charge of the worksite, who shall make sure that there is no risk of gas or fumes infiltrating the building's ventilation system.

- The Contractor shall make sure that the worksite is kept clean and tidy for the duration of the work.
- Copies of material safety data sheets of all controlled products shall be forwarded to the Departmental Representative and to the person responsible of the worksite before work begins.
- The Contractor shall provide sanitary facilities and rest areas compliant with requirements of the Safety Code for the Construction Industry.

## 6.3 HOT WORK

Hot work means any work where a flame is used or a source of ignition may be produced, i.e., riveting, welding, cutting, grinding, burning and heating.

Before the beginning of work, the Contractor must have received a “Hot Work Permit” from the Departmental Representative. Work on construction sites must be carried out in compliance with **Fire Commissioner of Canada Standard CI 301, Standard for Construction Operations, June 1982**. This standard is available at the following website:

[http://www.hrsdc.gc.ca/fra/travail/protection\\_incendies/politiques\\_normes/commissaire/301/pa\\_ge00.shtml](http://www.hrsdc.gc.ca/fra/travail/protection_incendies/politiques_normes/commissaire/301/pa_ge00.shtml)

A working portable fire extinguisher suitable to the fire risk shall be available and easily accessible within a 5 m radius from any flame, spark source or intense heat.

An individual shall be appointed to go on rounds (fire) for a period of 1 hour after the end of the shift. This individual shall countersign the permit and give it to the person in charge of the worksite (or the individual he/she appoints) after the 1-hour period.

The storage of propane cylinders shall comply with the CAN/CSA-B149.2-F00 standard, Propane Storage and Handling Code, and meet the specific conditions outlined in this document.

The cylinders shall be stored outdoors, in a safe place, away from any unauthorized handling, in a storage cabinet specially designed for this purpose. The cylinders shall be securely kept upright and locked at all times in a place where no vehicles are allowed, unless the cylinders are protected by bars or the equivalent.

All of the cylinders used or stored on the worksite shall be equipped with a collar designed to protect the valve. Filling the cylinders on the worksite is forbidden, unless a procedure compliant with the CAN/CSA B149.2 standard is approved and authorized by the Departmental Representative.

## WELDING AND CUTTING

Note: For welding and cutting activities, make sure that the following conditions are met, in addition to the above-mentioned conditions.

In the case of any electric welding, oxy-acetylene cutting and grinding operations to be performed in proximity to combustible materials, a metal fume extractor equipped with an activated charcoal filter in good working condition and operational must be placed at 6 inches from the work area.

The work must be carried out in accordance with articles “3.13 Compressed gas supply” and “3.14 Welding and cutting” of the Safety Code for the Construction Industry, S-2.1, r. 4).

Work on construction sites must be carried out in compliance with **Fire Commissioner of Canada Standard CI 302, Standard for Welding and Cutting, June 1982**. This standard is available at the following website:

[http://www.hrsdc.gc.ca/fra/travail/protection\\_incendies/politiques\\_normes/commissaire/302/pa\\_qe00.shtml](http://www.hrsdc.gc.ca/fra/travail/protection_incendies/politiques_normes/commissaire/302/pa_qe00.shtml).

Welding and cutting devices are extremely dangerous and represent a significant fire hazard on construction sites. The following precautions must be taken whenever this type of work is carried out:

- Store all compressed gas cylinders on fireproof surfaces and make sure that the room is well ventilated.
- Store all oxygen cylinders more than 6 metres from any flammable gas cylinder (ex: acetylene) or combustible materials such as oil or grease, unless the oxygen cylinder is separated from such materials by a wall made of non-combustible material, as mentioned in Article 3.13.4 of the Safety Code for the Construction Industry (S-2.1, r. 4).



- Set up fireproof materials when welding work is being performed with superposition and there is risk of falling sparks.
- Store the bottles far from all heat sources.
- Do not store the bottles close to staircases, exits, corridors and elevators.
- Do not put acetylene in contact with metals such as silver, mercury, copper and brass alloys with a copper content higher than 65%, to avoid the risk of an explosive reaction.
- Check that any electric-arc welding equipment has the appropriate voltage and is grounded.
- Ensure that power cords for the electric welding equipment are not damaged.
- Place welding equipment on flat ground and sheltered from bad weather.
- Move away or protect any combustible materials which can be close to welding equipment.
- It is prohibited to weld or cut any closed container.
- Apply protection measures when welding or cutting is carried out near drains, tanks or other containers containing flammable materials.
- Do not perform any cutting, welding or work with naked flame on a container, tank, pipe or other container containing a flammable or explosive substance, unless:
  - Air samples have been taken which indicate that work can be performed without danger; or
  - Provisions have been taken to ensure the safety of the workers.

## **6.4 WORK AT HEIGHTS**

1. The Contractor must ensure that any person who is carrying out work where there is a risk of falling more than 2,4 m must use fall protection equipment.
2. Plan and organize work so as to eliminate hazards at their source or to promote the safety of everyone on site, thereby minimizing reliance on personal protection equipment. When personal fall protection is required, workers must use a safety harness that complies with the CAN/CSA Z-259.10 M90 standard. Safety belts must not be used as protection against falls.
3. It is mandatory to wear a safety harness in any elevating platform with a telescopic, articulated or rotary boom.
4. Cordon off a danger zone wherever equipment for work in height is used.

## 6.5 LOCKOUT

1. For work on equipment that is powered by electricity **or any other energy source** or that is likely to be turned on accidentally, the Contractor shall provide in writing and apply a lockout procedure. **For work on equipment that is powered by electricity**, the Contractor shall also complete a lockout form, which will include, at the very least, the items appearing in the form presented on the next page.

Although the list below is not exhaustive, here are some examples where it is mandatory to use the form:

- 1) main building power feeders
  - 2) feeder supply panels and sub-panels
  - 3) bus ducts
  - 4) motor control centres
  - 5) emergency power circuits
  - 6) fire alarm and fire protection equipment
  - 7) mechanical protective equipment (sump pump, etc.)
  - 8) alarm circuit for building services, including all heating, ventilating and air conditioning equipment
  - 9) circuits **or networks** supplying more than one (1) piece of equipment
  - 10) **circuits or networks** affecting one (1) single piece of equipment used in a cooling or heating system
  - 11) After having completed the form, the Contractor shall have it countersigned by the Worksite Manager before starting work.
2. Notwithstanding the previous paragraphs, the Contractor shall, in emergency situations, receive an oral guarantee of isolation of the Worksite Manager and immediately countersign the request of electrical isolation.
  3. The procedure requested at paragraph 1 must comply with the principles listed in the “*Le cadenassage*” pamphlet published by the *Association paritaire pour la santé et la sécurité du travail secteur construction* (ASP Construction), **as well as the Z460-13 CSA standard and Section 185 of the Regulation Respecting Occupational Health and Safety.**
  4. Supervisors and all workers concerned must have followed the course given by **ASP Construction, “*Les techniques de cadenassage*” [(514) 355-6190 or 1 800 361-6190]** or an equivalent course given by another firm.
  5. Identify every work that must absolutely be done on live equipment and establish the safety measures to be applied, including any personal protection equipment.

## REQUEST FOR ELECTRICAL ISOLATION DEMANDE DE COUPURE À LA SOURCE

<b>A. Building Name and Address - Nom et adresse de l'immeuble</b> <span style="float: right;">A</span>		Isolation Request No. N° de demande de coupure à la source	
Specific Location of Installation or Equipment to be Isolated (indicate floor, wing, room no., cabinet no., etc.) Endroit précis de l'installation ou de l'appareillage devant être coupé à la source (indiquer étage, salle, le n° de la pièce, le n° du panneau, etc.)		Date and Time of Request - Date et heure de la demande	
Description of Installation or Equipment to be Isolated Description de l'installation ou de l'appareillage devant être coupé à la source		Isolation to Start On Coupure à la source devant débuter le	
Procedures for Isolation - Procédures de coupure à la source (NOTE: When procedures involve more than one operation a Procedures for Isolation Form must be completed and attached.) (NOTA: Lorsqu'un procédé comporte plus d'une opération, vous devez remplir le formulaire «Procédures de coupure à la source» et l'attacher au présent formulaire.)		Isolation to End On Coupure à la source devant se terminer le	
Voltage Tension		When high voltage equipment is to be isolated a Procedures for Isolation Form must be completed and attached. Pour la coupure à la source d'appareillages haute tension, le formulaire «Procédures de coupure à la source» doit être rempli et joint.	
Update of Line Drawings Required Upon Completion Nécessité de mettre à jour les schémas électriques une fois les travaux terminés		<input type="checkbox"/> Yes / Oui <input type="checkbox"/> No / Non	
Requested by - Demandé par			
Name of Person in Charge - Nom de la personne responsable	Signature	Date	Hour - Heure
		Y-A M D-J	HHMM
<b>B. Request Approved - Demande autorisée</b> <span style="float: right;">B</span>			
Name of Guarantor - Nom du garant	Signature	Date	Hour - Heure
		Y-A M D-J	HHMM
<b>C. Isolation Confirmed - TO BE COMPLETED PRIOR TO COMMENCEMENT OF WORK</b> <b>Coupure à la source confirmée - À REMPLIR AVANT DE COMMENCER LES TRAVAUX</b> <span style="float: right;">C</span>			
Isolation has been tested and it is determined safe for workers to perform the work. Le procédé de coupure à la source a été mis à l'essai et les travaux peuvent être exécutés en sécurité.			
Name of Person in Charge - Nom de la personne responsable	Signature	Date	Hour - Heure
		Y-A M D-J	HHMM
<b>D. Completion of Requested Isolation Time and Completion of Work Confirmed</b> <b>Achèvement de la période demandée pour la coupure à la source et confirmation de l'exécution des travaux</b> <span style="float: right;">D</span>			
Line Drawings Updated as Required Les schémas électriques ont été mis à jour tel que demandé			
<input type="checkbox"/> Yes / Oui <input type="checkbox"/> No / Non			
Name of Person in Charge - Nom de la personne responsable	Signature	Date	Hour - Heure
		Y-A M D-J	HHMM
<b>E. Approval of Completion of Work and Confirmation that Equipment or Installation has been Re-energized</b> <b>Approbation d'achèvement des travaux et confirmation de la remise sous tension de l'appareil ou de l'installation</b> <span style="float: right;">E</span>			
Name of Manager in Charge of Worksite or Supervisor Nom du gestionnaire responsable du lieu de travail ou du superviseur	Signature	Date	Hour - Heure
		Y-A M D-J	HHMM

PWGS-TPSGC 13 (12/1997)

**THIS RECORD MUST BE KEPT FOR ONE YEAR FOLLOWING COMPLETION OF WORK  
À CONSERVER PENDANT UN AN APRÈS LA FIN DES TRAVAUX**

Copy 1 / Copie 1 → **Manager in Charge of Worksite or Supervisor**  
Gestionnaire responsable du lieu de travail ou superviseur

Copy 2 / Copie 2 → To be submitted to, and retained by the Guarantor (upon completion of the work)  
À remettre au garant à la fin des travaux. Le garant doit garder cette copie.

## 6.6 SANDBLASTING

Sandblasting must be carried out in accordance with Section 3.20 Sandblasting of the Safety Code for the Construction Industry (S-2.1, r. 4).

### Ventilation

The area must be isolated and ventilated by extraction. (Safety Code for the Construction Industry, Section 3.20.5). The Contractor shall seal off the work area and the work clothes changing room from the rest of the building with an airtight enclosure that has an exhaust ventilation system. The ventilation system shall meet the following standards: (a) it shall be equipped with a high-efficiency filter; (b) it shall provide at least four (4) changes of air per hour; (c) it shall ensure negative pressure of between 1 and 4 Pa.

### Respiratory protection

It is mandatory for any worker using an abrasive air blaster to wear an air-supplied hood as specified in the current *Guide des appareils de protection respiratoire utilisés au Québec*, published by the *Institut de recherche Robert-Sauvé en santé et en sécurité du travail*, gloves and clothing designed to provide protection against dust and abrasive or metal projections, unless the worker is isolated from the process.

## 6.7 SCAFFOLDING

### FOUNDATION

- Scaffolding shall be installed on a solid foundation so that it does not slip or rock.
- Contractors wishing to install scaffolding on a roof, overhang, canopy or awning shall submit their calculations and loads to the Departmental Representative and shall obtain permission from the Departmental Representative before beginning installation.

### ASSEMBLY, BRACING AND MOORING

- All scaffolding shall be assembled, braced and moored in accordance with the manufacturer's instructions and the provisions of the Safety Code for the Construction Industry.

- Where a situation requires the removal of part of the scaffolding (e.g., crosspieces), the Contractor shall submit an assembly procedure duly signed by an engineer and bearing his or her seal, certifying that the scaffolding assembled in that manner will allow the work to be performed safely, given the loads to which it will be subject.
- For scaffolding where the span between two supports is greater than 3 m, the Contractor shall provide an assembly plan duly signed by an engineer and bearing his or her seal.

### **PROTECTION AGAINST FALLS DURING ASSEMBLY**

- Workers working above the ground shall be protected against falls at all times during assembly.
- Before the work begins, the Contractor shall submit to the Departmental Representative a procedure stating the protective measures to be used which identifies the anchor points for safety cables or moorings, if applicable. Said procedure shall comply with Sections 3.9.4.5, 2.9.1 and 2.10.12 of the Safety Code for the Construction Industry (amended August 2, 2001)

### **PLATFORMS**

- Scaffolding platforms shall be designed and installed in accordance with the provisions of the Safety Code for the Construction Industry.
- If planks are used, they must be approved and stamped in accordance with Section 3.9.8 of the Safety Code for the Construction Industry (in effect as of January 1<sup>st</sup>, 2002).
- The platforms must cover the entire surface protected by the guardrails.
- Notwithstanding the foregoing, any scaffolding of 4 sections (or 6 metres) high or higher shall have a full platform covering the entire surface of the putlogs every 3 m or any fraction thereof, and the components of that platform must not be moved at any time to create an intermediate landing.

### **GUARDRAILS**

- A guardrail shall be installed on every landing.
- Cross braces shall not be considered guardrails.
- Wherever scaffolding of 4 sections (or 6 metres) high or higher requiring full platforms is used, guardrails shall be installed on each landing at the start of work and shall remain in place until the work is completed.

## **ACCESS**

- The Contractor shall ensure that access to scaffolding does not compromise worker safety.
- Wherever scaffolding platforms are comprised of planks, ladders shall be installed in such a way that planks extending beyond the platform do not block the way up or down.
- Notwithstanding the provisions of the Safety Code for the Construction Industry, stairs shall be installed on all scaffolding that includes 6 or more rows of uprights or 6 sections or more (or 9 metres) in height.

## **PROTECTION OF THE PUBLIC AND OCCUPANTS**

- The Contractor shall identify the boundaries of and barricade the work area so as to limit access to authorized workers only.
- The Contractor shall install covered walkways, nets or other similar devices to protect the public or the occupants against falling objects.

## **USE OF PUBLIC ROADS**

- Whenever it is necessary to encroach on a public road, the Contractor shall obtain, at the Contractor's expense, any authorizations and permits required by the competent authority.
- The Contractor shall install, at the Contractor's expense, any signage, barricades or other devices needed to ensure the safety and security of the public and the Contractor's own facilities.

# **6.8 CONFINED SPACES**

## **Classifying and assessing confined spaces**

NRCan shall classify and evaluate all confined spaces on properties of which it is the custodian. Confined spaces are divided into three categories: 1- low risk, 2- medium risk, 3- high risk. An evaluation report is produced for each confined space, which identifies all of the characteristics and entry requirements of the confined space, and which will serve as one of the elements taken into account in issuing permits and developing work procedures.

All confined spaces shall be properly identified according to their classification. A signboard approved by NRCan must be placed at the entrance of confined spaces or installed as close as possible to such spaces.

### **Class 1**

For all Class 1 (low risk) confined spaces, every person involved shall have completed the basic training, the contents of which will be given if necessary. While it is not necessary to implement specific work practices in low-risk confined spaces, the Contractor shall employ methods to ensure the health and general safety of individuals who must perform work in such spaces.

Before entering confined spaces, the Contractor must inform the Worksite Manager of the date and time agreed for entry and exit. People who have access to low-risk confined spaces must indicate the relevant information in the confined spaces access log, i.e., all persons entering this category of confined space must register each entry and each exit.

### **Classes 2 and 3**

For all confined spaces of classes 2 and 3 (medium and high risk), the following measures must be strictly enforced.

1. The Contractor's Safety Program shall include a written procedure that identifies:
  - The tools required to perform the work;
  - The equipment installed or to be installed in the confined space and measures for its installation, use, maintenance, protection or travel;
  - Pipes and conduits entering the confined space;
  - The hazards and safety measures to be taken depending on the work to be performed;
  - Contaminants that might be encountered in the confined space;
  - The means and rescue equipment and actions that are appropriate in case of emergency.
2. The Contractor shall complete an access permit. Said permit shall be valid for the duration of a shift and must consider the information contained in the evaluation report and the specific conditions for the work to be performed. However, the Contractor may use their own form, if it contains all the information that appears on the form provided by NRCan.
3. The Contractor shall prepare a Hot Work Permit when the work to be performed includes welding, cutting or any other activity producing a flame or sparks.
4. All persons with access to the confined space must hold the following training certificates:
  - Security for work in confined spaces – NRCan (ASP Construction)
  - First aid in the workplace and CPR (by an organization recognized by the CSST)
  - Use of ventilation (ASP Construction)
  - Use of safety harness (ASP Construction)
  - Use and maintenance of respiratory protective equipment (ASP Construction)
  - Gas detection devices (ASP Construction).

- When using equipment with supplied-air or autonomous respirators, comprehensive training on the preparation, maintenance and use of these devices (manufacturer, supplier, or recognized organization) is required.
  - In remote areas where there is no local rescue and emergency response unit available, the Contractor shall designate persons qualified to conduct rescue operations in confined spaces. Rescuers designated by the Contractor must receive the appropriate training on the use of lifesaving equipment.
5. All persons who use a supplied-air respirator must present a medical certificate confirming their ability to work in confined spaces. The certificate is valid for two years.
  6. Employees required to work in sewage collection systems or other similar systems should be immunized against infectious diseases, according to the immunization program prescribed by Health Canada, that is, against diphtheria and tetanus, and in the case of work undertaken with Correctional Services Canada, against hepatitis "B".
  7. Vaccination against diphtheria and tetanus is strongly recommended for all work in confined spaces.
  8. The Contractor shall establish an emergency and rescue procedure with municipal and ambulance services. The procedure, phone numbers and location of the nearest telephone shall be prominently displayed near the work location.
  9. Before entering the confined space and every 15 minutes thereafter, the Contractor shall take readings of the concentration of oxygen, flammable gases and any toxic gases likely to be present, in particular carbon monoxide and hydrogen sulphide. The readings shall be recorded in a log unless the detection devices have an alarm and operate continuously. The detection devices used shall be calibrated and adjusted by a qualified person according to the manufacturer's instructions so that the alarms comply with the limits set out in the permit.
  10. The Contractor shall supply its own gas detection devices and keep them in good working condition. Furthermore, the Contractor must provide a calibration certificate. The Departmental Representative may have the accuracy of the Contractor's devices checked at any time by a qualified person. If a detection device fails, work shall be suspended immediately, and all workers shall leave the confined space. No claim for lost time will be accepted in those circumstances.
  11. If the alarm on a detection device sounds, all workers shall leave the confined space. The Contractor shall then determine the source of the contamination, neutralize it and ventilate the confined space in order to eliminate any remaining contaminant, as well as keep individuals out of the confined space until the oxygen and gas levels have returned to normal.



12. Compressed gas cylinders and welding machines must not be taken into confined spaces: such equipment must remain outside and should not block the access or exit; all bottles must be secured properly.
13. Electric tools and devices used to access confined spaces shall be grounded and, if necessary, designed to be explosion-proof. All equipment shall be connected to a ground fault interrupter or stepdown transformer. The Contractor shall, at his own expense, have a qualified electrician modify the power outlets and/or circuit breakers that he intends to use which do not match these criteria.
14. The Contractor shall provide a ventilation system to keep contaminant levels below the allowable limits.
15. The Contractor shall post signs to prevent unauthorized persons from entering the confined space.
16. Where it is impossible to keep the noise level below 85 dB, the Contractor shall provide all workers with ear protectors appropriate to the level desired and work to be performed.
17. The Contractor shall ensure that all workers wear the personal protective equipment that is required.
18. The Contractor shall assign a competent person to assume the duties of custodian. The custodian must:
  - Be familiar with working in confined spaces.
  - Ensure constant communication with all workers present in the confined space. The instructions used must be adapted to confined spaces. The Contractor shall select means of communication based on the hazards identified and other relevant factors, that is, the protective equipment that workers are required to wear, noise levels in and near confined spaces, remoteness, lighting conditions, etc.
  - Be familiar with the gas detection devices and that they are in working order throughout the work.
  - Be familiar with the back-up ventilation systems and ensure that they are in working order throughout the work.
  - Be familiar with emergency procedures.
  - Ensure that:
    - All workers entering the confined space shall follow the Contractor's work procedure.
    - The conditions and the working environment inside the confined space are not detrimental to the workers' health and safety.
19. The custodian shall remain at the entrance to the confined space as long as there is a worker in the space.

20. The Contractor shall designate a person responsible for the safety in confined spaces. This person must be present at all times on site.

21. The same person may serve as custodian and confined spaces safety officer, provided that he or she can meet all the requirements of both positions.



CONFINED SPACE ENTRY PERMIT / PERMIS D'ACCES AUX ESPACES CLOS

Permit no. / N° du permis

Valid for eight (8) hours only. / Ce permis est valable pendant huit (8) heures seulement.

Issue date and time / Date et heure d'émission | Expiry date and time / Date et heure d'expiration

Contractor / Entrepreneur | PWGSC Personnel / Personnel de TPSGC

Location - Lieu | Dept. - Min. | Confined space no. / N° de l'espace clos | Confined space class / Catégorie d'espace clos

Description of work to be completed - Description du travail à effectuer

Table with 2 columns: Yes/Out, N/A/S.O. and Hazards of the Confined Space / Risques présentés par l'espace clos. Rows include Oxygen, Flammables, Toxic Chemicals, Mechanical, Electrical, Physical, and Others.

Equipment required for CS Entry - Équipement requis pour entrer dans l'espace clos. Grid of checkboxes for Respiratory, Lifelines, Lockouts, Hearing protection, etc.

Person in charge - Personne responsable | Signature

Safety Watcher - Gardien | Signature

Entrants - Personnes qui entrent dans l'espace clos

Local emergency/medical response teams - Équipes locales d'intervention médicale et d'urgence | Telephone nos. - N°s de téléphone

Authorization - Autorisation. The above information is complete and accurate. / Tous les renseignements fournis ci-dessus sont complets et exacts. Manager in Charge of Worksite or Supervisor | Signature



**CONFINED SPACE ENTRY LOG  
REGISTRE D'ACCÈS AUX ESPACES CLOS**

Site supervisor - Superviseur du site	Telephone number - Numéro de téléphone
---------------------------------------	--

Name Nom	Date	Confined Space Location Identification de l'espace	Time In Heure d'entrée	Time out Heure de sortie

PWGSC-TPS3C 103 (10/06)

## **6.9 WORK IN ISOLATED LOCATIONS**

Tunnels, crawl spaces, mechanical rooms, roofs, mechanical shafts, pent roofs and pumping stations are considered to be isolated locations.

Depending on the type or urgency of the work to be done, where an employee must work alone in an isolated location, it shall be mandatory for the employee to so advise his immediate supervisor and the work manager.

The employer shall provide the employee working under these conditions with a means of communication to enable him/her to communicate in the event of an emergency, until the work in question is completed.

## 6.10 LIFTING OPERATIONS

The Contractor must be capable at all times of demonstrating that its lifting operations are not hazardous to the safety of workers or occupants. A lifting plan including, at a minimum, the information contained in the following example shall be forwarded upon request to the safety officer and, in the event of any doubt, the Departmental Representative may require that the lifting plan be duly signed by an engineer and bear his or her seal.

The Contractor must plan lifting operations in order to prevent any loads from passing above occupied areas. Where loads are to be carried above an occupied area, it will be mandatory for the lifting plan to be duly signed by an engineer and bear his or her seal in order to guarantee the safety of the occupants of the area in question.

### 1.1 Safe use of mobile tower cranes and traditional mobile telescopic cranes

**RE:** This document is meant to serve as a guide for the safe use of mobile tower cranes and traditional mobile telescopic cranes in construction work. (Note: This section is supplementary to the OHS requirements set out in the specifications and the current Construction Safety Program – in the event of a discrepancy between two requirements concerning an element, the most rigorous of the two shall apply.)

#### ACTIONS

#### RESPONSIBILITY

**General note:** This safety guide has been developed in accordance with existing regulations and standards concerning mobile tower cranes and traditional mobile telescopic cranes.

**Introduction - Responsibilities of the stakeholders:** The following abbreviations (between quotation marks) are used to establish the division of responsibilities in the right column.

- Project Manager: **"PM."** Represents the Principal Contractor, authorizes the work to be performed.
- General Contractor: **"GC."** Coordinates the development of work and lifting plans, as well as the work to be performed.
- Crane operation subcontractor, crane operator and assistant(s): **"C."** Develop the lifting plan and installation drawing. The crane operator is responsible for lifting operations; as soon as they begin, the crane operator becomes the "head" of lifting operations.
- Flagperson(s): **"FLAG."** Responsible for the protection of the public and workers.

**PM**

**GC**

**C**

**FLAG**

- Slinger(s): **"SLING."** Main worker involved in lifting and placing materials on foundations.
- OHS Technical Advisor, Construction: **"OHS."** The Principal Contractor's Representative; i) ensures that all stakeholders are aware of their responsibilities regarding lifting operations, and ii) performs spot checks to ensure work is being carried out correctly (safety breaks before lifting operations begin).

**SLING**  
**OHS**

1. **Applicable Quebec legislation:** Standards set out in the Safety Code for the Construction Industry (S-2.1, r. 4). They are mandatory.

1.1 **Traditional mobile telescopic cranes:** CSA-Z-150-1974 and its supplement No. 1-1977; the sections of the Code are the following: 2.15.4, 2.15.7.2 and 3.10.7(4).

**"2.15.4. Boom:** The boom of a hoisting apparatus not covered by CSA Standard Z150-1974 Safety Code for Mobile Cranes and its supplement No. 1-1977 or CSA Standard Z248-1975 Code for Tower Cranes shall be installed and built according to the specifications approved by an engineer."

**"2.15.7.2.** A mobile crane shall conform to CSA Standard Z150-1974 Safety Code for Mobile Cranes and its supplement No. 1-1977, with the exception of section 4.3.2.5.

A **mobile crane log book** shall be kept up-to-date in accordance with that standard and shall comply with Schedule 9."

**"3.10.7. Lifting of workers:**

4. During the hoisting of a worker with a mobile crane:

- a) the crane shall conform to CSA Standard Z150-1974 Safety Code for Mobile Cranes and its supplement No. 1-1977;
- b) the platform shall be suspended or held in such a way that:
  - i. the slope of the floor does not exceed 1/5 in the worst loading conditions; and
  - ii. the flexible suspension members of the platform and the supporting hitch or pin have a minimum safety factor of 10;
- c) an additional link shall tie the supporting hitch of the platform to a point located above the hook; and
- d) the mobile crane shall be equipped with an upper limit switch for the hook or with a boom allowing the lifting of the platform at least to 3 m above the highest work level."

**C**

**APPENDIX 9**

(a. 2.15.7.2) **MOBILE CRANE LOG BOOK**

1.2 **Tower cranes:** CSA-Z248-1975 and the section of the Code is the following: 2.15.7.4

**"2.15.4. Boom:** The boom of a hoisting apparatus not covered by CSA Standard Z150-1974 Safety Code for Mobile Cranes and its supplement No. 1-1977 or CSA Standard Z248-1975 Code for Tower Cranes shall be installed and built according to the specifications approved by an engineer."

**"2.15.7.4.** A tower crane shall conform to CSA Standard Z248-1975 Code for Tower Cranes.

A tower crane log book shall be kept up-to-date in accordance with that standard and shall comply with Schedule 10."

## APPENDIX 10

### (a. 2.15.7.4) TOWER CRANE LOG BOOK

#### 2. Key risks associated with this equipment:

- 2.1 Falling equipment (danger of workers being crushed by loads)
- 2.2 Overturning (danger of overturning if all stabilizers are not used)
- 2.3 Electrocutation (danger of coming into contact with power supply)
- 2.4 Building damage, in the case of direct contact with the boom or the load
- 2.5 Dangerous manoeuvres (direct relation between the impact of the fall and the height at which loads are suspended above the building)  
Examples:
  - Loads must be handled no more than 1 meter above pent roofs or parapets on the roof.
  - The swing of the load could compromise the crane's stability.
- 2.6 Collapse, if daily verifications are not carried out.
- 2.7 During start-up operations, crane operators sometimes perform manoeuvres to install the boom outside the safety perimeter (danger of collision with vehicles and risk that visitors or other individuals present in the area may approach manoeuvres).

#### 3. Basic safety measures:

- 3.1 Yearly verification by an engineer (certificates of compliance for major components) and verification by a mechanic (with a minimum of 5 years of experience) immediately before the equipment is delivered to the worksite.
- 3.2 Use of a communication system (two-way radios) to avoid misinterpreting visual signals when working on the third floor or above of a building.
- 3.3 Daily verification by the operator (log book) before beginning crane operations.
- 3.4 Use of accessories, in good condition: Example:
  - Synthetic slings (no tears) or metal slings (10 broken wires in a strand); the data plate must be present to advise the user of the sling's rated capacity.
- 3.5 Do not use such lifting equipment
  - when the anemometer at the end of the boom indicates a wind speed above 30 km/hour; or
  - at temperatures of minus 30°C.
- 3.6 If the ground is unstable, request the assistance of the engineer to determine the dimensions and type of leveling pads necessary to distribute the weight (different dimensions and thicknesses) over the ground (varies in the case of embankments).

C

C + FLAG  
+ SLING

C

C

C

C



3.7 Immediately stop using lifting equipment if a major component or safety mechanism is defective (e.g., malfunctioning stabilizers or limiting device for safe operation near power lines).	C
<p>3.8 Safe use of tower cranes and Potain cranes, requiring:</p> <ul style="list-style-type: none"> <li>• an engineer's plan and certificate of compliance before it is first used;</li> <li>• use flagpersons with two-way radios;</li> <li>• flagpersons must wear an orange security vest so as to be identifiable as such on the worksite;</li> <li>• a safety meeting must be held before the beginning of tower crane operations in order to establish each worker's role and the authority of flagpersons, who may stop any operations and move any worker for manoeuvres which require stopping a load above workers on the worksite;</li> <li>• loads must not be moved over the public; flagpersons must establish a safety perimeter for lifting components and loads;</li> <li>• the use of tower cranes and Potain cranes to lift workers is prohibited;</li> <li>• the crane operator must test the crane's breaks to ensure that they are in good working order and to avoid dropping a load; the crane operator must also carry out the rest of the verifications required as per the tower crane log book.</li> </ul>	<p>C C+ <b>FLAG</b></p> <p><b>FLAG</b></p> <p><b>OHS +C + FLAG + SLING</b></p> <p><b>GC + C</b></p> <p><b>GC + C</b></p> <p>C</p>
<b>4. Requirements as per the Construction Safety Program:</b>	
<p>4.1 Creation of lifting plan and installation drawing:</p> <ul style="list-style-type: none"> <li>- Carried out by a qualified person: e.g., an engineer, an assessor or technical advisor from the crane company</li> <li>- To include an assessment of the area, taking measurements to determine the distance covered by the boom, the items to be lifted (size and weight), the type and capacity of crane - and review, as appropriate, the data sheets of products to be lifted;</li> <li>- In certain cases, namely when loads must be moved above occupied areas, the installation drawing must be certified by an engineer;</li> <li>- In light of their expertise regarding the site, OHS advisors in construction must be present during the development of the lifting plan.</li> </ul>	<p><b>PM + GC + C</b></p> <p><b>OHS</b></p>
<p>4.2 Ensure public safety:</p> <p>Immediate safety measures barring public access to the site where lifting activities are executed:</p> <ul style="list-style-type: none"> <li>- During start-up operations, crane operators may carry out manoeuvres to install the boom outside the safety perimeter: For all start-up operations outside the perimeter, <b>no less than</b> two flagpersons must be present wearing reflective security vests (green on the roads and orange in parking areas) and carrying a flag.</li> </ul>	<p><b>OHS</b></p> <p><b>GC</b></p>

- Duration of lifting operations – 1 day: Implementation of a safety perimeter using barricades and red tape; use of flagpersons with safety vests and flags (as necessary). When the area is high traffic or when it is more difficult to control access to the site: prioritize the installation of a fence.
- Duration of lifting operations – over 1 day: Implementation of a safety perimeter using metal fencing (1.8 m high), which must be padlocked in the evening.
- If the Contractor would like to change positioning as established in the start-up plan, all new parameters must be confirmed with the Principal Contractor.
- If the sidewalk is blocked, a safe alternative route must be made available for pedestrians.
- Approaching distances to power lines must be taken into account. If a problem remains, Hydro-Québec must be involved.

In the case of occupied buildings,

- Plan to evacuate the sector's occupants in certain cases (e.g., laundry room, Human Resources meeting room). Also plan for signage. A communication plan may also be necessary.
- Obtain written confirmation that the lifting equipment's catalyst is functional.
- Environmental measures to be considered: OHS Technical Advisors in Construction will further validate this function using a 4-gas detector and will verify the fresh-air inlets. As needed, take the following measures: reposition the fresh air inlet or integrate activated carbon filters.

#### 4.3 Slinging and lifting loads:

- Loads must be slung by experienced slingers, who shall make sure to install two (2) appropriate guiding ropes in order to avoid the impact of wind on the load or any risk of collision with the building or the crane's boom.
- The slinger must never be close to or under the load. Instead, the slinger must use guide ropes to lead the load to the area where it is to be positioned or moored.

#### 4.4 As per the Code, experienced flagpersons and slingers:

- Flagpersons must be identified and wear required safety vests: Green on roads and orange within the worksite and facilities.

**GC**

**PM+ OHS**

**SLING**

**FLAG**

- Flagpersons must never, under any circumstances, allow for the load be moved over the public.
- On the roof: All flagpersons who approach a drop in height must be restrained by a fall arrest connecting device and a safety harness attached to a lifeline which is tied to a part of the building's structure.
- The use of two-way radios is mandatory with buildings over 3 stories high.
- When lifting operations require actions outside the established safety perimeter, flagpersons must be present to secure the unprotected area and avoid any manoeuvres above the public.

**FLAG**

**FLAG**

**FLAG**

4.5 Presence of OHS Technical Advisors, Construction: their presence is required prior to all lifting operations; they shall host a safety break focusing on each worker's role in the upcoming lifting operation.

**OHS**

End of procedure

## **SAFE LIFTING PLAN**

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

Contractor: \_\_\_\_\_

### **TYPE OF CRANE USED:**

### **LOAD DETAILS:**

- Weight and length of load as determined by crane operator and supervisor:
- Width, height or diameter of load:
- Length of load:
- Guide ropes:
- Height of obstacle to be cleared:
- Lowering:
- Verification of lifting equipment:
- Marking off work area:
- Marking off crane area:
- Lifting capacity according to location:
  - Maximum weight:
  - Angles allowed:
- Reach:
  - On the reverse, indicate the worksite location, angles covered, safety perimeter and maximum allowable load.
- Supply an installation drawing for the crane

Signatures of crane operator and the safety officer

## 7. EMERGENCY NUMBERS

EMERGENCY NUMBERS	PHONE NUMBER
AMBULANCE	911
FIRE DEPARTMENT	911
POLICE	911
C.S.S.T.	1-866-302-2778
ESDC	1-800-641-4049
PROJECT MANAGER (NRCAN) Stéphane Marois	418-648-7076
PROJECT MANAGEMENT SUPPORT (MHPM PROJECT MANAGEMENT) James Skaperdas	514-449-7611
POISON CONTROL CENTRE QUEBEC	1-800-463-5060
ENVIRONNEMENT QUÉBEC	1-866-694-5454
ENVIRONMENT CANADA	1-866-283-2333
CANUTEC	613-996-6666
GAZ MÉTROPOLITAIN	1-800-361-8003
HYDRO-QUÉBEC	1-800-361-8003
INFO-EXCAVATION	1-800-663-9228

## 8. NOTICE OF WORK DONE OUTSIDE REGULAR WORKING HOURS AND WEEKENDS

### CANMET EXPERIMENTAL MINE, VAL D'OR – REROOFING OF THE SECONDARY BUILDING AND MECHANICAL SHOP

Submitted to: \_\_\_\_\_

General Contractor: \_\_\_\_\_

Subcontractors on worksite: \_\_\_\_\_

Work planned for: \_\_\_\_\_  
dd / mm / yyyy

Evening of: \_\_\_\_\_  
dd / mm / yyyy

Saturday: \_\_\_\_\_  
dd / mm / yyyy

Sunday: \_\_\_\_\_  
dd / mm / yyyy

Planned work schedule: start: \_\_\_\_\_ : \_\_\_\_\_ end: \_\_\_\_\_ : \_\_\_\_\_

Description of work planned: \_\_\_\_\_

\_\_\_\_\_

Total number of workers on site: \_\_\_\_\_

Name of superintendent who will be on site: \_\_\_\_\_

Name of first-aid worker who will be on site: \_\_\_\_\_

Notice completed by: \_\_\_\_\_

Date: \_\_\_\_\_  
dd / mm / yyyy

**Notes:**

This notice must be sent to the Departmental Representative at least 24 hours before the work is performed. For work done on weekends, this notice must be sent on the Thursday prior to the weekend in question.

This authorization is valid only for the date and duration indicated. This is not an authorization for overtime and does not obligate either the Project Owner or his Representative to compensate the Contractor and/or Subcontractor for the expenses incurred for time worked outside of regular working hours.

## 9. CONTRACTOR AND SUBCONTRACTOR'S COMMITMENT

### CANMET EXPERIMENTAL MINE, VAL D'OR – REROOFING OF THE SECONDARY BUILDING AND MECHANICAL SHOP

I declare that I have read the Project Owner's Safety Program Framework and commit myself, my employees, my subcontractors, my suppliers, visitors and any other person for which I am responsible, to comply with the Project Owner's Safety Program Framework. This commitment also applies to section II of the present document (Contractor's Safety Program).

Moreover, the Project Owner shall not be held liable for any losses or costs incurred by the Contractor or his subcontractors, his employees or representatives for any delay, work stoppages, or for the non-compliance of a provision of the Safety Code for the Construction Industry or of any other law or regulation concerning occupational health and safety.

The Contractor undertakes to hold harmless, defend and compensate the Project Owner, if necessary, following any inspection report, correction notice, infringement notice, advance notice, lawsuit or judgment in all matters related to the violation of a provision of an act or a regulation regarding occupational health and safety under the Contractor's responsibility, when the Project Owner can be charged with said violation under a provision of an act or regulation concerning occupational health and safety.

In the event of inconsistency, the Project Owner's Safety Program Framework shall take precedence over the Contractor's and/or Subcontractor's safety programs, in accordance with Article 203 of *An Act Respecting Occupational Health and Safety*.

**Contractor's identification and address:** \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Date

\_\_\_\_\_  
Contractor's Representative's signature

**Subcontractor's identification and address:**\_\_\_\_\_

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\_\_\_\_\_

Date

\_\_\_\_\_

Subcontractor's Representative's signature

**Subcontractor's identification and address:**\_\_\_\_\_

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Date

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Subcontractor's Representative's signature

**Subcontractor's identification and address:**\_\_\_\_\_

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Date

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Subcontractor's Representative's signature

**Subcontractor's identification and address:**\_\_\_\_\_

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Date

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Subcontractor's Representative's signature



**Subcontractor's identification and address:** \_\_\_\_\_

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Date

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Subcontractor's Representative's signature

**Subcontractor's identification and address:** \_\_\_\_\_

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Date

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Subcontractor's Representative's signature

**Subcontractor's identification and address:** \_\_\_\_\_

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Date

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Subcontractor's Representative's signature

**Subcontractor's identification and address:** \_\_\_\_\_

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\_\_\_\_\_

Date

\_\_\_\_\_

Subcontractor's Representative's signature

## 10-TABLE OF VIOLATIONS AND DISCIPLINARY NOTICE FORMS

Any violation of NRCan's safety program, various safety regulations, legislation, codes, government standards and worksite-specific standards must be made known verbally by the Principal Contractor's Representative or the Contractor's Representative and **put in writing in a disciplinary notice** (see next page). The offender (employer or worker) must correct the situation immediately upon noting the violation. The employer's representative (responsible for work on site) is responsible and accountable for supervising the health and safety of stakeholders on the worksite. **According to the severity of the action in question and its impacts on our clients, the sanction may be increased and expulsion may last until the end of work on site or be permanent.**

### Table of violations

Type of violation	1st violation	2nd violation	3rd violation
<b>Exposing oneself</b> to one or more of the following hazards ( <b>zero tolerance from the CSST</b> ): - Fall exceeding 3 meters; - Electrocutation; - Being buried during digging operations; - Scaffolding collapse; - <b>Disregard of lockout procedure</b> ; - Silica or asbestos.	Written notice	<b>Expulsion</b> from the worksite for the rest of the day and the following day	Permanent <b>expulsion</b> from the worksite
Welding and cutting procedure not respected	Written notice	Permanent <b>expulsion</b> from the worksite	
One or more of the following violations: - Use of inadequately labeled scaffolding; - Superimposed work; - Passing a load over workers; - Working under a load.	Written notice	<b>Expulsion</b> from the worksite for the rest of the day and the following day	Permanent <b>expulsion</b> from the worksite
Lifting equipment: - Disregard of operating procedure; - Use of non-compliant equipment.	Written notice	<b>Expulsion</b> from the worksite for the rest of the day	Permanent <b>expulsion</b> from the worksite
Threaten the integrity of another worker or the public.	Written notice and <b>expulsion</b> from the worksite for the rest of the day and the following day	Permanent <b>expulsion</b> from the worksite	
Contribute to the contamination of laboratory areas	Written notice #1	Written notice #2	<b>Expulsion</b> from the worksite for 2 or more days depending on the severity of the violation



# Disciplinary notice

Company name:

Date:

Employee's name:

Union and local:

Worksite:

**Brief description of the incident or behaviour which resulted in this measure:**

Previous notice (yes/no):

Date:

**This measure will remain in your file and may result in more rigorous disciplinary measures, potentially as serious as expulsion from the worksite, if this incident is repeated or another significant incident occurs.**

\_\_\_\_\_  
Employee's signature:

Date:

\_\_\_\_\_  
Employer signature:

Date:

\_\_\_\_\_  
Witness signature:

Date:

**Employee's name:** .....**Employer's name:** .....

## **SECTION II**

### **CONTRACTOR'S SAFETY PROGRAM**

# **1. CONTRACTOR'S HEALTH AND SAFETY POLICY**

(TO BE PROVIDED BY THE CONTRACTOR)

**2. CURVES SHOWING SIZE OF WORK FORCE ACCORDING TO WORK STAGES**

(TO BE PROVIDED BY THE CONTRACTOR)

### **3. SCHEDULE**

(TO BE PROVIDED BY THE CONTRACTOR)

## **4. ORGANIZATION CHART OF HEALTH AND SAFETY RESPONSIBILITIES**

(TO BE PROVIDED BY THE CONTRACTOR)



## **5. PHYSICAL AND MATERIAL ORGANIZATION OF THE WORKSITE**

### **ACCESS TO THE WORKSITE:**

At all times, access to the worksite must be controlled, delimited, maintained and limited to persons authorized by the person in charge of the site. All visitors and workers must, at a minimum, wear a safety hat certified in accordance with standard CSA Z94.1-M1977 and safety shoes conforming to the standard Protective Footwear, CSA Z195-M1984.

(TO BE COMPLETED BY THE CONTRACTOR)

### **WORKSITE TRAILER / PLACE FOR TAKING MEALS 3.2.9)**

The Contractor must, at a minimum, comply with section 3.2.9 of the Safety Code for the Construction Industry.

(TO BE COMPLETED BY THE CONTRACTOR)

### **TOILET FACILITIES (S.C. 3.2.7), DRINKING WATER (S.C. 3.2.6)**

The Contractor must provide a sufficient number of toilets as required by section 3.2.7 of the Safety Code for the construction industry. The Contractor must provide the workers with drinking water as required by section 3.2.6 of the Safety Code for the Construction Industry.

(TO BE COMPLETED BY THE CONTRACTOR)

## **SITE MAINTENANCE:**

The worksite, including the roads within it, the entrances to it and the exits from it, shall be kept in good order so that no danger results from the storage of materials or equipment, the accumulation of waste or the condition of materials or of pieces of equipment. Take all the specified steps to remove waste from the site and keep the site well maintained at all times.

(TO BE COMPLETED BY THE CONTRACTOR)

## **6. FIRST AID AND FIRST AID MEASURES**

Furthermore, as per the First-aid Minimum Standards Regulation, the Contractor must make sure that at least one first-aid worker is present at the worksite at all times when there are workers on site, including during any overtime, evening or night shifts (as applicable). The first-aid worker must be nearby and accessible to employees.

(CONTRACTOR SHALL SPECIFY THE FOLLOWING: first-aid room, kits, names of first-aid workers, etc.)

## **7. LIST OF IDENTIFIED RISKS ON THE WORKSITE**

(WORKING ENVIRONMENT GENERAL RISKS - TO BE PROVIDED BY THE CONTRACTOR)

## **8. WORK SAFETY PLANNING**

(TO BE PROVIDED BY THE CONTRACTOR – MUST ALSO INCLUDE THE SAFETY PLAN FOR THE WORK TO BE DONE BY ALL SUBCONTRACTORS, IDENTIFYING TASKS TO BE PERFORMED, RISKS ASSOCIATED WITH THESE TASKS, PREVENTION MEASURES WITH REGARD TO THESE RISKS AND IMPLEMENTATION METHODS)

## **9. REQUIRED EMPLOYEE TRAINING**

(TO BE PROVIDED BY THE CONTRACTOR – MUST INCLUDE A COPY OF THE CERTIFICATES OR A NOTE SIGNED BY THE CONTRACTOR STATING THAT THEIR EMPLOYEES HAVE COMPLETED THIS TRAINING)

- Safety Course for Construction Work
- Content of the Contractor's orientation session
- Workplace Hazardous Materials Information System (WHMIS) (if applicable)
- Lockout (if applicable)
- Aerial platforms (if applicable)
- Lift trucks (if applicable)
- Other training (if required)

## **10. PROCEDURE REGARDING ACCIDENTS/INJURIES**

(THE CONTRACTOR MUST INCLUDE ITS PROCEDURE IN ACCORDANCE WITH PART 9 OF THE PROJECT OWNER'S SAFETY PROGRAM AS WELL AS A BLANK ACCIDENT REPORT)

## **11. WORKSITE INSPECTION CHECKLIST BASED ON SAFE WORK PLANNING**

(THE CONTRACTOR SHALL DEVELOP AN INSPECTION SHEET BASED ON ALL THE WORK TO BE PERFORMED ON THE SITE – THIS SHEET SHALL BE COMPLETED DAILY DURING THE WORK)



## **12. DANGEROUS GOODS USED ON THE WORKSITE**

(TO BE PROVIDED BY THE CONTRACTOR – UP-TO-DATE MATERIAL SAFETY DATA SHEETS SHALL BE SUBMITTED TO THE DEPARTMENTAL REPRESENTATIVE AND BE AVAILABLE ON THE WORKSITE WHEN THESE MATERIALS ARE TO BE USED)

### 13. WORK PLAN TEMPLATE

## CANMET EXPERIMENTAL MINE, VAL D'OR – REROOFING OF THE SECONDARY BUILDING AND MECHANICAL SHOP

PERIOD FROM: \_\_\_\_\_ TO \_\_\_\_\_

CONTRACTOR:  
DESCRIPTION OF WORK EXECUTED DURING THIS PERIOD:

ACTIVITIES	LOCATION OF WORK	TOOLS/EQUIPMENT USED	MEANS OF ACCESS USED (IF APPLICABLE)

RISKS	PREVENTIVE MEASURES	PERSON RESPONSIBLE

Prepared by: \_\_\_\_\_ Date: \_\_\_\_\_

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**PART 1 – GENERAL**

1.1 Related requirements

- .1 In addition to these clauses, clause 5.4 on “Environmental Protection” from standard estimate NQ 1809-300. – Construction Work – General Clauses – Drinking Water and Wastewater Conduits, shall apply.
- .2 Management and elimination of waste from construction/demolition division 1
- .3 Cleaning division 1

1.2 References

- .1 Municipal regulations in effect in the project's sector.

1.3 Definitions

- .1 Pollution and damage to the environment: the presence of chemical, physical or organic items or agents that have a harmful effect on the health and well-being of people, that alter ecological balance that are important for humans and that could damage species that play an important role for humans or that degrade the aesthetic, cultural or historical character of the environment.
- .2 Environmental Protection: prevention/control of pollution and of any disruption of the local habitat and environment during construction. Prevention of pollution and damage to the environment includes the protection of the ground, water, air and biological and cultural resources. It also includes management of the visual aesthetics, noise, any solid, chemical, gaseous or liquid waste, radiant energy, radioactive materials and other pollutants.

1.4 Documents and samples to be submitted for approval and information purposes

- .1 Before beginning any construction activity or the delivery of equipment and materials to the worksite, submit an environmental protection plan to the professional, for review and approval.
- .2 The contractor will not be authorized to begin any work before he submits an environmental protection plan in due form and before that plan has been accepted in writing.

- .3 The environmental protection plan must include:
- a) the names of the individuals responsible for ensuring compliance with the plan;
  - b) the names and qualifications of the individuals responsible for training staff on the worksite;
  - c) a plan to prevent erosion and the removal of sediments, setting out the measures that will be applied, including the monitoring of the work in order to ensure those measures are in compliance with federal, provincial and municipal statutes and regulations;
  - d) drawings that show the location of temporary excavations or worksite pathways created using embankments, running water crossings, material, structures, sanitary facilities, piles of surplus materials or soiled materials. Drawings that show the methods that will be used to control any runoff water and to keep materials on the worksite;
  - e) an emergency plan in the event of spillage, including the procedures to be implemented, instructions to be followed and the reports to be produced in the event of an unforeseen spill of a regulated substance;
  - f) a plan for the elimination of non-dangerous solid waste, including the methods and locations for removal of that solid waste and the debris from the clearing of the site.

1.5 Fire

- .1 Fires and burning any waste on the worksite are prohibited.

1.6 Clearing of  
worksite and  
protection of  
plants

- .1 Ensure that trees and plants on the worksite and on adjacent properties are protected.
- .2 During the excavation and grading work, protect the roots of designated trees up to the drip line so that they will not be moved or damaged. Avoid transporting and unloading or storing any materials above the root zone of protected trees when it is not necessary to do so.
- .3 Only remove trees in the designated zones shown on the plans.
- .4 It is prohibited to cut or damage any trees beyond the boundaries of the property or the edge of the cutting area shown in the plans.
- .5 As far as possible, keep the existing trees at those places indicated for new trees on the plans.

1.7 Prevention of  
pollution

- .1 Maintain the temporary facilities for preventing erosion and pollution that have been set up under this contract.
- .2 Monitor the emissions produced by equipment and tools, in accordance with the requirements of the local authorities.
- .3 Prevent the sanding residue and other foreign materials from contaminating the air and waterways beyond the zone in which they are applied.
- .4 When requested by the professional, the contractor must provide written proof that the materials from the worksite have been stored in a place that has been accepted by the municipality and that is compliant with the statutes and regulations of the Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs [Quebec Ministry of Sustainable Development, Environment, Wildlife and Parks] (MDDEFP).
- .5 In addition, in cases where there is a possibility of encountering contaminated soil, the soil at the site must be reused in accordance with the requirements of the MDDEFP directives that are applicable for the reuse and reclamation of contaminated soil.

1.8 Notice of non-  
compliance

- .1 A written notice of non-compliance will be issued to the contractor by the Departmental Representative whenever any non-compliance with a federal, provincial or municipal statute, regulation or permit, or with any other item in the environmental protection plan set up by the contractor, has been observed.
- .2 After receiving a notice of non-compliance, the contractor must propose corrective measures to the professional and must implement those measures with the professional's approval.
- .3 The contractor must wait to receive written approval from the professional before implementing the proposed measures.
- .4 The Departmental Representative will order an interruption of the work until satisfactory corrective measures have been taken.
- .5 No additional time extension or adjustment will be allowed for the interruption of the work.

**PART 2 – PRODUCTS**

2.1 Not applicable

- .1 Not applicable.

**PART 3 – IMPLEMENTATION**

3.1 Cleanup

- .1 Carry out the cleanup in accordance with the indications in the cleanup section in division 1.
- .2 Ensure that there is no waste in water conduits, storm sewers and public domestic sewers and that all volatile substances have been removed.
- .3 The contractor must not dispose of, pour out or allow seepage into the soil or into any water conduits by any organic or inorganic contaminant, in particular, but not only, petroleum products or other derived products, anti-freeze or solvents. These substances and all equipment or products that have been contaminated by them must be gathered at their source and eliminated in accordance with the legislation, policies and regulations of the MDDEFP.
- .4 All excavated materials, whether contaminated or not, that are not reused on the worksite and any wood from the cutting down of trees, all materials from demolition or construction, pieces of concrete and masonry and pieces of asphalt, must be removed from the worksite to another location in such a way as to comply with the *Environment Quality Act*, the *Soil Protection and Contaminated Sites Rehabilitation Policy*, the *Regulation Respecting Hazardous Materials* and the *Regulation Respecting the Burial of Contaminated Soils*. The contractor himself must choose that other location.

## PART 1 – GENERAL

This section is in addition to all the clauses of the contract, all the general clauses of the architectural and engineering estimate and the clauses of the owner.

### 1.1 Content of section

- .1 Inspections and tests, administrative and operational requirements.
- .2 Dosage tests and forms.
- .3 Samples of structures.
- .4 Factory tests.

### 1.2 Related sections

- .1 Documents and samples to be submitted division 1

### 1.3 Inspection

- .1 The Departmental Representative must have access to the structures. If part of the work or of the structures is completed or built outside of the worksite, then access to that location must also be provided for the entire duration of the said work.
- .2 In cases in which structures are subject to inspections, approvals or special tests ordered by the Departmental Representative or required in accordance with local regulations affecting the worksite, request them within a minimum period of 48 hours.
- .3 If the contractor has covered a structure or allowed it to be covered prior to any inspections, approvals or special tests required, the contractor must uncover the structure in question, ensure that the required inspections or tests are conducted to the satisfaction of the relevant authorities, and then return the structure to its previous condition.
- .4 The Departmental Representative may order an inspection of any part of the structure whose compliance with the contractual documents is called into question. If, after the examination, the structure in question is found to be non-compliant with the requirements of the contractual documents, the contractor must take the necessary steps to bring the structure into compliance with the specified requirements and pay the costs of inspection and repairs.

1.4 Independent  
testing and  
inspection  
organizations

- .1 Any recourse to testing and inspection organizations will not in any way release the contractor from his responsibility concerning the performance of the work in accordance with the requirements of the contractual documents.
- .2 If defaults come to light during the tests and/or inspections, the contractor must correct the defaults and imperfections in accordance with the instructions of the professionals, and shall pay the cost of any tests and inspections that must be carried out after those corrections.

1.5 Access to  
worksite

- .1 Provide the testing and inspection organizations with access to the worksite and to the manufacturing and processing plants located outside of the worksite.
- .2 Collaborate with these organizations and take all reasonable steps to ensure that they are provided with the necessary means of access.

1.6 Procedure

- .1 Provide 48 hours' notice to the appropriate organization and the Departmental Representative prior to when it is necessary to conduct tests so that all the parties in question may be present.
- .2 Submit the samples and/or materials that are necessary for tests in accordance with the specifications, within a reasonable timeframe and following a predetermined sequence, in order to avoid delaying the performance of the work.
- .3 Provide the manpower and facilities necessary to remove and process the samples and materials on the worksite. Also provide the space required to store and treat the samples.

1.7 Rejected  
structures  
or work

- .1 Remove any defective items that are deemed to not comply with the contractual documents and that have been rejected by the Departmental Representative, either because they have not been made in accordance with the rules of art or because they have been made with defective materials or products, even when they have already been integrated as part of the structure. Replace or remake the items in question, in accordance with the requirements of the contractual documents.



- .2 Repair any structures from other contractors that have been damaged during the above-mentioned repair work or replacement, as soon as possible.

1.8 Reports

- .1 Provide one copy of the reports on any tests and inspections to the professional.
- .2 Provide copies of reports to the subcontractors responsible for the structures that have been inspected or subjected to tests.

1.9 Dosage  
tests and forms

- .1 Provide reports on any required dosage tests and forms.

1.10 Samples of  
structures

- .1 Prepare samples of structures that are specifically required in the specifications. The requirements of the clause apply to all the sections of the specifications in which the provision of samples of structures is requested.
- .2 Construct the samples of structures at the various locations designated in the section in question.
- .3 Prepare the samples of structures for approval by the Departmental Representative within a reasonable timeframe and following a predetermined order, in order to avoid delaying the performance of the work.
- .4 A delay in preparing samples of structures will not constitute sufficient reason for an extension of the deadline for completion of the work and no request for such an extension will be accepted.
- .5 As needed, the Departmental Representative will help the contractor to set up a timetable for preparing samples of structures.
- .6 Remove the samples of structures at the end of the work or at the time determined by the Departmental Representative.

1.11 Small and  
large equipment  
and systems

- .1 Submit the reports on the setting and calibration of mechanical and electrical systems and of the other building systems.

**PART 2 – PRODUCTS**

.1 Not applicable. 2.1 Not applicable

**PART 3 – PERFORMANCE**

.1 Not applicable. 3.1 Not applicable

## PART 1 – GENERAL

### 1.1 Related sections

- .1 All of the sections in the tender documents.

### 1.2 Reference standards and codes

- .1 References to the relevant standards can be made in each section of the estimate. Comply with the specified standards, fully or in part, depending on the requirements of the estimate.
- .2 In cases in which there is any doubt concerning the compliance of certain products with the relevant standards, the Departmental Representative reserves the right to verify them by means of tests.
- .3 If the products or systems comply with the contractual documents, the costs of these tests will be paid by the owner. Otherwise, they must be paid by the contractor.
- .4 If no date or specific edition is mentioned or if the specified date has already passed, then comply with the most recent standards in effect at the time of the submission hand-in.

### 1.3 Quality

- .1 The products, materials, equipment, devices and components (called the "products" in the specifications) used for carrying out the work must be new, in perfect condition and of the best quality (in accordance with the stipulations of the specifications) for the purposes for which they are intended. As needed, provide proof setting out the type, origin and quality of the supplied products.
- .2 The products, materials, equipment, devices and components (called the "products" in the estimate) used for carrying out the work must have no asbestos, or only contain amounts lower than the authorized limit in Quebec, which would be less than 0.1%. The contractor must provide a document setting out the asbestos content of each product used as part of this project.
- .3 Any products found to be defective before the end of the work will be rejected, regardless of the conclusions of any previous inspections. The purpose of the inspections is not to release the contractor from its liability, but simply to reduce the risks of omission or error. The contractor must ensure that all defective products are removed and replaced, at its own expense, and will be responsible for any resulting delays and costs.
- .4 When there is a conflict with regards to the quality or appropriateness of the products, only the professional may make a final decision, based upon the requirements of the contractual documents.

- .5 Unless specified to the contrary in the specifications, foster a certain level of uniformity by ensuring that all materials or items of the same type come from the same manufacturer.
- .6 Labels, trademarks and permanent nameplates placed visibly on products being used are not acceptable, unless they provide operating instructions.

1.4 Ease of  
acquiring  
products

- .1 Immediately after signing the contract, become familiar with the requirements concerning the delivery of the products and make provisions for any potential delays. If delays in the delivery of products can be foreseen, advise the professional of that fact in order that measures may be taken to substitute them with alternative products or to make the corrections that are necessary, with sufficient advance notice to avoid delaying the work.
- .2 If the Departmental Representative was not advised of foreseeable delays in delivery at the beginning of the work and it seems probable that the performance of the work will be delayed as a result, the Departmental Representative reserves the right to substitute other comparable products for the planned products, which can be delivered more quickly and do not result in increasing the price for the contract.

1.5 Storage,  
handling and  
protection of  
products

- .1 Handle and store the products in such a way as to avoid damaging, altering or soiling them, and in accordance with the manufacturer's instructions, as applicable.
- .2 Store the products in their original packaging, either grouped together or in lots; leave the packaging, label and manufacturer's seal intact. Do not unpack or untie the products until just before they are to be used in the structure.
- .3 Products delivered to the worksite must be dry.
- .4 Products that could be damaged by bad weather must be kept in a sheltered area.
- .5 Hydraulic binders must not be placed directly on the ground or on a concrete floor or come into contact with the walls.
- .6 Sand that is to be used in mortar and grout must be kept dry and clean. It should be stored on wooden platforms and covered with watertight sheets during bad weather.
- .7 Stack wood for construction and material in the form of sheets in panels on rigid and flat supports, so they are not laying directly on the ground. Provide a slight incline to facilitate the condensation water runoff.

- .8 Store and mix paint products in a location that is heated and well ventilated. Remove oily rags and other inflammable waste from the work area every day. Take all the necessary precautions to avoid any risk of spontaneous combustion.
- .9 Replace any damaged products, at no additional cost, to the professional's satisfaction.
- .10 Touch up factory-finished surfaces that have been damaged, to the professional's satisfaction. Use products that are identical to those used for the original finish for any touch-up. It is prohibited to apply a finish or touch-up product onto nameplates and on the certification labels of doors and frames.

#### 1.6 Transportation

- .1 Pay the shipping or transportation cost of the products required to carry out the work.

#### 1.7 Manufacturer's instructions

- .1 Except as otherwise provided in the estimate, install or set up the products in accordance with the manufacturer's instructions. Do not rely on the indications written on the labels and containers provided with the products. Get a copy of the written instructions directly from the manufacturer.
- .2 Notify the Departmental Representative in writing about any discrepancy between the requirements in the estimate and the manufacturer's instructions, so he or she may take the appropriate action.
- .3 If the manufacturer's instructions have not been followed, the Departmental Representative could require the removal and replacement of any products that have been set up or installed incorrectly, and this shall not result in any increase in the contract price.

#### 1.8 Coordination

- .1 Ensure that the workers coordinate their work on the structure. Supervise their work closely, on an ongoing basis.
- .2 The Contractor is responsible for ensuring coordination of all the work and for organizing all bushings, sleeves and accessories.

#### 1.9 Items to be hidden

- .1 Except as otherwise specified, hide the pipes, conduits and electrical wiring under the floors, in the walls and in the ceilings of all finished rooms and areas.
- .2 Before hiding any items, inform the Departmental Representative about any unusual situation. Complete the installation in accordance with the professional's instructions.

#### 1.10 Repairs

- .1 Complete any repair work that is necessary to repair or replace parts or components of the structure that have been found to be defective or unacceptable. Coordinate the work to be done on any adjacent structures that will be affected, as necessary.
- .2 All repairs must be done by specialists who are familiar with the materials and equipment being used. This work must be carried out in such a way as to ensure that no part of the structure is or could be damaged.

#### 1.11 Location of large equipment

- .1 The locations indicated for large equipment, exits and other electrical or mechanical equipment should be understood as being the approximate locations.
- .2 Inform the Departmental Representative about any problem that could be caused by the choice of the location of a piece of equipment, and carry out the installation according to the instructions.

#### 1.12 Fasteners - general

- .1 Except as otherwise stipulated, provide metal accessories and fasteners that have the same texture, colour and finish as the item in which they are being fitted.
- .2 Avoid any electrolytic interference between metals or materials of different types.
- .3 Except when fittings made of stainless steel or any other material have been specified in the relevant section of the specifications, use rust-proof fasteners and anchorage made of hot galvanized steel to attach outdoor structures.
- .4 It is necessary to identify the location of anchorages, taking into account the maximum charges and the shear strength, in order to ensure strong, permanent anchoring. Plugs made of wood or any other organic material are not acceptable.
- .5 Use as few apparent fasteners as possible. Space them out evenly and install them carefully.
- .6 Fasteners that could cause any chipping or fissuring of the item in which they are to be anchored will be rejected.

#### 1.13 Fastening equipment

- .1 Use fastening components in standard commercial shapes and sizes, made of appropriate materials and with a finish that is appropriate for their intended use.

- .2 Unless otherwise specified, use robust, semi-fine quality fasteners with hexagonal heads. Use items made of 304 shade stainless steel or of an appropriate grade in the case of outdoor facilities.
- .3 The length of bolts must not go beyond nuts by any length greater than their diameter.
- .4 Use ordinary washers on the equipment and sheet metal lock washers with flexible rings where there are vibrations. Use stainless steel washers to affix equipment on stainless steel items.

1.14 Protection  
of work in  
progress

- .1 Do not overload any part of the building. Unless otherwise stipulated, get the written authorization from the professional before cutting or drilling holes or inserting a sleeve in any part of the frame.

1.15 Existing  
utility networks

- .1 When it is necessary to make connections to existing networks, do so during the hours designated by the relevant local authorities, causing as little disruption as possible to the completion of the work and/or the occupants of the building and the circulation of pedestrians and vehicles, as well as the operations of the plant.
- .2 Protect, remove or keep in service any utility connections that are functional. If connections are discovered during the work, plug them in a manner approved by the relevant authorities and identify and record the locations of such plugs.

1.16 Compatibility  
of equipment

- .1 It is essential for the components of materials and equipment attached to each other to be compatible. Provide the professional with a written statement certifying that the materials and components of all assemblies are compatible.
- .2 It is the responsibility of everyone involved in the various sections to ensure that their products and equipment are compatible with the assembly of the other sections.
- .3 Notify the Departmental Representative in writing about any incompatibility of materials and systems that are incompatible with their own, so he or she may make the required changes.

**PART 2 – PRODUCTS**

.1 Not applicable. 2.1 Not applicable

**PART 3 – PERFORMANCE**

.1 Not applicable. 3.1 Not applicable



**PART 1 – GENERAL**

1.1 Associated sections

- .1 All of the sections from the request for proposal documents.

1.2 Cleanliness of worksite

- .1 Keep the worksite clean and free of any accumulated debris or waste materials, other than those generated by the departmental representative or by the other contractors.
- .2 Remove debris and waste materials from the worksite on a regular basis or dispose of them in accordance with the professional's instructions. Waste materials must not be burnt at the worksite unless this disposal method is authorized by the departmental representative.
- .3 Keep the access ways to the building free of ice and snow. Snow should be dumped/piled in designated areas only.
- .4 Take the necessary steps and obtain the permits from the proper authorities in order to dispose of debris and waste materials.
- .5 Have dumpsters at the worksite for removal of debris and waste materials.
- .6 For recyclables, provide and use separate and labelled containers. Refer to Section 01 74 21 – Management and Disposal of Construction/Demolition Waste.
- .7 Dispose of debris and waste materials at designated landfill sites outside the worksite area.
- .8 Clean interior surfaces before the beginning of any finishing work and keep these areas free of dust and other impurities during the work in question.
- .9 Store volatile waste in closed metal containers and remove them from the worksite at the end of each work period.

- .10 Ensure proper indoor ventilation when using volatile or toxic substances. The building's ventilation system cannot be used for this purpose.
- .11 Only use cleaning products recommended by the manufacturer of the surface to be cleaned and use these products in accordance with the manufacturer's recommendations.
- .12 Establish a cleaning schedule to ensure that the dust, debris and other dirt do not fall back on freshly painted surfaces and do not contaminate the building's systems.

1.3 Final  
cleaning

- .1 Remove the debris and waste materials and leave the worksite clean and ready to be occupied.
- .2 Before the final inspection, remove any surplus materials, tools, equipment and construction materials.
- .3 Clean and polish the glass surfaces, mirrors, hardware parts, wall tiles, chrome or enamelled surfaces, laminate surfaces, stainless steel or porcelain enamel elements as well as mechanical and electrical devices. Replace any broken, scratched or damaged glass.
- .4 Remove all dust, stains, marks and scratches from decorative works, mechanical and electrical devices, furnishings, walls and floors.
- .5 Clean the lighting reflectors and diffusers and all other lighting surfaces.
- .6 Dust and vacuum the building's interior surfaces, including behind any vents, louvers, registers and screens.
- .7 Wax, soap, seal or treat the flooring in whatever appropriate manner indicated in the manufacturer's instructions.
- .8 Examine the finishes, accessories and materials in order to make sure they meet the prescribed requirements in terms of operation and execution quality.
- .9 Sweep and clean the sidewalks, steps and other exterior surfaces; sweep or rake the rest of the property.

- .10 Remove any dirt or other elements marring the exterior surfaces.
- .11 Clean and sweep the roofs and eave troughs.
- .12 Sweep and clean the paved surfaces.
- .13 Carefully clean any equipment and devices and clean the filters in the mechanical systems.
- .14 Clean the roofs, downspouts as well as the drains and discharge pipes.
- .15 Empty the crawl spaces and other hidden accessible spaces of debris or surplus materials.
- .16 Remove snow and ice from the access ways to the building.

1.4 Management  
and disposal  
of waste

- .1 Sort the waste for reuse and recycling purposes in accordance with Division 1 specifications.

**PART 2 – PRODUCTS**

2.1 Not  
applicable

- .1 Not applicable

**PART 3 – EXECUTION**

3.1 Not  
applicable

- .1 Not applicable

## PART 1 – GENERAL

### 1.1 Section Content

.1 This section provides an overview of the waste management and of requirements and procedures for the disposal of waste.

### 1.2 Definitions

.1 Solid waste: All waste (including land clearing debris) removed from a project worksite to another location for disposal.

.2 Land clearing debris: Waste resulting from the clearing of land, including landscaping materials and pre-existing plant matter, but excluding earth.

.3 Reused waste: Waste that is removed to a location outside the worksite (e.g. other construction project site or a product supplier's premises) where it will be reused in its original form (i.e. without additional processing).

.4 Recycled waste: Waste that is removed to a recycling facility where it will be used to replace virgin materials, such as raw material for new product manufacturing processes.

.5 Landfill waste: Waste that is removed to a landfill site for disposal.

### 1.3 References

.1 Canadian Construction Association. Standard Construction Document CCA 27-1997 – A Guide on Construction Environmental Management Planning.

.2 Canadian Construction Association. Standard Construction Document CCA 81-2001 – A Best. Practices Guide to Solid Waste Reduction.

.3 Canada. Public Works and Government Services Canada. National Construction, Renovation and Demolition Non-Hazardous Solid Waste Management Protocol, 2002.

.4 *Environment Quality Act*, CQLR c Q-2.

.5 *Sustainable Development Act*, CQLR c D-8.1.1

.6 Quebec Residual Materials Management Policy, 1998–2008.

.7 *Regulation respecting the landfilling and incineration of residual materials*, CQLR c Q-2, r 19.

1.4 Objectives

- .1 Reduce the volume of solid waste (including land clearing debris) produced by construction, renovation and demolition (CRD) activities.
- .2 Divert from landfill sites (through reuse or recycling) at least 75%, by weight, of inevitable solid waste (including land clearing debris) generated by CRD activities.
- .3 Comply with the Canadian Construction Association code of practice mentioned in Standard Construction Document ACC 27-1997 in order to encourage best practices for waste management.

1.5 Description  
of work

- .1 Prepare and provide an outline plan for waste management.
- .2 The worksite foreman (or any other person designated as waste management coordinator by the contractor) will be responsible for all aspects of waste management and disposal.
- .3 Identify, implement and keep a record of specific measures for achieving the waste management objectives listed above.
- .4 Implement a strategy based on the 3-R hierarchy: Reduce waste production on the worksite; reuse waste on other construction worksites (where possible); and recycle waste as a raw material in new product manufacturing processes.
- .5 The waste management and disposal activities will include the following:
  - a) Draw up waste management service agreements with trucking firms and waste receiving facilities.
  - b) Supervise daily waste management activities on the worksite.
  - c) Coordinate waste management tasks with the subcontractors to ensure that orderly work progress is made within the required time frames.
  - d) Produce all monitoring documents concerning waste management.

1.6 Coordination  
meeting

.1 Prior to the start of construction, the contractor will hold a coordination meeting with the construction team in order to explain the waste management and disposal requirements and objectives to the subcontractors. This meeting will include a review of the following:

- a) waste management and disposal objectives;
- b) waste management and disposal requirements and procedures.

1.7 Documents  
to be submitted

.1 The contractor must submit his/her waste management plan, as well as the method the contractor intends to use to ensure the collaboration of the subcontractors in addition to the method the contractor plans to use to demonstrate how the plan will be implemented.

**PART 2 – PRODUCTS**

2.1 Products

.1 Not applicable

**PART 3 – EXECUTION**

3.1 Procedures

.1 Waste reduction

- a) Encourage suppliers and subcontractors to keep or recycle packaging (such as pallets, stretch wrap, etc.) for reuse.
  - Prevent damage caused to materials through inappropriate handling, poor storage and contamination.
  - Where possible, use prefabricated assemblies in a central facility in order to avoid producing waste on the worksite.

b) Waste diversion

- Contact local salvaging and recycling facilities and organize reuse and recycling services. The facilities concerned must recycle or reuse a minimum of the following waste produced during the construction activities:
  - land clearing debris
  - asphalt
  - concrete, masonry and stone
  - steel and other metals
  - wood (see note below)
  - Gyproc
  - cardboard
  - plastic
  - "blue recycling box" waste.
- NB: These materials do not necessarily have to be separated and placed in individual containers if the recycling facility selected by the contractor does not dispose of these materials in separate areas. The contractor must exercise judgment and gather together materials that are processed together by the recycling facility before they are disposed of in an environmentally friendly manner.
- Designate a central waste collection area on the worksite where the expected types and quantities of waste produced during the construction activities can be sorted and stored.
- Provide containers in the waste collection area that are an appropriate size for the expected types and quantities of waste. Provide separate containers for the following materials:
  - concrete, masonry and stone
  - steel and other metals
  - wood
  - Gyproc
  - cardboard
  - plastic
  - "blue recycling box" waste
  - mixed waste
  - other types of materials (as per the requirements of local salvaging and recycling facilities).
- Using appropriate signage, clearly indicate the types of materials stored in each container.
- All subcontractors must use the containers provided in the waste collection area.

- Gather together materials that are processed together by the local recycling facility.
  - Comply with the requirements of salvaging or recycling facilities regarding the acceptance of materials in order to ensure that the waste is appropriately sorted, grouped together and packed for collection.
  - Provide recycling bins and blue recycling boxes near the worksite trailer for the recycling of waste produced by workers and worksite visitors. Waste placed in these bins and boxes will include the following and comply with the local recycling program:
    - aluminum foil food containers and cans;
    - glass food and beverage jars and bottles;
    - PET (polyethylene terephthalate) bottles for food or beverages;
    - metal containers for food or beverages;
    - paper or cardboard items.
  - Waste monitoring
    - Coordinate the delivery of sorted materials to salvaging or recycling facilities;
    - Keep in a file all trip tickets, invoices, certificates and all other relevant documents that must be included in the final waste diversion report.
- 3.2 Inspection  
and maintenance
- .1 If necessary, carry out daily inspections of containers in order to check for or address cross-contamination.
  - .2 When filled, transport containers to the receiving facilities as soon as possible.
  - .3 Make sure that each container is clearly labelled.
  - .4 Take photographs every week to document and encourage waste management best practices and recycling activities.



## **PART 1 – GENERAL**

### 1.1 Section content

- .1 Project file, samples and specifications.
- .2 Equipment and devices.
- .3 Technical data sheets, materials, finishing equipment and products, and related information.
- .4 Operating and maintenance records and manuals.
- .5 Replacement materials and equipment, special tools and spare parts.
- .6 Warranties and bonds.

### 1.2 Documents and items to be submitted

- .1 Instructions must be prepared by competent people that have required knowledge in regards to maintenance and operation of described products.
- .2 Submitted copies will be returned after the final inspection of the work, along with the comments of the professional concerned.
- .3 Revise content of documents as required prior to final submittal.
- .4 Two weeks prior to substantial completion of the work, submit to the professionals concerned three final copies of operating and maintenance manuals in French.
- .5 Equipment/materials, special tools and replacement parts provided must be new, without defect and of the same manufacturing quality as those products used to perform the work.
- .6 Upon request, provide documents confirming the type, source of supply, and quality of products supplied.
- .7 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.

### 1.3 Presentation

- .1 Organize data in the form of an instructional manual.
- .2 Use vinyl, hard covered, 3 "D" ring, loose leaf 219 mm x 279 mm with spine and pockets.
- .3 When multiple binders are used, correlate data into related consistent groupings. Identify the contents of each binder on the spine.
- .4 The cover page in each binder must identify the document as follows: "Project File", typed or printed in block letters; the project name; and the table of contents.
- .5 Arrange the contents by systems, under section numbers and sequence of table of contents.
- .6 Provide tabbed fly leaf for each separate product and system with typed description of product and major component parts of equipment.
- .7 The text must be the printed information provided by the manufacturer or typed information.

### 1.4 Content of each volume

- .1 Table of Contents: Provide title of project:
  - a) Date of submission of documents;
  - b) Name, address and telephone number of the contractor and the names of the contractor's representatives;
  - c) Schedule of products and systems, indexed to content of volume.
- .2 For each product or system, list names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Technical data sheets: Mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Typed text: As needed in order complement the technical data sheets; give the instructions in a logical order for each step and incorporate the manufacturer's instructions.

1.5 Documents  
and samples to  
place in the  
Project Record

- .1 Keep on the worksite for the Departmental Representative a copy or set of the following documents:
  - a) Contract drawings;
  - b) Specifications;
  - c) Addenda;
  - d) Change orders and other contract amendments;
  - e) Revised shop drawings, technical data sheets and samples;
  - f) Records of on-site tests;
  - g) Inspection certificates;
  - h) Certificates issued by manufacturers.
- .2 Store record documents and samples in worksite 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 the Departmental Representative.

1.6 Recording of  
actual site  
conditions

- .1 Record information on a set of drawings, provided by the contractor.
- .2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress. Do not conceal work until required information is recorded.

- .4 Contract drawings and shop drawings: Legibly mark each item to record actual construction, including the following.
- a) Measured depths of elements of foundation in relation to finish first floor datum.
  - b) Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  - c) Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
  - d) Changes in dimensions and details made on site.
  - e) Changes made as a result of change orders.
  - f) Details not shown on the original contract documents.
  - g) References to related shop drawings and modifications.
- .5 Specifications: Legibly mark each item to record actual construction, including the following:
- a) Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
  - b) Changes made by addenda and change orders.

1.7 Equipment  
and systems

- .1 Each item of equipment and each system: Include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Provide the lists of power circuits (distribution panels), showing electrical characteristics, and control and telecommunications circuits.
- .3 Include installed colour coded wiring diagrams.

- .4 Operating procedures: Include start-up, break in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown, and emergency instructions. Include summer, winter, and any special operating instructions.
- .5 Maintenance requirements: Include routine procedures and guide for troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .6 Provide servicing and lubrication schedule, and list of lubricants required.
- .7 Provide written manufacturer's instructions for operating and maintaining components.
- .8 Provide descriptions of the sequence of operations prepared by the various manufacturers of control/adjustment devices and machines.
- .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .10 Provide control diagrams for installed control/adjustment devices, prepared by the various manufacturers.
- .11 Provide Contractor's coordination drawings, with installed colour coded piping diagrams.
- .12 Provide the list of valve labelling numbers, showing the location and function of each device, referring to control and flow diagrams.
- .13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .14 Include test and balancing reports as specified in Section 01 45 00 – Quality Control and other mechanical sections – Common Work Results.

1.8 Materials and  
finishing  
products

- .1 Building products, applied materials, and finishes: Provide technical data sheets, along with catalogue number, size, composition, and colour and texture designations. Provide information required to order special products.
- .2 Provide instructions regarding cleaning agents and methods as well as recommended cleaning and maintenance schedules, and indicate any precautions to be taken against harmful methods or products.
- .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.

1.9 Warranties

- .1 Separate each warranty with index tab sheets keyed to the Table of Contents listing.
- .2 List subcontractor, supplier and manufacturer, with name, address and telephone number of the responsible principal.
- .3 Obtain warranties executed in duplicate by subcontractors, suppliers and manufacturers, within ten days after completion of the applicable item of work.
- .4 Verify that documents are in proper form and contain all necessary information.
- .5 Co-execute submittals when required.
- .6 Retain warranties until time specified for submittal.

**PART 2 – PRODUCTS**

2.1 Not  
applicable

- .1 Not applicable

**PART 3 – EXECUTION**

3.1 Not  
applicable

- .1 Not applicable

## **PART 1 – GENERAL**

### 1.1 Responsibility

- .1 The general contractor is responsible for all demolition work and work involved in the removal of components and equipment, as well as hole drilling required for various types of work, unless indicated otherwise in the section concerned.
- .2 Prior to the start of any work, the contractor must verify with the owner all fixtures and equipment on the roof in order to identify those that will remain in place and those that will no longer be used.

## **PART 2 – NATURE OF THE WORK**

### 2.1 Scope of the work

The following is not a complete list:

- .1 Dismantle all equipment and fixtures that are no longer used, and give them to the owner or dispose of them outside the worksite, if requested by the owner.
- .2 Disconnect mechanical conduits and electrical wiring used for the equipment to be reinstalled. Place warning placards on conduits, wiring and equipment that must remain in operation while the work is carried out.
- .3 Plug mechanical conduits that will be put back in operation after the work is carried out so that they do not become clogged with demolition debris.
- .4 Unless instructed otherwise, remove demolition debris from the worksite in compliance with the requirements of the competent authorities.
- .5 The demolition work will mainly consist of the following:
  - a) Remove all ventilation devices located on the roofs affected by the work and put them in a safe place until they are installed on new bases or modified bases in accordance with the instructions in the plans.
  - b) Remove antennae and antenna supports. Reinstall them as per the owner's current requirements.
  - c) Dismantle gutters in order to reinstall them later.
  - d) Dismantle gas lines on the roof of the secondary building.

- e) Remove ice/snow guards.
- f) Remove all metal flashing and cap flashing.
- g) Remove all items that may hinder the installation of the new sealing? and insulation system.
- h) Carefully remove materials, pipe material and other equipment that hinders the repair work and put them back in place as the work progresses, or modify them to take the new sealing system into account.

2.2 Storage of  
materials and  
cleaning

- .1 The contractor will store all mechanical and other types of equipment on the worksite while the work is carried out.
- .2 All demolition material that the owner does not deem suitable for salvaging will be promptly taken outside the worksite. It is strictly and solely the general contractor's responsibility to dispose of everything.



**PART 1 – GENERAL**

1.1 Responsibility

- .1 The general contractor is responsible for all of the work listed below as well as for all work required to efficiently and thoroughly complete the work.

**PART 2 — NATURE OF THE WORK**

2.1 Notice to the contractor

- .1 Prior to submitting his/her bid, the general contractor must draw up a list of all of the work related to the contractor's undertaking.

The list provided below is not a complete list and does not release the contractor from his/her obligation to carry out all other work required to efficiently and thoroughly complete the work.

The contractor is solely responsible for the repair work that needs to be carried out on the existing preserved or modified roofing material and the existing backing that must be reattached to the structure before the installation of any new roofing material.

2.2 List of tasks

- .1 Raise the bases of mechanical equipment, exhaust fans and existing fresh air intakes; extend the ducts and the wiring; and modify the conduits, if required.
- .2 Reinstall, and modify, if necessary, all roof devices and equipment that had to be removed in order to repair the roof, such as the following:
- a) fans and other similar equipment, with or without motors;
  - b) light fixtures, cameras, antennae and other components attached to the parapets or the roof;
  - c) gas pipes;
  - d) any other component, device or piece of equipment not identified herein, but required to efficiently and thoroughly complete the work. .
- .3 Repair all ceilings, walls, floor slabs and finishes thereof that will be affected by the work. The finished structure must be consistent and in accordance with the existing structure.
- .4 Clean all deteriorated existing finishes while the work is carried out both inside and outside (including paving, sodding, etc.). These must be restored or put back in place to fit perfectly with the existing finishes. This is the general contractor's sole responsibility.

## PART 1 – GENERAL

### 1.1 Notice to the general contractor

- .1 This section includes all the carpentry work and strapping required to complete all parts of the contract.
- .2 The contractor must comply with all the regulations contained in the *Safety Code for the construction industry*, with all the changes or amendments that might have been issued by any order in council.

### 1.2 Associated works

The list below is not exhaustive and is meant only as a reminder for the contractor in terms of the indications provided in the plans and specifications.

- .1 Elastomeric membrane roof: Section 07 51 12. All the preparations for this specialized work, i.e. construction and installation of the lifts, various bases, fascia and eaves, etc.
- .2 Flashings and sheet metal: Section 07 62 00.
- .3 Caulking and sealing products: Section 07 92 10.
- .4 Generally speaking: supplying and installation of all strapping, filler pieces, fasteners, various elements and accessories, not specifically described anywhere, but which are necessary in the complete and perfect execution of the work.

### 1.3 Handling and storage

- .1 The contractor will only have materials on the roof that are needed for that day's work. The other materials will be stored in a safe area, approved by the owner and away from public access.

### 1.4 Cleaning

- .1 The contractor will take care to thoroughly clean the uncovered steel roof decking before installing the new system.

## PART 2 - PRODUCTS

### 2.1 Construction lumber

- .1 The construction lumber must be compliant with CSA 0141 and the species groups must be compliant with CSA 086 as well as Table 17A, Art. D of Supplement no. 5 of the NBC.

.2 The lumber's humidity content must not exceed 19% at time of installation.

a) Structural light framing: spruce, select structural, grade 1.

b) Structural joists and plank lumber, spruce, select structural, grade 2.

.1 Plywood made of western or eastern spruce, compliant with CSA 151M, sheathing grade, average density veneer on both sides.

2.2 Plywood

.1 Sill flashing: roofing roll (6.8 kg/m<sup>2</sup>) compliant with CSA A123.3.

2.3 Various materials

.2 Nails and staples: compliant with CSA B111, galvanized for outdoor work, very wet areas and for treated wood; ordinary finish for the other work. Unless otherwise indicated use spiral nails.

.3 Rough hardware: bolts, nuts, washers, lag screws, dowel pins, screws, all hot dipped galvanized.

.4 Nails: compliant with CSA B111, zinc-plated steel, in the required size, spiral type, flat head.

.5 Fasteners: self-tapping bolts in zinc-plated steel, 9 mm in diameter, of sufficient length to penetrate the entire thickness of the materials and penetrate at least 38 mm into the steel roof decking. The use of powder-actuated nails or fasteners is absolutely prohibited.

.6 Plastic cement: asphalt type, cold laying process.

### **PART 3 – EXECUTION**

#### 3.1 Scope of the work

- .1 The scope of the work described in this section is relevant to all systems involved in the plans, without exception. More specifically, the contractor must provide and assemble:
  - a) All the materials and labour for the construction and installation of elements for the parapets, control joints, wall joints, etc., if required.
  - b) All the materials and labour required to lift the bases for the existing devices, the new bases for the fans and all wooden components for anchoring the exterior metallic sheathing.

#### 3.2 Backing

- .1 The contractor must provide all the other subcontractors all the strapping materials required for fastening purposes and all the unprocessed frames and spacers for placing the frames, installing insulation or securing materials. These wooden pieces will be solidly secured using the appropriate fasteners.
- .2 All works will be solidly anchored, carefully aligned and thoroughly levelled. The instructions in the plans for installing the spacers, filler pieces, anchors and rough penetrations will be respected. All the required rough hardware will be used for proper execution and no additional requests will be tolerated for the use of such hardware, anchors or work.
- .3 Drill all the holes, do all the rework, make all the adjustments or other carpentry and joinery work as well as all the adjustments needed or required for the proper execution of this contract.

**PART 1 – GENERAL**

- 1.1 Related work
- .1 Rough carpentry Section 06 10 10
- .2 Metal flashing Section 07 62 00
- .3 Waterproofing products Section 07 92 10
- 1.2 Reference standards
- .1 Unless otherwise indicated, install the covering in accordance with the requirements set out in the *Specifications de couverture* (covering specifications) of the Association des maîtres couvreurs du Québec (AMCQ) [Quebec master roofers association] and the requirements of the Factory Mutual System (FMS).
- 1.3 Extended warranty
- .1 Submit a certificate of extended warranty on equipment and labour, issued by the manufacturer and the installer stating that the roof waterproofing work is defect-free for a 10-year period. The warranty must be non-regressive and provide full protection against any defect in manufacturing or installation. It must also cover repairs to damage caused by water infiltration, repairs to defects, such as perforations, heaving, blistering, etc., and full replacement of the system, if required.
- 1.4 Contractor's qualifications
- .1 Be officially recognized as a contractor authorized by the manufacturer of the waterproofing materials.
- .2 Be able to carry out the work with workers who are skilled for this type of covering installation work and employed by a firm that has appropriate and necessary equipment for such work, and which has installed more than 10,000 m<sup>2</sup> of roofing with the specified type of membrane.
- 1.5 Samples
- .1 Submit three samples of the products and materials specified in this section of the Specifications. Do not order materials before having received written approval of the samples (vapour barrier, insulating material and membrane).
- 1.6 Shop drawings
- .1 Submit shop drawings in accordance with the general conditions and special requirements.
- .2 Indicate details of flashing, contraction joints, tapered insulation, etc.

- .3 Shop drawings must show details of manufacturing, dimensions, installation, etc.
- .4 Have shop drawings approved by the membrane manufacturer before submitting them to professionals involved in the project.

1.7 Certification

- .1 Unless indicated otherwise, all roofing materials must be certified by Factory Mutual or Underwriters Laboratories of Canada. Unless otherwise indicated, the entire waterproofing assembly must comply with the requirements for Factory Mutual Class 1 and/or the ULC R210 assembly number, Class C (one hour).

1.8 Technical data sheet

- .1 Submit technical data sheets indicating installation details and relevant recommendations of the manufacturers of the roofing materials.
- .2 Have shop drawings approved by the membrane manufacturer before submitting them to professionals involved in the project.

1.9 Delivery and storage

- .1 Store materials and equipment, in accordance with the general conditions and special requirements, in a dry place and not in direct contact with the ground, and in accordance with suppliers' instructions.
- .2 All materials will be delivered and stored in their original packaging bearing the name of the manufacturer and indicating the quality, weight, associated standards and any other indication or reference accepted as a standard.
- .3 The materials will be properly and permanently protected and stored in a dry, ventilated place protected from the weather. Only materials that will be used in the same day will be removed from this sheltered place. During the winter, the materials will be previously stored in a sheltered place that is heated to a minimum temperature of 10°C, and will be removed as and when they are used and installed. They will be protected from open flames and welding sparks.
- .4 Materials delivered in rolls will be carefully stored in an upright position. Metal flashing and cap flashing will be stored in such a way as to prevent folding, twisting, scratching and other damage.
- .5 Avoid piling materials on the roofs in certain places where, because they exceed allowable loads, may compromise the strength of the roofs.
- .6 Do not store materials on areas of the roofs where installation of the roof covering has been completed.
- .7 Comply with any other instructions issued by the membrane manufacturer.

1.10 Compatibility  
of materials

- .1 It is essential that the materials used to install the waterproofing assembly be compatible. Adhesives, surface coatings and vapour barriers must be compatible.
- .2 Provide written proof that the waterproofing assembly materials are compatible.

1.11 Phased  
approvals

- .1 Obtain approval from the architect and his instructions before resuming the work at the end of each of the following stages:
  - a) insulation installation work;
  - b) membrane installation work.

**PART 2 – PRODUCTS**

2.1 General

- .1 Do not use materials that were damaged, deteriorated or contaminated during transportation or storage, or that have traces of dampness. Replace them at the discretion of the inspection unit and at no charge.
- .2 The roof system components must be products from the same manufacturer or products that the manufacturer considers to be compatible with the use of its products.

2.2 Asphalt  
primer

- .1 Asphalt primer must be adhesive, fire-resistant, quick-setting and contain fast-evaporating solvents.

Reference product: Soprema Elastocol 500

2.3 Insulation  
for crickets

- .1 Expanded polystyrene insulation boards conforming to CGSB 51-GP-20M, Type 2, with a relative strength index (RSI) value of 0.75 per 25 mm of thickness and square edges. The polystyrene insulation acceptable for this project must be included on the list of certified products published by the Qualification Board of the Canadian General Standards Board (CGSB).
- .2 The insulation must be shaped to provide the required cricket slopes around devices behind which water may accumulate. No slope may have an angle of less than 2%.

2.4 Thermal  
and filler  
insulation

- .1 Thermal insulation must be made of closed-cell, polyisocyanurate foam integrally laminated on both sides with organic/inorganic fibre-reinforced felt facings in compliance with the CAN/CGSB 51.26-M standard, and submitted beforehand to post-bake aging for 28 days at 100 °C to obtain stable heat resistance of 1.39 RSI per 25 mm of thickness.

Thickness: 125 mm in total, including the filling row to an appropriate depth for the existing type of roof covering.

Reference products: Johns Manville ENRGY 3 or approved equivalent.

2.5 Asphalt  
panels

- .1 Semi-rigid panels composed of a mineral-fortified asphaltic core laminated with two asphalt-saturated glass mat reinforcement layers .

Thickness: 6.5 mm

Dimensions: 1,220 mm X 1,525 mm

Reference product: Soprema SOPRABOARD or approved equivalent

2.6 Joint  
sealant

- .1 The joint sealant must be Soprema Sopramastic 200 rubber-based plasticized synthetic bitumen or an approved equivalent product.

2.7 Fasteners

- .1 Nails must comply with the CSA B111 standard, be made of galvanized steel and be sufficiently long to penetrate to a depth of at least 20 mm into the wood blocking.
- .2 Self-tapping hexagonal head screws for metal flashing and enamelled aluminum trim that are fitted with nylon or neoprene washers and come in a colour matching the enamelled aluminum.
- .3 Pre-assembled attachment screws and plates, such as the TruFast PA system. Screws must be able to penetrate through the existing metal sheathing without penetrating through the 50-mm thickness of urethane interior insulation.



2.8 Various  
material and  
equipment, and  
special tasks

.1 In the case of various bases for mechanical equipment, the contractor will be responsible for waterproofing flashing assemblies.

.2 Dome strainers for vents and chimney liners: insulated prefabricated aluminum covers for vents and chimneys where required to complete the work.

Reference product: Murphco products or approved equivalents.

3. Prefabricated edge boards: Waterproofing system for complex roof penetrations consisting of prefabricated polymer edge boards and an elastomer filling agent.

Reference product: Chemlink ChemCurb system or approved equivalent

2.9 Elastomer  
membrane

.1 Underlayer

The underlayer will consist of a modified bituminous membrane with the addition of a minimum 15% content of mechanical stabilizers and elastomer. The reinforcement material will be a tough, dimensionally stable non-woven polyester mat. The topside and underside will be coated with thermofusible plastic film.

Product required: Soprema Sopralene Flam 180 or approved equivalent.

.2 Cap sheet:

The cap sheet membrane will be modified thermofusible bituminous type with the addition of a minimum 15% content of SBS-type mechanical stabilizers and elastomer. It will have a non-woven polyester reinforcement of 250 g/m<sup>2</sup>. The topside layer will contain mineral aggregates for added protection. The underside will be coated with thermofusible plastic film.

Reference product: Soprema Sopralene Flam 250 GR

Colour: pale grey

Propane gas soldering torches will be used to install the membrane, in accordance with the CGSB 37-GP-56m, Type 1, Category A, Class 2 standard.

.3 Protective membrane

The protective membrane will be made of the same product as the cap sheet, but in a contrasting colour to provide pathways for persons carrying out maintenance on equipment on the roof.

Reference product: Soprema Sopralene Flam 250 GR

Colour: black

Propane gas soldering torches will be used to install the membrane, in accordance with the CGSB 37-GP-56m, Type 1, Category A, Class 2 standard.

.4 Self-adhering membrane

The self-adhering membrane will be SBS modified bitumous type and strengthened with fibreglass. The underside will be self-adhering and protected with detachable silicone-coated paper, while the topside will be coated with thermofusible plastic film applied solely by means of propane gas soldering torches.

2.10 Caulking  
product

.1 Plastic cement: NCS type or approved equivalent, with a bituminous base or containing mineral fibres, for cold installation in compliance with the CGSB 37-GP-5c or CGSB 37-GP-23m standard.

.2 Joint filler for expansion joints, and 2.5-mm fibreglass boards (Rodofill or equivalent).

2.11 Spray-applied  
insulation

.1 Spray-applied insulation with two components: (1) insulation consisting of thermosetting polyurethane foam and (2) plastic foam with a rating density of 40 kg/m<sup>3</sup> for an RSI insulation factor of 1.4 per 25 mm of thickness, in compliance with the CAN/ULC S705.1 standard.

**PART 3 – EXECUTION**

3.1 Execution  
conditions

.1 Prior to the start of the waterproofing work, inspect the existing roof. A written notice of non-compliance must be submitted to the contractor for the corrective measures to be taken. Commencement of the work implies acceptance of the conditions permitting this work to be carried out.

.2 Begin the roof covering installation work as soon as the existing support is ready and inspected. Do not work in rain, fog, freezing rain, snow or ice conditions.

- .3 Use the materials required in accordance with the manufacturer's recommendations.
- .4 Do not carry out work in temperatures below -20 °C.
- .5 Sweep all roof surfaces before starting the work, and remove debris.
- .6 Install the various materials only on dry surfaces free of dust, water, rain, ice and snow.
- .7 Ensure that joints are waterproof in areas of the roof where pipes, vents and other items run through the roof.
- .8 Obtain from various manufacturers their written instructions and comply with them. Ensure that the various materials used are compatible.
- .9 Where possible, begin the installation work at the highest point on the roof to prevent water infiltration and reduce traffic on completed sections. This includes the installation of flashings and end points and daily sealing work.
- .10 Place coverings over walls and structures adjacent to the areas where it is necessary to hoist up and install bituminous materials.
- .11 Prohibit all traffic on completed portions of the roof covering, except in places where it is necessary to carry out work above roof level. Comply with precautionary measures deemed necessary by the supervising architect and the manufacturer and repair any damage caused by failure to follow instructions.
- .12 At the end of each work day, or when the work is interrupted because of bad weather, protect finished surfaces and materials taken from the storage areas from possible damage.
- .13 At the end of each work period during which membranes were installed by means of gas torches, make sure that someone is present on the worksite for a minimum period of 45 minutes to detect any possibility of fire breaking out.

### 3.2 Installation of blocks

- .1 Install blocks in areas where required and where it is indicated in the plans.

### 3.3 Installation of thermal and filler insulation

- .1 Install the row of rigid filler insulation of the appropriate thickness in the splines of the existing metal roof covering. The panels must be shaped and adjusted so that they completely fill the splines without leaving any gaps.
- .2 Rigid thermal insulation panels will be laid along the first filler insulation row. All of the panels must fit together perfectly and must not present any significant unevenness in their juxtaposition. All joints must be offset from one another both horizontally and vertically.

### 3.4 Installation of asphalt panels

- .1 Asphalt panels will be laid on top of the thermal insulation, in parallel rows with joints fitting tightly together, and mechanically well anchored up to the metal covering of the existing roof. For this purpose, use fasteners and washers installed every 400 mm on centre in both directions, i.e. 8 screws per 1,220-mm X 1,525-mm panel to obtain a minimum uplift resistance of 1.1 kPa. Use screws of an appropriate length to penetrate the existing metal base without penetrating into the interior urethane insulation of a thickness of about 50 mm. All of the panels must fit together perfectly and must not present any significant unevenness in their juxtaposition. All joints must be offset from one another both horizontally and vertically.

### 3.5 Surface preparation

- .1 The membranes must be installed according to the recommendations of the manufacturer of waterproofing materials and in acceptable weather conditions. In extreme cold or hot weather conditions, the membranes must be installed in strict accordance with the manufacturer's recommendations and under increased supervision.
- .2 The support surface must be smooth, dry and clean. Primer must be applied evenly to the wood surface, and the surface must be ready for the work to be carried out in this section.

### 3.6 Installation of the underlayer on the regular part

- .1 The underlayer membrane will be unrolled dry onto the asphalt panels in order to be placed in alignment, starting from the bottom of the slope. Take care to properly align the outside strip in parallel with the edge of the roof. Each strip will overlap the preceding strip by 75 mm laterally and in accordance with the line indicated for that purpose and by 150 mm at butt joints.

- .2 This underlayment will then be rolled up again, then unrolled and soldered into place by gas torch on the asphalt panels, as recommended by the membrane manufacturer. This application will consist in simultaneously melting the two surfaces until a continuous bead of bitumen appears as the cap sheet is unrolled.
- .3 Avoid overheating, so as not to burn the membranes and reinforcing materials.

3.7 Installation of  
the underlayer  
under raised  
sections and  
parapets

- .1 The underlayment will be installed by 1-metre wide strips over the underlayment of the regular surface over a length of 100 mm. The lengthwise overlap will be 75 mm, and the overlaps will be offset by at least 100 mm in relation to the overlaps of the underlayment of the regular surface so as to avoid an excessive thickness.
- .2 This underlayment will be soldered directly to its support, proceeding from the bottom to the top and using a gas torch. This application will consist in softening the inside facing of the underlayment without overheating it in order to obtain consistent adherence across the entire surface.

3.8 Installation  
of the cap sheet  
on the regular  
part

- .1 After installing the underlayment and checking that there are no deficiencies, install the cap sheet.
- .2 The cap sheet will be soldered to the underlayment, using the method described above.
- .3 Make sure you have an offset of at least 300 mm between the joints of the underlayment and those of the cap sheet.
- .4 Overlaps for the cap sheet will be 75 mm wide for strips in parallel and 150 mm for the butt joints.
- .5 Make sure that the soldering is properly and consistently carried out in all areas between the two membranes and do not leave any air pockets or folds during the installation operation.
- .6 After installation of the cap sheet membrane, inspect the overlap joints of the cap sheet membrane.
- .7 During the installation operation, be especially careful to avoid leaving any bitumen droppings on the joints.

3.9 Installation  
of the cap sheet  
on raised  
sections and  
parapets

- .1 This cap sheet will be arranged by 1-metre-wide strips over the cap sheet of the regular surface over a length of 150 mm. The lengthwise overlaps will be 75 mm and will be offset by at least 100 mm in relation to those of the underlayment of the raised sections and those of the cap sheet of the regular surface in order to avoid excessive thickness.
- .2 This cap sheet will be soldered directly onto the underlayment, working from the bottom to the top and using a gas torch. This application will consist in softening the two membranes to obtain a homogenous weld.

3.10 Waterproof  
cover plates

- .1 Install temporary cover plates over the roof coverings and the insulation at the end of each work day or when the work is interrupted for a short period. Remove them when the work resumes.

3.11 Membrane  
reinforcement

- .1 Membrane reinforcements made of the same material as the underlayment and cut in appropriate widths will be installed in all places where they are necessary: inside corners, outside corners, around all fixtures, along parapets, on various joints, etc. Install the membrane reinforcements in accordance with the membrane manufacturer's specifications.

3.12 Traffic  
pathway

- .1 The traffic pathway will consist of an additional piece of cap sheet membrane in a contrasting colour and will be installed as indicated in the plans and soldered in place on the cap sheet membrane.

3.13 Plumbing  
vents

- .1 Make sure that aluminum liners are made waterproof with 190-mm-wide collars covered with cap sheet membrane. Use flashing or prefabricated aluminum dome strainers, as shown in the architects drawings. All dome strainers must be replaced. Install a 50-mm layer of insulation between the liner and the vent pipe.

3.14 Protection  
of the completed  
structure

- .1 If work has to be carried out on the roof covering before the final covering is installed, be sure to protect the surface of the top membrane by placing panels at least 2 mm thick.

3.15 Openings

- .1 Provide and install the membrane flashing and metal flashing around appliances mounted on the roof, as well as around roof openings used to run equipment through. Refer to the drawings to determine the work to be carried out in collaboration with other tradespeople.

3.16 Expansion joint  
(if required)

- .1 Fill the intersection with flexible insulating material compressed to 50% of its original volume.

Cover with material with permanent elasticity placed with enough give to absorb thermal and structural movements. An Ethafoam pad provides good support. Install the flashing and cap flashing in accordance with sheet metal work requirements, as required.

3.17 Installation  
of spray-applied  
insulation

- .1 Spray-applied insulation must be installed by specialized technicians who use appropriate equipment. Follow the manufacturer's recommendations.
- .2 The insulation will be sprayed around the perimeters of all openings, in all cavities, gaps and holes where it is not possible to install leakproof air or vapour barriers otherwise, around the perimeters of exterior walls where they meet the roof, and in locations indicated on the plans.
- .3 The spray-applied insulation must be installed and protected in accordance with the requirements of the Code de construction du Québec and those of the CAN/ULC S705.2 standard.

## PART 1 – GENERAL

### 1.1 Notice to the contractor

- .1 It is extremely important that the (sheet metal) extension work around ventilation devices, which requires that the equipment concerned be turned off, be perfectly coordinated with the owner's requirements.

### 1.2 Shop drawings

- .1 Submit for the architect's approval shop drawings for all types of existing or required upgraded fans.

## PART 2 – PRODUCTS

### 2.1 Sheet metal

- .1 Prefinished steel treated with silicone-aldehyde and oven-baked following chemical priming and bonding treatment – Reference product: Steel Color 5000, in accordance with the CGSB 93-GP-3a standard, used in the fabrication of flashing, fascia boards and wall backsplashes. Colour to be chosen by the architect.

Thickness: 0.76 mm for all types of fans;  
0.60 mm for flashing, cap flashing and gutters.

- .2 Insulation coating: to CGSB 1-GP-108c standard.
- .3 Plastic cement: to CGSB 37-GP-5m standard.
- .4 Fasteners: of same material and gauge as the sheet metal used.
- .5 Cleats: of same material as the sheet metal used and generally 1.3 mm thick.
- .6 Washers: of same material as the sheet metal used, 1.6 mm thick with rubber packing.
- .7 Solder metal: to ASTM B32 standard (50% tin, 50% lead).
- .8 Welding flux: rosin, diluted hydrochloric acid or other commercial preparation compatible with the materials to be welded.
- .9 For some commercial manufactured products, the use of aluminum instead of galvanized steel is accepted.
- .10 Touch-up paint: As per the recommendations of the flashing and metal trim manufacturer.



2.2 Products  
and work

- .1 Flashing and sheet metal work to complete the roof work, include, as a general rule, the following:
  - counterflashing;
  - coverings on parapets and control/expansion joints;
  - all other components and structural shapes intended to protect membranes and reinforcements wherever required.
- .2 Ridge flashing, fascia boards and sheet metal work to complete the installation of roof membranes that the work concerns.

**PART 3 – EXECUTION**

3.1 Metal  
forming

- .1 Form metal flashing and other sheet metal work on a sheet-metal brake as per instructions.
- .2 Form pieces in 2400 mm maximum lengths. Provide enough leeway for expansion at joints.
- .3 Hem exposed edges on underside 12 mm. Miter and seal corners with sealant.
- .4 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.
- .5 Apply insulation coating to metal surfaces to be embedded in concrete or mortar.

3.2 Sheet  
metal work

- .1 All joints will be stapled-cleat (securement strip) type.
- .2 Paint with insulating paint the back surface of the sheet metal that comes in contact with other metal or concrete surfaces. Remove any grease from the sheet metal before painting. Apply primer to the metal that will be coated with bitumen.
- .3 Assemble the sheet metal by locking end joints, unless indicated otherwise.
- .4 Fasten the sheet metal work to the support material using cleats. The maximum spacing between cleats will be 300 mm off centre. Fold back exposed edges of the sheet metal.
- .5 The cleats will be 50 mm wide, of the same material, will have a core thickness double that of the structure to which they are fastened, will be long enough to effect a seal of 20 mm, and fold over the nail heads.

- .6 As a general rule, direct fastening through the sheet metal is prohibited.
- .7 Install flush-mounted-type expansion joints to a maximum of 2,400 mm on centre or as per instructions.
- .8 All sheet metal joints must be covered with a sealant in accordance with Section 07 92 10.

### 3.3 Metal flashing

- .1 Install metal flashing over (or under) all coping, around vent pipes, and around appliances mounted on the roof. Form flashing for fascia boards and install where required.
- .2 Install metal flashing to protect and cover the membrane at junction points between roofs and the walls of adjacent buildings. The height of this flashing in relation to the average level of the roof will be no less than 300 mm.

### 3.4 Installation

- .1 Install sheet metal work in accordance with the technical data of the Association of Consulting Engineering Companies (ACEC).
- .2 Use concealed fastenings except where approved before installation.
- .3 Provide underlay and install under the sheet metal. Secure in place and lap joints 100 mm.
- .4 Fit cap flashing over the bitumen-coated flashing installed in places where it meets the roof, vertical surfaces and borders. Cover the joints with flash joints using S-lock standing seams forming a tight fit over hook strips, as per instructions.
- .5 Lock end joints and caulk with sealant.
- .6 Using a sealant, caulk the flashing along the line where it meets the counterflashing.

## PART 1 - GENERAL

### 1.1 Prior examination

- .1 Examine the joints that need to be caulked; check the temperature and all other conditions that might have an impact on work in this section and make sure the work conditions are right to obtain a positive result.
- .2 This work can begin when the works and worksite conditions allow for it. Notify the manufacturer of the products in question before starting the work.
- .3 The joints must be dry, clean and free of dust and other foreign materials.

### 1.2 Installation conditions

- .1 Apply the sealing product and support materials at a minimum temperature of 5 °C.
- .2 If the product must be applied at a temperature of less than 5 °C, inquire with the manufacturer and follow the instructions given.

### 1.3 Guarantee

- .1 The guarantee will be for five years.

## PART 2 - PRODUCTS

### 2.1 Materials

- .1 Dry oakum, mineral or glass wool, closed cell expandable polyethylene cushioning foam or cord.
- .2 Primers: the type recommended by the sealing product manufacturer.
- .3 Backer rod:
  - a) General: Must be compatible with the primers and sealing products, oversized by 30 to 50%.
  - b) Polyethylene, urethane, neoprene or vinyl: extruded closed cell foam, hardness of 20 on the Shore A scale, tensile strength of 140 to 200 kPa.
- .4 Non-stick product: plastic tape that bonds with light pressure and does not stick to sealing products.
- .5 Sealing products: For vertical and horizontal joints where there is no access to traffic, use the sealing products listed in Table no. 1 in CGSB 19-GP-23.

- .6 Solvent: oil free. Reference product: Xylol or methyl ethyl ketone, compliant with CGSB 1-GP-94c.
- .7 Colour of sealing product chosen by the architect.

### **PART 3 - EXECUTION**

#### 3.1 Preparation of the joints

- .1 The joints to be caulked must be dry and free of all traces of corrosion, grease, coatings, hardening products, asphalt, rust, pieces of concrete, separated granulates, waterproofing products, humidity, dust and other contaminants.
- .2 Humidity is particularly bad for adhesion and all joints must be dry before the application of caulking products. A heat gun is particularly effective in situations where there is condensation and it is recommended for horizontal joints, just prior to the application of primers and caulking products.
- .3 The following elements must be taken into consideration when planning caulking work:
  - a) Plan for the space and accessibility needed to facilitate the application and compression of caulking products in the joints.
  - b) Plan for the space needed at the bottom of the joint to receive the support material that will be used to control the thickness of the caulking product and support if necessary.
  - c) Ensure that the caulking product will adhere permanently to the two opposite surfaces of the joint only. If necessary, a stripping product (recommended by the manufacturer of the sealing product) will be applied to the backer rod or the support material in order to prevent the caulking product from adhering to the surface.

#### 3.2 Priming

- .1 Apply a layer of primer on all joint surfaces that need to be primed, in compliance with the manufacturer's instructions. Certain surfaces might require a second layer of primer under certain circumstances. Refer to the manufacturer's instructions.

#### 3.3 Caulking and support

- .1 When necessary, the depth of the joints will be reduced using appropriate products (see "Preparation of the joints"). Joints that are too deep will be filled in using the materials indicated in the sketches or required by the manufacturer of the caulking product in question. Select a support material of a certain size so that when it is inserted into the joint, the material is not subject to a compression of more than 30%.

### 3.4 Size of the joints

The following width/depth ratios will be used in guiding the application of most caulking products.

- .1 For non-porous materials, metals, glass, etc.:
  - Width: 6 mm (minimum);
  - Depth: 6 mm, otherwise a half to equal depth to width ratio.

### 3.5 Application

- .1 Apply the sealing products (primer, backer rod, bond-breaker tape for sealing products) in compliance with the manufacturer's instructions; apply the sealing product using a gun with an appropriately-sized nozzle. Application pressure must be strong enough to fill the voids and perfectly seal the joint. Sealing using a single bead forming a film is prohibited.
- .2 Execute the joints by applying a continuous seal bead without ridges, folds, settling, air bubbles and coated dirt and shaping the bead by giving it a slightly concave profile.
- .3 Immediately clean the adjacent surfaces and leave the work clean and in perfect condition. As the work progresses, remove any surplus sealing product or smearing on adjacent surfaces by using the recommended cleaning product. Remove the taping materials after having shaped the joints.

### 3.6 Application of the caulking product

- .1 Apply the caulking product using a gun that can stream a continuous bead that completely fills the joint.
- .2 Heat in accordance with the manufacturer's instructions.
- .3 Shape the beads with an iron immediately after application to ensure solid contact with the opposite sides of the joint. Remove any surplus using a shaping tool or a knife. The bead should be flush with the surface unless otherwise indicated.
- .4 Remove any smearing and surplus materials as the work progresses and complete a general cleaning.
- .5 These products must not be applied at temperatures below 5 °C or above 8 °C.