

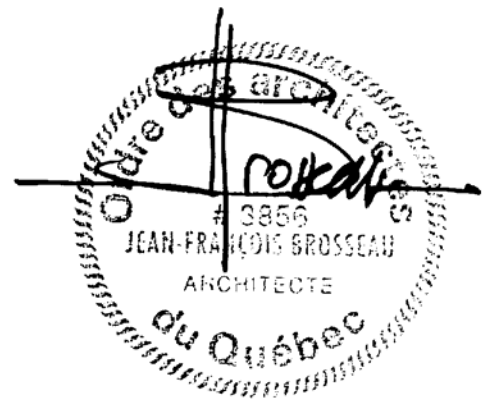
SPECIFICATIONS FOR TENDER
Canadian Space Agency

6767, route de l'Aéroport
Saint-Hubert (Québec) J3Y 8Y9

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Roofs reconditioning 2016-17
John H. Chapman Space Center

cimaise



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| 1.
Description | .1 | The goal for this division is to complete all clauses and general conditions of this contract. |
| | .2 | Unless stated otherwise and being a particular case written on the drawings, drawings or other documents being part of the contract, these conditions and these complementary requirements are applicable without condition and according to the case, to the contractor and sub-contractors of all trades, concerning the specified divisions in the present specification or for the whole architectural, structural, mechanical and electrical works, that must be done to complete the construction. |
| | .3 | For interpretation or contradiction of document, French documents take precedence on English documents. |
| 2.
Cooperation and coordination
with other trades | .1 | Ensure the entire cooperation of all trades, without exception, pertaining to these works, for the furniture and the installation of all components necessary for the execution of this work. |
| | .2 | Unless stated otherwise, the manufacturer must provide all necessary accessories to complete, on the spot, the installation of the components he fabricated. |
| | .3 | The installation is the responsibility of the subcontractor. He will provide materials, workmanship and equipment required to complete the installation of his work. |
| 3.
Openings and repairs | .1 | In principle, unless stated otherwise on the drawings and on Ministerial representative tender, all openings and piercing to be done, being over 150mm in diameter or more than 195 square centimeters, for the needs of different trades in the existing building and in new concrete slabs, will be done by the contractor, after approval of Ministerial representative. |
| | .2 | The contractor will do the repairs afterwards, as soon as subcontractor's work is done and that they have the certificates for tests, inspection and approval done by laboratories, inspectors and Ministerial representative. |
| | .3 | It is the responsibility of the contractor to ensure the cooperation and the coordination of all subcontractors to anticipate, as much as possible before beginning of the work, the openings, location for fastening devices, necessary space for various components, etc. To this effect, refer to the beginning of each division for general clauses, proper to each trade. |
| 4.
Site limits | .1 | The contractor will respect the site limits established while respecting the required conditions stated on the drawings, in the tender and by other requirements by Ministerial representative. |
| 5.
Existing services | .1 | When connecting work has to be done to existing networks, the work has to be performed at times fixed by responsible authority, not to bother the activities of users. |
| 6.
Other drawings | .1 | The Ministerial representative can, for clarification purposes only, give to the contractor extra drawings to ensure the good execution of the works. These drawings will have the same signification and the same range as if they were part of the contract documents. |

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7. Site meetings .1 The consultant will organize some project meetings when necessary. He will state the time and write a progress report then distribute it.
8. Equipments .1 In their tender, the contractor and subcontractors will take into account the installation costs for existing equipment and equipment provided by the ministerial representative as stated in architectural, mechanical/electrical tender.
9. Site preparation .1 At the beginning and during work, prepare premises in advance and in relation with the work to be done.
- .2 Anticipate the arrival of materials and equipment so as not to block or even reduce access ways during heavy traffic. Release and transport out of the site any residue resulting from construction work and demolition. As much as possible, deliver materials immediately before needed or for before installation, therefore not cluttering unnecessarily access to the buildings.
- .3 In entrances and other places, remove all clutter to allow easy access where work must be done. Free entrances and build the required protections to allow users to pass in security, at all times.
- .4 Plan, coordinate and prepare the work for each operations so there is no loss of time or delays due to the lack of foresight, of rules and regulations, of harmful overlapping of certain works, of useless clutter and hard access, basic work and incomplete preparation, or defective electricity, water and other inadequate supply services and of all other unfavorable similar causes or conditions.
- .5 Before starting any work, coordinate and determine, with each subcontractor, the spaces required for doing the work.
10. Site conditions .1 Work must be planned and done to minimize all inconvenient such as interferences, troubles, noise, dust, gas for combustible motors and other nuisances. Work areas must be zoned and when required by the Ministerial representative, adequate temporary protections must be installed to confine construction spaces where necessary; (according to the requirements of the ministerial representative).

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- 11. Public, workers and occupants protection.**
- .1 According to the regulation of Health and Work Security Board, the contractor is the project manager.
 - .2 Build and maintain in good order, fences, partitions, wire netting, covered bridges and any other means for temporary protection appropriate for surrounding the building, around openings and scaffoldings and also in other dangerous areas around the building and on the ground.
 - .3 Provide, install and maintain in operation, during darkness periods, fires or guard lights in areas where there are ramps, clutter, open passages, dangerous objects or equipment and in any other area of this nature around the building and on the ground.
 - .4 Protective gears must be as per Workmen Health and Safety Code.
 - .5 The Ministerial representative will have the right, without prior formal demand, to provide, at the expense of the contractor, safety measures that the contractor has omitted to take, either for the maintenance of communications or for the protection of public or company's workers.
 - .6 It is the responsibility of the contractor to build and maintain in place signs, barricades and required fences to ensure safety of occupants having to circulate on the site. However this work has to be coordinated with the security service of the Ministerial representative and municipal authorities.
 - .7 The prevention program of the contractor, proper to the site, must be coordinated to the prevention program of the Ministerial representative.
- 12. Access to work on site**
- .1 The contractor is responsible for any damage caused on the site or out of the site area where work is being done with heavy machinery and demolition of construction materials. The route taken by vehicles must be approved by competent authorities.
 - .2 Access must be made to ensure safety of public and of workers in areas where work is being done, as much for municipal, ambulance, police and firemen services.
- 13. Traffic blocking**
- .1 The contractor has to comply with the prescribed measures and precautions stated by the Ministerial representative concerning tools, installations and work on the site and must not hinder traffic and not be the cause for accident.
 - .2 Actual services to buildings for taxis, suppliers, fire and security services, resupplying for cafeterias, postal services, and garbage removal must stay in operation at all times; the Contractor will coordinate his work and deliveries to the site so as not to hinder or affect normal functioning of services stated above.
- 14. Storage areas and parking**
- .1 In principle, no massive storage will be authorized on the site, except for limited spaces well defined by the Ministerial representative and the ministerial representative, to store certain materials in large enough quantity to continue the work and ensure its continuity.
 - .2 Parking spaces for the contractor and his subcontractors will be allowed only inside the limited area selected by the Ministerial representative. The contractor must take into consideration that there are very few parking areas available on the site.

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- .3 Parking on the premise, elsewhere of inside prescribed limits is forbidden and any vehicle found will be toed at his own expense and be liable for a fine.
- 15. Site offices**
- .1 The contractor will not have any room outside of work area.
- .2 Site meetings will be held in an office supplied by Ministerial representative.
- 16. Protection of materials**
- .1 During storage period, protect against damage all materials and manufactured products delivered to the site.
- .2 Protect materials and manufactured products according to printed instruction from manufacturer.
- 17. Protection of work in place and of the site.**
- .1 With a tarp, protect plywood or other types of appropriated material, all existing walls and other works located nearby and near ramps, ladders and other temporary means of transport and circulation.
- .2 During bad weather, protect work being done or finished against any deterioration by means of temporary shelter and other appropriate means. Also protect against humidity and water all work susceptible to be damaged by the weather.
- .3 Cover with a plywood sheet all finished surfaces that must be protected to allow for work to continue.
- .4 Protect all equipment that is entrusted to the contractor.
- 18. Protection of existing structures**
- .1 The contractor must, at his own expense, protect, support, hold, re-route and re-establish to good order, all water ducts, building gas conducts, energy, telephone or other structures met, disturbed or damaged in the course of the work, and all this, to the satisfaction of interested parties.
- .2 Before beginning demolition work, the contractor must communicate with authorities of concerned services to locate existing ducts. Otherwise, the contractor will be held responsible for damages caused to ducts, structures and other components like finishing, etc.
- 19. Removal of temporary works**
- .1 As work progresses, remove scaffoldings, ramps, footbridges, ladders and other temporary work of same nature that are no longer required.
- .2 At the end of the work, remove equipments, accessories, materials, networks etc, coming from temporary works. Leave grounds free of all residue material or surplus.
- 20. Temporary source for supplies**
- .1 The contractor will be able to use existing services for water, electricity, heating and any other source of energy necessary for the duration of the construction of expansion work, for his operation purpose and the ones for the subcontractors.
- .2 Note that existing services are located near the main building. The Contractor must provide the necessary facilities near the site and protect the path traveled from the point of connection.

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| | .3 | Any damage done to the work due to inadequate functioning of temporary mechanical and electrical services must be repaired without additional cost to the ministerial representative. |
| | .4 | Temporary services must comply with the laws and regulations pertaining to accident prevention of the Quebec Workmen Health and Safety Code. |
| | .5 | Temporary services must be maintained in operation until provisory acceptance of permanent designed areas. |
| 21.
General repairs | .1 | Repair or replace all material or other accessories that could have been damaged by any situation out of control of the manufacturer or concerned trade. |
| | .2 | Before each final acceptance by the Ministerial representative, the contractor must proceed to repair all surfaces that could have been damaged by contractor or his subcontractors while doing their work. |
| 22.
Licenses and authorization | .1 | It is the responsibility of the contractor to obtain from municipal and government authorities, all pertinent information concerning laws and regulations in force concerning construction work in the province and the town where work will be done. He must also inquire about the execution contingencies specific to the areas. |
| | .2 | No construction permit is required for this construction. |
| 23.
Toilets | .1 | The Contractor shall erect temporary sanitary services near the project area. The positioning of facilities must be approved by the Departmental Representative. |
| 24.
Garbage containers | .1 | Cost of transportation and dumpsite will be paid by Contractor. |
| 25.
Approval of shop drawings | .1 | All shop drawings must be checked by Ministerial representative before making a product, equipment, etc. |
| | .2 | All products, equipment etc., stated in the shop drawings and that were not approved by Ministerial representative before their shipping, will be automatically rejected. |
| 26.
Building codes in force | .1 | Canadian Building Code and all other codes and regulations in force. |
| 27.
Supervision and coordination :
Responsibility of the
contractor | .1 | The contractor must coordinate himself all the works of different trades. |
| | .2 | The contractor must keep an eye on all subcontractor works and make sure that the work is done according to specifications. The presence of a superintendent or responsible for the coordination is required during the construction period. |
| | .3 | The contractor must check all the lists of deficiencies given by the Ministerial representative after their inspection. He must verify himself that each items listed has been corrected. |

28. Protection of finishing components and other works .1 The contractor has the responsibility to protect against all damage, all components that must be used in the building construction, mainly decoration and finishing accessories. Damaged components will be refused and must be replaced.
29. Works done by others .1 In the drawings and tender, the mention "by other divisions" or "by other sections" implies that these works are concerning the contractor, either for another section or for another division of the tender.
- When works are not part of the contract, the mention "apart from contract" appears specifically.
- The contractor must consult in detail all architectural, structural, mechanical and electrical drawings and tender to be able to include, in his contract, all the works designed by the mention "by other divisions", "by the contractor" or any other similar term.
- Some of these works could already have been included in other sections of the tender or other drawings. It is the responsibility of the contractor to consult all documents so he can itemize the ones being already under someone else's specific section of the tender or again, illustrated on the drawings of other specific trades or field. The ones that are not specifically described or itemized on the drawings or tender of other divisions will be the responsibility of the contractor.

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PART 1 – GENERAL

- 1.1
Document priority
- For all conflicting conditions or requirements between PWGSC's general conditions and complementary general conditions, general conditions prevail. Furthermore, sections from **Division 01** prevail on technical sections from other divisions in project specifications.
- 1.2
Work covered by contract documents
- The work involves two distinct types of interventions property :
- The project involves the complete renovation of the roof basins at P2N3, P4N3, P0N3, P0N5 and the main rotunda totaling over 1285 square meters of running surface. Without limitation, the works include :
- .1 Dismantling of the lightning rod system;
 - .2 Dismantling of aluminum wall panels, crowning and counter flashing;
 - .3 Removal and cleaning of ballast river stone compound and patio slabs;
 - .4 Demolition of the existing sealing system and construction of a new cover with cold sealing system;
 - .5 Construction details for current drains, vent and equipment;
 - .6 Changes crowning panels to improve maintenance;
 - .7 Insulation and replacing components.
- Then the project will be completed by securing the access and circulation to the roof for repair and maintenance work, as much for the Ministerial representative that the contractor. These interventions aim the same basins as roof repairs :
- .1 Install safe anchorages;
 - .2 Adding lifelines on new anchors and some existing;
 - .3 Flow path planning to distance traffic parapets;
 - .4 Various work changes and safety features.
- Refer to plans and specifications to determine the full scope of the work.
- In order to comply with the requirements of the Ministerial representative, the work must be « flameless ».
- 1.3
Work scheduling
- Unless otherwise indicated,
- .1 The work site is outside the building. The area bounded by the site will be fully available to the contractor.
 - .2 Since the site is still in operation, services will remain active at all times and free lanes for local traffic.
 - .3 **Steps to be included** (list not exhaustive):

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- .1 Overall coordination and detailed.
 - .2 Submission of detailed work schedule for approval.
 - .3 Delivery schedule for submission of shop drawings, data sheets and samples for approval.
 - .4 Manufacturing according to documents reviewed and approved.
 - .5 Mobilization on the site according to approved schedule.
 - .6 Installation of temporary services.
 - .7 Delivery of products and materials according to the approved schedule.
 - .8 Demolition / construction on the site according to the approved schedule.
 - .9 Detailed inspection work by the Contractor and correction of all defects apparent even before notify in writing the designated professionals of completion.
 - .10 Correction of defects identified by the Ministerial representative within the time required.
 - .11 Decommissioning, compliance certificates and documents management.
- 1.4 Site use by contractor
- .4 Work will be performed in accordance with the requirements listed in other sections and to comply with the deadline imposed.
 - .5 **Always** maintain access for the fight against fire; also maintain the means to fight against fire.
- 1.5 Site occupancy by ministerial representative
- .1 **Except if otherwise noticed**, use of site by contractor is restricted to work, storage and access area. Work area needs to be surrounded by metal site fences.
 - .2 Site use must be coordinated with Ministerial representative's instructions.
 - .3 Find extra work or storage area required for completion of work included in contract. Contractor must pay all cost related to these areas.
- PART 2 – PRODUCTS**
- 2.1 Not applicable
- .1 Not applicable.

PART 3 – EXECUTION

3.1
Not applicable

.1 Not applicable.

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1.
Construction period

Unless otherwise stated in the specifications, the work must be completed on schedule in the contract terms. In addition, the Ministerial representative imposes the following milestones. The milestones are intended to provide more flexibility for construction. The time allocated shall not be transferred at a later stage.

Approximate date :

- Contract Awarded See terms and conditions
- Document preparation and control of materials..... 2 weeks
- Production of anchors and safety devices 4 weeks
- Mobilization and site preparation 2 week
- Roofing and waterproofing work 8 weeks
- Flashing work, covering and finishing 2 weeks
- Correction and finishing work 2 weeks
- Documents and Project Completion..... 4 weeks

Material must be ordered in time and all necessary labour must be planned to comply with above contractual schedule.

The noisy work will be performed outside the hours of operation of the building. Here is a list of the work to prohibit during hours of operation. The objective is primarily to reduce impart noise.

- Removal river stone;
- Screwguns and impact drivers;
- Hydraulic roof remover;
- Demolition hammers or demolition drills;
- Etc.

If roofing and waterproofing work exceed the expected period, contractor must pay the additional fees to insure onsite surveillance laboratory presence. See section 01 45 00 – Quality control.

2.
Required schedules

- .1 Schedules to be submitted:
 - .1 Execution schedule
 - .2 Workshop drawing and technical data sheet submission schedule
 - .3 Samples submission schedule
 - .4 Product order and delivery schedule

3.
Presentation

- .1 Schedules must be presented in one horizontal bar diagram.
- .2 One separate bar must be assigned for each operation or trade.
- .3 Time must be represented as an horizontal linear scale indicating first business

day of each working week.

- .4 Lists presentation: as per specification's table of content
- .5 Lists content designation: as per subjects of each specification sections.

4. Submission schedule

- .1 If need be, submit first schedules within **10 days** following contract attribution.
- .2 Submit one copy for owner and one copy per consultant.
- .3 Consultants must verify proposed schedule et hand back one revised copy within **5 days** after its reception.
- .4 Schedule's final version must be submitted with no delay after reception of the revised copy.
- .5 Each payment request must be accompanied of a revised version of the execution schedule.
- .6 One copy of the revised execution schedule must be sent to:
 - .1 Site office;
 - .2 Subcontractors;
 - .3 Other interested parties.
- .7 Ask addressees to inform Contractor, within a delay of **10 days**, of every issue which could be caused by the proposed execution schedule.

5. Execution schedule

- .1 Present construction activities' complete schedule.
- .2 Give dates of beginning and end of each of the major activities. The critical path shall be identified clearly from the development of the first schedule.
- .3 Planned progression's percentages on first day of each week must be given for each activity.
- .4 Progression's percentage of each activity must be given on schedule submission date.
- .5 Changes that occurred since last schedule submission must be indicated.
 - .1 Main changes to come
 - .2 Modified activities since last schedule
 - .3 Progression rhythm and work completion date revised forecast.
 - .4 Other predictable changes
- .6 Detailed report on following subjects must be done :
 - .1 Issues, predictable delay and their impact over schedule.
 - .2 Proposed corrective measures and intended results.

.3 Modifications' probable effect on other contractor's schedule.

***** END *****

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1. Requirements
 1. Shop drawings and product descriptions
 2. Samples
 3. Operation and maintenance manuals
 4. Drawings to be inserted in file project
 5. Certificates and copies

 2. Administrative tasks
 1. Submit to Ministerial representative for verification purposes all required documents and samples in a reasonable delay and following appropriate order so works are not delayed. Lateness does not constitute a valid reason for asking for a prolongation of the contractual period. No requirements to this effect will be accepted.
 2. Works stated in documents or samples to be submitted must not be started before all of them are confirmed.
 3. Check all dimensions taken on site and make sure that works pertaining to adjacent works, being subjected to approval, are coordinated.
 4. On site, keep an approved copy of documents and samples to be submitted.

 3. Shop drawings
 1. The expression "shop drawings" indicate drawings, diagrams, illustrations, productivity or performance graphic charts , brochures and other documentation that the contractor must provide to show in detail part of the work targeted.
 2. Shop drawings must indicate materials to be used and construction methods. Also they must show fixation or anchorages to be used. They must have mounting diagrams, explanatory notes and any other pertinent information needed to do the work. When some components or adjacent works are prescribed related to work to be done, make sure they are well coordinated in tender, no matter which section of adjacent works are provided or installed.
 3. Description. Shop drawings must:
 - 3.1 Indicate the date, the name of subcontractor and details, number of pages and their numbering.
 - 3.2 When asked for, as per certain standards, please indicate.
 - 3.3 Describe all abbreviations or symbols.
 - 3.4 Leave a free space of 60mm x 100mm for stamping and remarks by consultant.
 - 3.5 Must be very readable: fax will be refused.
 - 3.6 Must contain only information pertinent to the project.
 4. Modification to the shop drawings by the Ministerial representative should not increase price of contract. Should it increase the price, please notify to the Ministerial representative, in writing before starting works.
 5. Make changes to shop drawings requested by the Ministerial representative, as per requirements of contractual documents. When re-submitting, notify the Ministerial representative in writing of all changes made other than the ones required by the

- architect.
6. Unless stated otherwise, submit shop drawings in PDF format by e-mail.
 7. Allow ten (10) working days to leave time to the professionals to check submitted documents.
 8. When shop drawings are verified by the Ministerial representative and no errors or omission have been found or that there are only minors corrections to be made, the copies will be returned and manufacturing and installation can start. If shop drawings are rejected, the annotated copies will be returned and new corrected shop drawings should be submitted as per mentioned indications, before manufacturing or installation can start.
4. Identification sheets
1. Contractor must keep one (1) copy on the site and three (3) other copies will be inserted in operation and maintenance manuals.
5. Samples
1. Submit samples for verification purposes as per requirements of various sections of tender. Label samples, stating their origin and proposed use in performing the works.
 2. Notify the Ministerial representative in writing, of all differences in samples in regard to requirements in contractual documents.
 3. Modifications made to samples by the Ministerial representative should not increase price of contract. Should it happened, please notify the Ministerial representative, in writing, before starting works.
 4. Make changes to samples that could be requisite by Ministerial representative as per requirements of contractual documents.
 5. When required, build work samples in an area approved by the Ministerial representative. For these works, coordinate with the Ministerial representative in order to approve the samples on site.
6. Drawings to be inserted in file project
1. After contract is awarded, in lieu of drawings to be inserted in the project file, note with care and precision all disparities in regard to contractual documents that are cause by state of premises and changes to be done.
 2. Mark placement of concealed components in mechanical and electrical installations.
 3. Identify drawings as being "drawing as built, copies for project file", maintain them as new and make sure they are available on site, so the Ministerial representative can validate them.
 4. Once works are done and before final inspection, submit to the Ministerial representative all documents inserted in project file.
7. Certificates and copies
1. Immediately after contract is awarded, submit required certificates to responsible organism for Workmen's Health and Security Welfare, proper construction licenses and copies of insurance policies. All documents must be submitted in three (3) copies to the Ministerial representative.

Part 1 General

1.1 SECTION INCLUDES

- .1 Contractor shall manage his operations so that health and safety of the public and of site workers always take precedence over cost and scheduling considerations.

1.2 REFERENCES

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

1.3 SUBMITTALS

- .1 Submit to Departmental Representative, the site-specific safety program, as outlined in 1.8 at least 10 days prior to start of work. The Contractor must review his program during the course of the project if any change occurs in work methods or site conditions. The Departmental Representative may, after receiving the program or at any time during the project, ask the Contractor to update or modify the program in order to better reflect the reality of the construction site and activities. The Contractor must make the required changes before work begins.
- .2 Submit to Departmental Representative the site inspection sheet, duly completed, at the intervals indicated in 1.13.1.
- .3 Submit to Departmental Representative within 24 hours a copy of any inspection report, correction notice or recommendation issued by federal or provincial inspectors.
- .4 Submit to Departmental Representative within 24 hours an investigation report for any accident involving injury and any incident exposing a potential hazard.
- .5 Submit to Departmental Representative all safety data sheets for hazardous material to be used at the site at least three days before they are to be used.
- .6 Submit to Departmental Representative copies of all training certificates required for application of the safety program, in particular:
 - .1 General construction site safety and health courses;
 - .2 Safety officer attestations, if applicable;
 - .3 First aid in the workplace and cardiopulmonary resuscitation;
 - .4 Work likely to release asbestos dust;
 - .5 Work in confined spaces;
 - .6 Lockout procedures;
 - .7 Safe work procedures at height;
 - .8 Hot work procedures;
 - .9 Wearing and fitting of individual protective gear;

- .10 Forklift truck safe driving practices;
 - .11 Positioning platform;
 - .12 Any other requirement of Regulations or the safety program.
- .7 Medical examinations : Wherever legislation, regulations, directives, specification or a safety program require medical examinations, Contractor must:
- .1 Prior to start-up, submit to Departmental Representative certificates of medical examination for all concerned supervisory staff and employees who will be on duty when the site opens.
 - .2 Thereafter, submit without delay certificates of medical examination for any newly hired concerned personnel as and when they start work at the site.
- .8 Emergency plan : The emergency plan, as defined in 1.8.3, shall be submitted to Departmental Representative at the same time as the site-specific safety program.
- .9 Notice of site opening : Notice of site opening shall be submitted to the Commission *de la santé et de la sécurité du travail* before work begins . A copy of such notice shall be submitted to Departmental Representative at the same time and another posted in full view at the site. During demobilization, a notice of site closing shall be submitted to the CSST, with copy to Departmental Representative.
- .10 Plans and certificates of compliance : Submit to the CSST and to Departmental Representative a copy signed and sealed by engineer of all plans and certificates of compliance required pursuant to the Construction Safety Code (S-2.1, r. 6), or by any other legislation or regulation or by any other clause in the specifications or in this contract. Copies of these documents must be on hand at the site at all times.
- .11 Certificate of compliance delivered by the CSST: The certificate of compliance is a document delivered by the CSST confirming that the contractor is in rule with the CSST, i.e. that he had pay out all the benefits concerning this contract. This document must be delivered to Departmental Representative at the end of the work.
- 1.4 HAZARDS ASSESSMENT**
- .1 The contractor must identify all hazards inherent in each task to be carried out at the site.
 - .2 The contractor must plan and organize work so as to eliminate hazards at source or promote mutual protection so that reliance on individual protective gear can be kept to a minimum. Where individual protection against falling is required, workers shall use safety harness that meets standard Can-CSA-Z-259.10-M90. Safety belts shall not be used as protection against falling.
 - .3 Equipment, tools and 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.
 - .4 All mechanical equipment shall be inspected before delivery to the site. Before using any mechanical equipment, submit to Departmental Representative a certificate of compliance signed by a qualified mechanic. Whenever he suspects a defect or accident risk, Departmental Representative may at any time order the immediate shut-down of equipment and require a new inspection by a specialist of his own choosing.

1.5 MEETINGS

- .1 Contractor decisional representative must attend any meetings at which site safety and health issues are to be discussed
- .2 Set up a site safety committee, and convene meetings every in accordance with the Construction Safety Code (S-2.1, r.6).

1.6 LEGAL AND REGULATORY REQUIREMENTS

- .1 Comply with all legislation, regulations and standards applicable to the site and its related activities.
- .2 Comply with specified standards and regulations to ensure safe operations at site containing hazardous or toxic materials.
- .3 Regardless of the publication date shown in the construction safety code, always use the most recent version.

1.7 SITE-SPECIFIC CONDITIONS

- .1 At the site, the contractor must take account of the following specific conditions:
 - .1 Works in a building occupied in operation.
 - .2 Waterproofing work "with no flame".
- .2 The entrepreneur has to follow the instructions of the ministerial Representative in what concerned the internal and outside temporary installations and concerning the accesses to the site of the works.

1.8 SAFETY AND HEALTH MANAGEMENT

- .1 Acknowledge and assume all the tasks and obligations which customarily devolve upon a principal Contractor under the terms of the Act Respecting Occupational Health and Safety (R.S.Q., chapter S-2.1) and the Construction Safety Code (S-2.1, r.6).
- .2 Develop a site-specific safety program based on the hazards identified and apply it from the start of project work until close-out is completed. The safety program must take account of all information appearing in 1.7 and must be submitted to all parties concerned, in accordance with the provisions set forth in 1.3. At a minimum, the site-specific safety program must include :
 - .1 Company safety and health policy.
 - .2 A description of the work, total costs, schedule and projected workforce curve.
 - .3 Flow chart of safety and health responsibility.
 - .4 The physical and material layout of the site.
 - .5 First-aid and first-line treatment standards.
 - .6 Identification of site-specific hazards.
 - .7 Risk assessment for the tasks to be carried out, including preventive measures and the procedures for applying them.
 - .8 Training requirements.
 - .9 Procedures in case of accident/injury
 - .10 Written commitment from all parties to comply with the prevention program.
 - .11 A site inspection schedule based on the preventive measures.

- .3 The contractor must draw up an effective emergency plan based on the characteristics and constraints of the site and its surroundings. Submit the emergency plan to all parties concerned, pursuant to the provisions of 1.3. The emergency plan must include:
 - .1 Evacuation procedure;
 - .2 Identification of resources (police, firefighters, ambulance services, etc.);
 - .3 Identification of persons in charge at the site;
 - .4 Identification of those with first-aid training;
 - .5 Training required for those responsible for applying the plan;
 - .6 Any other information needed, in the light of the site characteristics.

1.9 RESPONSIBILITIES

- .1 No matter the size of the construction site or how many workers are present at the workplace, designate a competent person to supervise and take responsibility for health and safety. Take all necessary measures to ensure the health and safety of persons and property at or in the immediate vicinity of the site and likely to be affected by any of the work.
- .2 Take all necessary measures to ensure application of and compliance with the safety and health requirements of the contract documents, applicable federal and provincial regulations and standards as well as the site-specific safety program, complying without delay with any order or correction notice issued by the Commission de la santé et de la sécurité du travail.
- .3 Take all necessary measures to keep the site clean and in good order throughout the course of the work

1.10 COMMUNICATIONS AND POSTING

- .1 Make all necessary arrangements to ensure effective communication of safety and health information at the site. As they arrive on site, all workers must be informed of their rights and obligations pertaining to the site specific safety program. The Contractor must insist on their 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 site. The Contractor must keep and update a written record of all information transmitted with signatures of all affected workers.
- .2 The following information and documents must be posted in a location readily accessible to all workers:
 - .1 Notice of site opening;
 - .2 Identification of principal Contractor;
 - .3 Company OSH policy;
 - .4 Site-specific safety program;
 - .5 Emergency plan;
 - .6 Data sheets for all hazardous material used at the site;
 - .7 Minutes of site committee meetings;
 - .8 Names of site committee representatives;
 - .9 Names of those with first-aid training;

.10 Action reports and correction notices issued by the CSST.

1.11 UNFORESEEN CIRCUMSTANCES

- .1 Whenever a source of danger not defined in the specifications or identified in the preliminary site inspection arises as a result of or in the course of the work, immediately suspend work, take appropriate temporary measures to protect the workers and the public and notify Departmental Representative, both verbally and in writing. Then the Contractor must modify or update the site specific safety program in order to resume work in safe conditions.

1.12 HEALTH/SAFETY/HYGIENE/ENVIRONMENTAL SPECIALISTS

- .1 As soon as work starts, hire one or several safety officer(s), pursuant to the provisions of sections 2.5.3 and 2.5.4 of the Construction Safety Code (S-2.1, r. 6) and give him/her/them the necessary authority to carry out the duties of this position, including authority to stop work on safety and health grounds.
- .2 As of [enter time], hire a qualified person whose duties will be to ensure compliance with and application of all legislation, regulations and standards and all contractual requirements pertaining to [specify area of expertise].
- .3 Provide this person with the authority, resources and tools needed for performance of his/her duties.
- .4 The person selected shall meet the following requirements:
 - .1 Possessed a minimum of five (5) years of experience in the domain.
- .5 The person selected shall:
 - .1 have in-depth knowledge of legislation and regulations applicable to the site pertaining to (specify area of expertise).
 - .2 develop and disseminate a safety orientation program for all site workers.
 - .3 ensure that no worker is admitted to the site without having taken the safety orientation program and met all the training requirements of the applicable legislation and the site-specific safety program.
 - .4 inspect the work and ensure compliance with all regulatory requirements and those of the contract documents or the site-specific safety program.
 - .5 keep a daily log of actions taken and submitting a copy to Departmental Representative each week.

1.13 INSPECTION OF SITE AND CORRECTION OF HAZARDOUS SITUATIONS

- .1 Inspect the work site and complete the site inspection sheet at least once a month if the work length exceeds 30 non working days. If the work length is less than 30 non working days, the frequency is at least once during the work length.
- .2 Immediately take all necessary measures to correct any lapses from legislative or regulatory requirements and any hazards identified by a government inspector, by the Departmental Representative, by the site safety and health coordinator or during routine inspections.
- .3 Submit to Departmental Representative written confirmation of all measures taken to correct lapses and hazardous situations.

- .4 Give the safety officer or, where there is no safety officer, the person assigned to safety and health responsibilities, full authority to order interruption and resuming of work as and 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, 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 or the public or to the environment.

1.14 POWDER ACTUATED DEVICES

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

***** END *****

**1.
Related requirements**

1. The specific requirements relating to inspection and to tests that must be performed by laboratories are indicated in various sections.
2. The Ministerial representative will oversee the execution of the work. This in no way limits the contractor's responsibility to comply with current standards and codes.
3. The Ministerial representative may also hire testing laboratories to perform tests on the structure or on the tightness of the various systems, damaged or not, in order to identify noncompliance or omissions.

**2.
Contractor's responsibilities**

1. Provide the workforce and facilities needed to:
 - 1.1 allow access to the structures to be inspected and tested;
 - 1.2 facilitate inspections and tests;
 - 1.3 restore structures that are disturbed during inspections and tests.
2. Give Ministerial representative enough advance warning of operations so that he may plan visits for the inspection of specific structures or make appointments with laboratory staff and establish a testing schedule.
3. When materials must be tested, send the requested amount of representative samples to the testing laboratory.
4. Assume the cost of work carried out to uncover and restore structures that were covered before the required inspection or tests were performed and approved by the Ministerial representative.

**3.
Quality supervisor**

1. The Ministerial Representative will retain and pay the costs relating to the quality supervisor on site for waterproofing works.
2. The inspector selected to supervise the quality of work will have its skill cards of the "Association des maîtres couvreurs du Québec (AMCQ)" for each type of proposed system.
3. However, the contractor is responsible to ensure inspection fees in the following conditions :
 - 3.1 Inspection and testing required by laws, rules, regulations or public order;
 - 3.2 Inspection and testing performed exclusively for the convenience of the contractor.
 - 3.3 inspections and tests specified as to be performed by the contractor or to be undertaken at the expense of the contractor in tender documents;
4. When tests or inspections of testing show non-compliance of the works with contract requirements, the Contractor shall pay the additional costs that may apply Ministerial representative to verify the acceptability of corrections.

5. Provide labor and facilities to :
 - 5.1 allow access to works to inspect and test;
 - 5.2 Facilitate inspections and tests;
 - 5.3 repair works disturbed or damaged during inspections and tests;
 6. The roofing contractor as the responsibility to maintain a team of a minimum of 6 workers per day including the foreman, for the entire duration of waterproofing works. If the minimum number of workers per day is not respected, the Ministerial Representative reserves the right to deduct from payment, inspection fees at the cost of \$700 per day.
4. Rejected structures
1. Remove defective elements deemed noncompliant with contract documents and rejected by the Ministerial representative, either because they were not built according to good engineering practices, they were made with defective materials or products, or they were damaged, even if they are already part of the finished structure. Replace or rebuild the elements in question according to the requirements in the contract documents.
 2. Immediately repair other contractors' structures that have been damaged during replacement work described above.
 3. If, in the Ministerial representative's opinion, it is not feasible to repair the structures deemed defective or noncompliant with contract documents, the Ministerial representative may deduct from the contract price the difference in value between the structure that was built and the one prescribed in the contract documents, with the amount of this difference being determined by the Ministerial representative.
5. Workers' competence
1. The contractor must prove to the Ministerial representative, upon demand, that the workers possess the skills to carry out the work they have been assigned. Certification complying with current laws and regulations may be necessary.
 2. If the Ministerial representative is not satisfied by the proof, he may require the contractor to replace the workers.

***** END *****

1. **Material installation and removal**
 - .1 Provide, set-up or lay out necessary installation on site to allow for work to be done within the shortest time possible.
 - .2 As work progresses, dismantle material not needed and remove of the site.

2. **On-site storage – Admissible charges**
 - .1 Ensure that work is done within the time limits stated in the contract. Do not clutter site unnecessarily with equipment and materials.
 - .2 Do not overload or allow overloading on any part of the work so as to not compromise its integrity.
 - .3 Provide and install weatherproof containers to store materials, tools and equipment sensitive to damage.
 - .4 Container's space must be determined by the ministerial representative.

3. **Transport equipment**
 - .1 Not harm the vessel's operations, the use of some motorized equipment will not be prohibited to carry out the work. The objective is to reduce noise and vibration on the structure.
 - .1 Without limitation, the following equipment will not be tolerated :
 - a. Mini excavators, lifts and equipment;
 - b. Mechanical harvester;
 - c. Etc.
 - .2 According to past experience, the following equipment could be tolerated :
 - a. Motorized wheelbarrow at inflated tires;
 - b. Etc.
 - .3 Therefore, removal of river stone will be hand or using a suitable vacuum cleaner. Refer to sections 02 41 00-Demolition work and 07 55 53-Protected membrane roof covering - Cold applied.

4. **Sanitary installation**
 - .1 Sanitary facilities must be provided inside the security perimeter of the site area.

5. **Signposting**
 - .1 Install, in pertinent areas, sign panels to indicate site limits, the direction of temporary relocated exits or other pertinent information.

6. **Removal of temporary installation**
 - .1 Remove from site all temporary installation when the Ministerial representative will judge it appropriate.

7. **Protection of finished building surfaces**
 - .1 During all the work period, protect all finished or partially finished surfaces, the existing equipments and furniture leaved in place.
 - .2 Foresee screens, tarps and necessary fences.
 - .3 Three (3) days prior to installation of protective components, confirm with the

- Ministerial representative where each protection will go. Confirm schedule for installation.
- .4 Take all the responsibility for damage caused to works because of lack of protection or unsuitable protection.
8. Guardrails and barriers on the ground
- .1 Provide rigid barriers and security and set traps around equipment, installations and storage on the ground.
- .2 Supply and install these components in accordance with jurisdictional requirements.
9. Guardrails and barriers on the roof
- .1 Installing barriers and guardrails for the protection of the perimeter of the basins of roof falls.
- .2 Always install drop cloths to limit the dispersion of debris and reduce the risk of falling for tooling.
- .3 The contractor may also use the lifelines and anchors in place in accordance with the specific use plan for the building. The new anchors could also be used to accomplish the sealing work.
10. Roof access
- .1 The contractor will not have access to the building and will provide safe access to the means to achieve the two roof levels. Only two types of facilities will be tolerated :
- a. Scaffolding manual with stairs and railings;
- b. Hydraulic scaffold (scissor lift).
- .2 Refer to drawings for the elevation of each roofing basins relative to ground level.
11. Site planning
- .1 Site mobilization imposes grass use for worksite installations as well as lifting equipment.
- .2 Protect surfaces and limit moving in order to minimize damage that may occur on site.
- .3 Contractor must recondition site after work. For ground occupation area:
- a. Remove existing grass
- b. Mix surface earth
- c. Level with 50mm of top soil
- d. Cover surface with grass rolls.
- e. Maintain during the setting time of the plates.

***** END *****

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1. **General**
 1. As required by Ministerial representative, submit following information for some or all materials or products used:
 - 1.1 Name and address of manufacturer.
 - 1.2 Commercial brand name, model and catalogue number.
 - 1.3 Yield, description and tests results.
 - 1.4 Instruction from manufacturer on installation or application.
 2. Provide and install materials and equipment of required quality and make, having a performance as per established standards and for which one can get replaceable parts easily.
 3. Unless stated otherwise, use products from one manufacturer only for material and equipment of same type or same class.

 2. **Instruction from manufacturer**
 1. Unless stated otherwise, follow the most recent written instructions from the manufacturer for materials and equipment to be used and method of installation.
 2. Notify Ministerial representative, in writing, of all discrepancies between the present tender and manufacturer's instructions. Ministerial representative will then confirm which document is to be used.

 3. **General fastener pieces**
 1. Provide fastener pieces and metal accessories of same texture, color and finish as metallic support where they are fixed. Make sure that different metals are not exposed to an electrolytic action. Use fasteners, anchorages and stainless steel shim to fix exterior works.
 2. Spacing between anchorages must take into account limited charges and resistance to shearing to ensure a permanent positive anchorage. Wooden pegs are not accepted.
 3. If possible use the least possible visible fastener devices. Space them uniformly and install carefully.
 4. Fastener devices that could cause crumbling or cracks of material being used as backing up material for anchorage will be rejected.
 5. Get approval from Ministerial representative before using fastener devices to be installed with a nail gun. Once approval is given, install in accordance with ACNOR Z166-1975 standard.
 6. With pressure treated wooden pieces, use compatible antirust anchorage in accordance with standards and recommendations from manufacturers.

 4. **Fastener material**
 1. Use fastener devices made of materials, as per commercial standard, shapes and dimensions and having a proper finish for intended use.
 2. Unless stated otherwise, use heavy fastener devices with hexagonal head. Use stainless steel pieces of type 304 for exterior installation.
 3. Bolts must not exceed nuts by more than one length of their diameter.

4. Use ordinary washers on equipment, steel blocking washers with soft trimming where there is vibration and soft washers on stainless steel components.
- 5. Delivery and storage**

 1. Materials and equipment must be delivered and stored so manufacturer seal and label are intact.
 2. Store materials and equipment as per instructions from suppliers.
 3. Repair to Ministerial representative's satisfaction all damage caused to shop finished surfaces. Use a primer or enamel, the closest possible to original finish. Do not paint signing plates.
- 6. Conformity to standards**

 1. If materials or equipment are prescribed as per descriptive standards or performance standards, at the request of the Ministerial representative, the report of an independent test laboratory must certify that materials and equipment are as per prescribed requirements or over.

*****END*****

1. **Related requirements**
 - .1 To complement the general conditions, the contractor must comply with the requirements of the present section.

2. **Cleanness of site**
 - .1 Ensure cleanliness of site and get rid of all piling up of rubbish and material for garbage.
 - .2 Remove from site debris and garbage materials and place them in garbage containers at the end of each work shift.
 - .3 Clean interior surfaces before starting finishing work and keep these areas free of dust and other impurities during said work.
 - .4 Clean daily occupied areas soiled by work of the general contractor or his subcontractors. Cleaning must be done immediately after work so the good functioning of the building is not hindered by it.
 - .5 The Contractor shall take precautions to protect existing and new assemblies to limit contamination of clean rooms. These precautions must comply with the recommendations of the subcontractor in decontamination.

3. **Final cleaning**
 - .1 When work is almost entirely done remove surplus material, tools and equipment. Remove construction material that is not necessary to the unfinished work.
 - .2 Remove debris and scrap material other than the ones generated by the Ministerial representative, other contractors or their employees and leave premises clean and ready to use.
 - .3 At the end of the work, remove surplus material, tools and equipment and also all construction material. Remove debris and scrap materials other than those generated by the Ministerial representative or other contractors.
 - .4 Scrap materials must be removed from site at pre-established fixed intervals, or eliminate them according to the Ministerial representative requirements. Do not burn scrap materials on site, unless you have an express approval from the Ministerial representative.
 - .5 Take the necessary required arrangements to obtain licenses from competent authorities to eliminate debris and scrap materials.
 - .6 Sweep all work surfaces prior to site inspection.
 - .7 Remove dust and stains, marks, scratches seen on decorative work, mechanical and electrical appliances, furniture components, walls, floors and ceilings.
 - .8 Examine the finishing, accessories and material to ensure that they all meet requirements stated regarding the quality of work and its functioning.
 - .9 Clean mechanical ducts in between the ceiling. Eliminate dust residues accumulated on equipment and mechanical ducts during the work.
 - .10 Carefully clean material and appliances. Clean or replace filters of mechanical appliances.

***** END *****

PART 1 – GENERAL

- 1.1**
Content and objective of this section
- .1 The present section states the requirements concerning the management and removal of garbage for the present project. It concerns in part demolition and construction works. It must include at the source sorting programs, for certain demolition garbage and for construction garbage.
- .2 Building, refurbishing and demolishing generate a good quantity of residues that are generally buried. The present section is for contributing to the good management of our environment. The goal of the present is to reduce the volume of garbage to be buried and to recuperate some materials that could be reused elsewhere.
- 1.2**
Definitions
- .1 Audit of garbage: The audit of garbage concerns the quantity of garbage that the works should generate. This verification assumes measurement and evaluation of the quantity, the composition and the origin of garbage produced and operational factors to their production.
- .2 Plan for reducing garbage: Written documents in which reduction, reuse and recycling opportunities are studied. The garbage reduction plan is based on data given by the garbage control sheet.
- .3 Audit of demolition garbage: Is applied to garbage generated by this work.
- .4 Sorting programs of material at the source: Sorting activities, on the site of reusable and recyclable garbage, so they may be classified in appropriate categories.
- .5 Coordination for garbage management: A chosen person and working on the site. Other persons must be designated among the personnel of each subcontractor to ensure coordination of the management of garbage with the Coordinator.
- .6 Sorted garbage: Garbage already classified by type.
- 1.3**
Use of premises and installations
- .1 Do the work without preventing normal use of premises.
- .2 Put in place provisory safety measures, approved by the Ministerial representative.
- 1.4**
Sorting program for demolition materials
- .1 Prepare sorting program for demolition material before beginning works.
- .2 Following approved methods by the Ministerial representative and with his authorization, begin the sorting program of material to be recuperated for recycling.
- .3 On the site, anticipate necessary installations to collect, handle and transport projected quantities of recyclable garbage.
- .4 Material must be collected, handled and evacuated either at the sorting stage or to be sorted at an independent site. Recuperated materials must be transported towards approved installation and authorized for recycling.

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- .5 Hold information and awareness meeting for workers that will be working on the site and give them written information on the procedure to be followed for recuperation.
- 1.5 Sorting program for construction garbage, at the source
- .1 Prepare sorting program for construction residue prior to the beginning of work.
- .2 Following approved method by the Ministerial representative and with his authorization, begin sorting program at the source where all garbage is generated by the works.
- .3 On the site, anticipate necessary installation to collect, handle and stock projected quantities of reusable and or recyclable garbage.
- .4 Provide containers in which reusable and /or recyclable garbage will be put in.
- .5 Place containers in areas where it will be easy to deposit materials without causing a problem for other activities on the site.
- .6 Place sorted material in areas where they will be the least damaged and where they will be easily accessible.
- .7 Materials should be collected, handled and stocked on the site, then evacuated at the sorting stage. Recovered materials must be transported towards approved and authorized installations for recycling.
- .8 Hold information and awareness meeting for workers that will be working on the site and give them written information concerning the procedure to be followed for recuperation.
- 1.6 Internet links on garbage treatment
- .1 <http://www.mddep.gouv.qc.ca/matieres/valorisation.htm#debris>
Available documentations:
- Information sheet: « *Construction residue, renovation and demolition* »
- *Information guide on recycling of dry materials.*
- .2 <http://www.3rmcdq.qc.ca/>
- .3 <http://www.usqbc.org/>
- .4 <http://www.recyc-quebec.gouv.qc.ca>
- .5 <http://www.cca-acc.com>
- 1.7 Removal of garbage
- .1 It is forbidden to bury debris and garbage on the site.
- .2 It is forbidden to throw garbage, mineral essences, oil, paint thinner in water ways, sanitary and rain sewers.

- 1.8
Stoking, Handling and
protection of materials
- .1 Stock, in designated areas on the site, material intended to be reused, recycled or recuperated.
 - .2 If not stated otherwise, materials that must be disposed of, become the property of the contractor.
 - .3 Protect, pile up, stock and list all components to be recuperated.
 - .4 Separate non recoverable components from recoverable ones. Transport and deliver non recoverable components to authorized elimination installation.
 - .5 Support all work affected by the works. Should the safety of the building become compromised, stop work and inform the Ministerial representative immediately.
 - .6 Protect superficial water evacuation works and all electrical and mechanical installations to prevent damage or blockage.
- 1.9
Work schedule
- PART 2 – PRODUCTS**
- 2.1
Without object
- PART 3 – WORK**
- 3.1
General
- .1 Do work as per garbage sorting program.
 - .2 Handle as per pertinent codes and regulations for garbage that are not reusable, recoverable and or recyclable.
- 3.2
Cleaning
- .1 Once work is done, remove all tools and garbage. Leave premises clean and in good order.
 - .2 Clean work areas as work progresses.
 - .3 Sort, at the source, all material that must be reused/recycled and place them in designated areas.
- 3.3
Recovering material and
to be sent to recovering sites
- .1 Sort materials from the general flow of garbage. Pile them in separate piles or in distinct containers, with the approbation of the Ministerial representative and as per pertinent regulations for fire safety. Identify containers and areas for piling. Provide instructions concerning removal practices.
 - .2 It is forbidden to sale recovered material on site.
 - .3 **Demolition materials**: The following materials must be recovered and brought to recovering sites for crushing or other possible recovering.
Steel (structure and other steel components), **masonry** (brick and stone), **concrete, asphalt and bituminous concrete, furniture, acoustical tile.**

3.4
Containers reuse

- .4 **Construction materials** : The following residue material must be sorted, place in separate containers and transported to salvage sites for recovery:
Steel (structure and other steel components), **masonry** (brick and stone), **gypsum and wood**.
- .1 Refer to section 07 55 53 –Protected membrane roof covering - Cold applied for aimed product specifications.
- .2 Products must be shipped in 170 liters (45 gallons) metal containers that must provide an inner liner allowing container reuse with a minimum cleaning.
- .3 Containers must be shipped back to manufacturer for reuse.
- .4 Obtain manufacturer's certificate confirming number of bucket that were diverted from landfill.

***** END *****

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1. **Content for this section**
 - .1 Project file, samples and tender.
 - .2 Materials and appliances.
 - .3 Technical data, materials, material and finishing products and related information.
 - .4 Data and operation and maintenance manuals.
 - .5 Material/replacement material, special tools and replacement parts.
 - .6 Guarantees and bonds.

 2. **Documents to submit**
 - .1 Information must be prepared by competent persons, having the required knowledge pertaining to functioning and maintenance for the described products.
 - .2 Submit a sample of operation and maintenance manual in their final form, before final reception of work.
 - .3 Submitted samples will be returned with comments from the Ministerial representative.
 - .4 If need be, review content of documents before to re-submitting.
 - .5 Once manuals are ready and approved, hand over one (1) definite copy of maintenance and operation manuals to the ministerial representative in addition to a digital version of those documents. Files must be in PDF format and organized according to the folders' structure provided by ministerial representative.
 - .6 In addition to information written in this present section, refer to engineering documents to know the requirements and the content of manuals to be submitted.

 3. **Presentation**
 - .1 Present data in the form of an instruction manual.
 - .2 Use three D shape ring rigid vinyl binders with loose leaves, 219mm x 279mm.
 - .3 The digital version will be handed on a DVD disc.
 - .4 When multiple binders are needed, regroup data according to a logic order. Clearly indicate content of each binder on the spine.
 - .5 On the covering page of each binder you must indicate the name of the document, – Project file, typed or written in square letters, name of the project and table of contents.
 - .6 Organize the contents per section numbers of the tender and the order as they appear on the table of content.
 - .7 Anticipate, for each product and each system a tab index on which is typed the description of the product and the list of main equipment pieces.
 - .8 The text must be printed or be typed data from the manufacturer.
 - .9 Fit the drawings with a reinforced perforated tab. Insert in the binder and fold large drawings according to format of the text pages.

4. Content of each volume of the final project file
- .1 Table of contents: indicate designation of project:
 - .1 Date for handing over the documents;
 - .2 Name, address and telephone number of the Ministerial representative, of the Contractor and the names of their authorized representatives;
 - .3 A list of products and systems, indexed, according to the contents of the binder;
 - .4 A list of subcontractors and pertinent information.
 - .2 For each product or system indicate the following:
 - .1 Name, address and telephone number of subcontractors and suppliers;
 - .2 Name of persons responsible for the project;
 - .3 Name of local distributors for spare parts.
 - .3 Technical data: Mark each sheet to clearly indicate products and specific parts. Give proper directives pertaining to installation. Delete all none pertinent information.
 - .4 Drawings: Drawings are used to supplement the charts and to illustrate the relation between various elements of material and systems; they include diagrams of order and principle.
 - .5 Typed text: according to need, to complete technical data. Give instructions in a logic sequence for each intervention, incorporating information from manufacturer.
 - .6 The following data specified in individual section of Divisions 02 to 48.
 - .1 List of equipment, including service center.
 - .2 Information written on identification plate like the number of the equipment, commercial brand, dimensions, capacity or power, serial number.
 - .3 List of pieces.
 - .4 Details pertaining to installation of equipment.
 - .5 Instruction pertaining to the operation of the equipment.
 - .6 Instruction pertaining to maintenance of equipment.
 - .7 Instruction pertaining to finish maintenance.
 - .7 Divide binders by specialty: architecture, structure, exterior layout, mechanic, electricity, etc.
 - .8 Refer to documents of Ministerial representative.
 - .9 Administrative information: Include the following information:
 - .1 Certificate of compliance given by the Workmen Health and Safety Commission;
 - .2 Certificate of company in order with the Quebec Construction Commission;
 - .3 Contractor must make a statutory declaration. It must accompany his request to free the deduction, security deposit or both when a substantial part of the work is done or finished;
 - .4 Receipts from subcontractors and suppliers;
 - .5 Guarantee asked for each sections;
 - .6 A list of paint products and color used;
 - .7 Maintenance instruction for surfaces and requested materials.

- .10 Shop drawings:
 - .1 Separately bind a complete set of definite revised shop drawings and technical data.
 - .11 List of special tools provided by the ministerial representative;
 - .12 List of spare parts to give to the ministerial representative;
 - .13 Inventory of replacement material given to the ministerial representative with acknowledgment of receipt of these products;
 - .14 Drawings "as built", on which real site conditions were written, as described in article 7.
- 5. Documents and samples to add to the project file**
- .1 In addition to requirements mentioned in the general conditions, store on the site, for the ministerial representative a sample or set of the following documents:
 - .1 Contractual drawings;
 - .2 Tender;
 - .3 addenda;
 - .4 Order of modification and other amendments to the contract;
 - .5 Revised shop drawings, technical data and samples;
 - .6 Records of tests made on the site;
 - .7 Inspection certificates;
 - .8 Certificates given by the manufacturer.
 - .2 Store all file project documents and samples used for the project apart from the documents used for the work. Anticipate filing cabinets, shelves and a safe storage area.
 - .3 Label documents and file according to list of section numbers stated in the table of contents of the file project. Clearly write FILE PROJECT in square letters on a label for each document.
 - .4 Keep project file documents clean, dry and readable. Do not use as execution documents for the work.
 - .5 The Ministerial representative must have access to documents and samples of the project file for inspection.
- 6. Consignment of conditions of site (building and site)**
- .1 Write down information on a set of opaque drawings with black lines and also in project file samples given by the ministerial representative. For the works, the contractor must provide three (3) sets of all Drawings given for construction, corrected with notes that state real conditions on the site.
 - .2 Write down information with fine line black felt markers, anticipating a color for each different important system.
 - .3 Write down information as work progresses. Do not conceal works before required information is registered.

- .4 Contractual drawings and shop drawings : Clearly indicate each data, to show work as is, including what follows :
 - .1 Position of utility ducts and interior accessories, measured in comparison with visible and accessible construction elements.
 - .2 Modifications done on the spot to dimensions and details of works.
 - .3 Changes done following order for modification and site instructions.
 - .4 Details not shown on original contractual documents.
 - .5 Reference to shop drawings and related modifications.
 - .5 Tender: clearly write each facts to describe works as they are, including what follows :
 - .1 Name of manufacturer, commercial brand and catalogue number for each product installed, especially optional and replacement elements.
 - .2 Changes being part of the addenda or order for modification.
 - .6 Other documents: keep manufacturer's certificates, inspection certificates, records of tests done on site prescribed for each of the technical sections of this tender.
- 7. Materials and finishing products**
- .1 Construction material, finishing products and other products to be applied: provide all technical data and indicate catalogue number, dimensions, composition, designation of colors and textures of products and materials. Give necessary requirements to order special products.
 - .2 Provide instruction concerning cleaning products and methods, recommended cleaning and maintenance schedule. Indicate precautions to be taken against detrimental methods and toxic products.
 - .3 Additional requirements: according to requirements of various technical sections of the tender.
- 8. Replacement Materials/Material**
- .1 Provide material and replacement materials according to indicated quantities requested in various technical section of the tender.
 - .2 Material and replacement materials must come from the same manufacturer and must be of same quality as of materials already incorporated in the work.
 - .3 Deliver and store material/ replacement materials where indicated.
 - .4 Receive and take inventory of material and replacement materials, then submit inventory list to the Ministerial representative. Insert approved list in operation manual.
 - .5 Keep a receipt of all parts delivered and submit if before final payment.
- 9. Special tools**
- .1 Provide special tools according to prescribed quantities in various technical sections of the tender.

**10.
Storage handling and
protection**

- .2 Tool must bear a label stating its function and material where they are met to be used.
- .3 Deliver and store special tools where indicated.
- .4 Receive and take inventory of special tools, then submit inventory list to the Ministerial representative. Insert approved list in maintenance manual.
- .1 Store spare parts, material, replacement material and special tools to prevent damage and deterioration.
- .2 Store spare parts, material, replacement material and special tools in their original packaging, kept in good order, bearing the seal and the label of the manufacturer.
- .3 Store all components sensitive to bad weather damage in weatherproof areas.
- .4 Store paint and product sensitive to very cold weather in a well ventilated heated room.
- .5 Get rid of components, damaged and/or deteriorated products. Replace them without additional costs, to the satisfaction of the Ministerial representative.

**11.
Guarantees and bonds**

- .1 Separate each guarantee or bond with tabs index, according to the list given on the table of contents.
- .2 Give list of subcontractors, suppliers and manufacturers with names, addresses and telephone numbers of a chosen representative for each one.
- .3 Obtain double copies of signed guarantees and bonds, by the subcontractors, suppliers and manufacturers, within ten (10) days following the end of the work concerned.
- .4 Except for what concerns the elements put into service with the authorization of the ministerial representative, do not modify the entry data in force on the guarantee before the date of the end of the work is established.
- .5 Ensure that all documents are in good order, that they have all necessary information and that they are notarized.
- .6 Countersign the documents to surrender when necessary.
- .7 Retain the guarantees and bonds until it is time to hand them over. Include them in the final project file at the end of the work.

***** END *****

PART 1 - GENERAL

- 1.1**
Related sections
1. Carpentry / woodworking.....Section 06 10 11
 2. Insulator and Lightning conductorSection 26 41 13

- 1.2**
Range of works
1. Temporary displacement of ballast and existing rigid insulation.
 2. Removal and disposal of existing filtering tarp.
 3. Uplifting of all existing membrane.
 4. Keep all metallic crowns and counter-flashings made of rigid aluminum panel.
 5. Remove and discard all metallic counter-flashings of appliance bases on roof.

- 1.3**
Regulations
1. All demolition works will be done following instruction from authorities having jurisdiction and after having paid all licenses that could be required for these works.

- 1.4**
Property
1. All materials coming from demolition, not indicated as reusable or that the Ministerial representative has not reserved before demolition is started, become the property of the Contractor. He will dispose of it as he wishes.

- 1.5**
State of works to be demolished
1. Start works in the state that they will be on day of contract awarding and not when site inspection was done before handing tender.

- 1.6**
Safety measures
1. Take all necessary safety measures to prevent any shifting or collapsing of works, services, electric network, mechanical system, landscaping, and parts of adjacent buildings. Provide and install all necessary bracing and shoring pieces. Repair damaged works and assume responsibility for corporal injuries that could result from demolition works.
 2. Put in place all necessary protective measures to ensure protection of users and personnel at all times.
 3. Check and take all necessary protective measures to make sure that no damage is done to accessories present on interior ceilings.

PART 2 - PRODUCTS

- 2.1**
Recuperation of demolition materials
1. Follow indication on blueprint and tender for recuperation and/or reuse of certain materials; appliances and/or equipment, if applicable. Contractor must handle and store them with care, so they are not damaged.

2. Remove with care accessories and equipments that will be incorporated to new works, such as patio slabs, river stone ballast, rigid insulation and all aluminum covering panels. Store them adequately and protect against damage. Have them reinstall at the right time by competent workers.
3. Some materials could be reused, however, only material allowing a quality of finish or at least a quality equal to new materials, will be used.

PART 3 - WORK

3.1 Preparatory works

1. Take all necessary precautions so installations being used for intern activities will not be out of order
2. Disconnecting and re-connecting will be coordinated with Ministerial representative's approval and will be done under the responsibility of the contractor.

3.2 Demolition BALLAST

1. Move the river stone in place with an industrial vacuum cleaner for ballast roof as FranVac of Fansyl. The goal is to eliminate the movement of motorized equipment on the roof and limit dust.
2. All existing stone will be removed off site, sieved and cleaned with water to settle the dust and urban pollution present in the gravel and that will be sucked into the sweeper. GRAVEL EXISTING CURRENT MUST BE RECOVERED.
3. Clean up on place all existing patio slabs with a jet of water under pressure. The tiles will be retained and reinstalled.
4. Move patio slabs to allow repairs to the waterproofing membrane. The contractor will be responsible for replacing all tiles damaged during handling. Plan to replace 5% of the tiles refer to section 07 55 53-Protected membrane roof covering -Cold applied for specification.

3.2 Demolition ROOF

1. Remove filtering tarp and discard.
2. Recuperate all existing modules that are in good order to be reinstalled later. Anticipate a lump sum for estimated quantity of 400 sq.meter to replace insulation equal to existing one and include a unit price per square foot to tender formula to adjust estimated quantities with real quantity. At the end of works, as stated in supervision reports.
3. Eliminate all polyethylene from roof's surface and from all existing membrane. Dry all surfaces with no flame.
4. To front (pilasters) parapets and exterior columns, remove with care, all rigid aluminum panels and keep, including all angle mouldings and corner fasteners. Number all metallic pieces to be able to reinstall them at the same places. If roof contractor does not have the qualified manpower to remove and reinstall this type of covering, he will have to hire, under his responsibility, a contractor specializing in

metallic covering.

5. Lightning arrester system can be disconnect during works and still maintain a protection for the building at all times. Contractor will be held responsible for any damage caused to the building by lightning, should the system not be as required, during these works. Keep all existing system pieces for reuse.
6. Discard all metallic flashing and counter-flashings of appliances bases on roof.
7. Discard all existing vent mantles and extend each vent to get a height of 400mm on top of insulation (inverted roof). Each vent extension must be of same nature as existing ones and be extended with appropriate mechanical collar.
8. Discard all existing mechanical drains and all drain pieces that could be a nuisance to new copper drains.
9. Clean all surfaces with care.
10. Remove and take out of site all demolition debris and residues and, if need be, do repairs of all damage to property done by the works.
11. Contractor will anticipate waterproof closings to protect from water, dust and noise parts of occupied building during demolition.
12. Contractor will anticipate waterproof closings to protect from poor weather all parts of demolition and rebuilding works , to be done on exterior of the building (roof).
13. Demolish only surfaces that can be made watertight on the same day. Even insulation must be kept in place. Strip surface to waterproof on a daily basis in order to avoid membrane overheating by the sun. Otherwise, membrane might stick to concrete making it harder to demolish.

Even if not indicated on the blueprints, anticipate demolition of all parts of building necessary to accomplish works as described on blueprint and tender.

3.3 Restoration

1. The contractor will check all actual building's levels to ensure proper connection as anticipated.
2. Contractor will make all joints and required assemblies to allow for differential movements, without provoking cracks.

Resurfacing of surfaces will be made with same existing materials, same textures and colors or with equivalent in case of none availability or discontinued materials. Touch-ups will be made up to the closest angles to make coating or paint touch-up disappear.

3.4 Materials handling

- 1.
2. The contractor will be responsible for technology and circuit selected by the handling of structural members, concrete and other materials.
3. Adequately protect the elements in place and resurface if they are altered in any way due to construction.
4. If necessary, make protective surfaces, walls to protect temporary shocks.

5. Restrict access or protect from noise and dust the affected parts of buildings.

6. Put the pieces in place taking care to resurface or replace them if they were damaged due to construction.

***** FIN *****

PARTIE 1 - GÉNÉRALITÉ

1.2

Range of work

Not limited to the work of this section:

1. Supply and installation of guardrail sections freestanding outdoors.
2. Certificate of conformity of specific products and installation.

1.3

Reference standards

1. ASTM A36M-90, Specification for Structural Steel.
2. ASTM A53-90a, Specification for Pipe, Steel Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
3. ASTM A325M-90, Specification for High Strength Bolts for Structural Steel Joints.

1.4

Calculation standards

1. The guard rail and all connections should be designed to withstand the overload in the vertical and horizontal direction in accordance with the requirements of National Building code, 2005 Edition (Code de construction du Québec).
2. Refer to structural specifications to meet the charges specified therein. These data should be validated with the manufacturer to ensure that the weight represented the plans and specifications meet the expenses listed documents the engineer.

1.5

Shop drawings

1. Submit shop drawings in accordance with the requirements of section 01 33 00 – Submittal procedures.
2. Shop drawings are represented all possible conditions to meet on the construction site.

1.6

Certificate of conformity

1. The contractor shall deliver a certificate from an independent firm to certify that the installation on the site meets all the standards in more stress loads specified in document structure and the manufacturer's specifications.
2. The certificate must be sealed and signed by a member of the Order of Engineers of Quebec and project specific.

PARTIE 2 - PRODUITS

2.1 Materials

1. Steel shapes : conforms to CAN3-G40.21-M81 or ASTM A36/A36M-84a, shade 300 W.
2. Bolts : conform to ASTM A307-84.
3. High strength bolts: conform to ASTM 325M-84a.
4. ASTM A53-90a, Specification for Pipe, Steel Black and Hot-Dipped, Zinc-Coated Welded and Seamless.

2.2 Pieces

1. Posts and rails: 38mm diameter steel pipe, Schedule 40, hot dip galvanized. See plan for location of the posts and for length of the rails.
2. Bend: piece 90 degrees, molded, galvanized steel.
3. Base: pole heel with variable angle, molded, galvanized steel.
4. External seals: linear union, molded, galvanized steel.
5. Plastic cap: clasp for the end of the tubes.
6. Wall mounting base: fixing washer receiving the tube rails.
7. Counterweight: Leste PVC 457mm X 495mm, ± 50 mm thick, with a total load of 13,5 kg.
 - a. CB-1: Tube de 32mm dia., 1320mm length, with (1) weight of 13,5 kg.
 - b. CB-3: Tube de 32mm dia., 1320mm length, with (3) weight of 13,5 kg.
 - c. CB-5: Tube de 32mm dia., 1905mm length, with (4) weight of 13,5 kg.
 - d. Some counterweight should be extended to suit the site conditions. Provide tubular accordingly. See notes to the plans for location and quantity.
8. Screw: hex head and treated against corrosion.
9. Floor mats: recycled rubber mats 19mm thick, cut so as to leave an excess of 25mm the perimeter of the equipment it supports. Reference product: carpet Sopramat by Sopramat or approved equivalent.
10. Reference product: railing system freestanding **KeeGuard** by *Kee Safety*, or approved and compliant equivalent.

2.3 References

1. To access the location of components and the number of systems to be in place, refer to the architectural plans.
2. The connecting parts were not listed on the documents. It is then up to the contractor to provide all the fasteners, unions, bolts, caps, etc. so that the work is complete.

PARTIE 3 - EXÉCUTION

3.1 Installation freestanding guardrail

1. Ensure that the installation surface is free of debris throughout the project area. If necessary, clean with a low pressure water jet.
2. Install the counterweight of a section and connect the vertical posts as indicated and shown in the architectural plans, assisted shop drawings. Tighten the screws with a torque wrench to achieve a tension of 39 N/m.
3. The base and the counterweight will be deposited on mats, unless deposited directly on concrete slabs. Cut so as to leave a 25mm exceeding the scope of the equipment it supports.
4. Install plumbing systems and alignment where indicated. The posts should be installed evenly, respecting an angle of ± 10 degrees inward, in both directions when applicable.
5. Insert the cross inside the accessories, taking care to stagger the joints 900mm minimum. Tighten the screws with a torque wrench to achieve a tension of 39 N/m. Add unions places the pipe sections with the same installation constraints.
6. With the ties exceed 200mm (unless otherwise specified in the plans) the last post from each end and connect with elbows to form an extension in "D".
7. When the permitted location, replacing the last weight (CB-5) for a wall attachment. Unless clearly indicated to the plans, this variant must be approved locally for each intervention.
8. Once the work is completed, filing or grinding the ends of each section to make them smooth and uniform. Seal against corrosion using a primer paint rich in zinc. Retouch galvanized surfaces, scratched or burned areas during installation work.
9. Finally, block the end of each tube with a sturdy plastic plug of appropriate size.

3.2 Certification

1. The engineer of the independent firm will have to move the site to ensure compliance of the installation and complete as-built plans of the entrepreneur, in two copies.
2. The certificate of conformity shall complete and submitted in accordance with Section 01 78 00. The professional should be mentioned in the list of subcontractors and the certificate attached to its topic.

*****FIN*****

PART 1 - GENERAL

- 1.1
Related sections
1. Demolition and resurfacing Section 02 41 00
 2. Protected membrane roof covering – Cold Applied Section 07 55 53
 3. Insulator and lightning conductor Section 26 41 13
- 1.2
Quality control
1. Wood marking: stamp class of a recognized organism by the *Canadian Lumber Standards Accreditation Board*.
 2. Plywood marking: classification marks as per pertinent ACNOR standards.
- 1.3
Range of works
- Non-limitative list of works for this section:
1. Cleat, baseboards, filler pieces, plywood, base of equipments, supports, all nailing ground required to build watertight works.
 2. Temporary shelters and partitions.

PART 2 - PRODUCTS

- 2.1
Building timber
1. Spruce, category #1, as per dimensions indicated on blueprints and details, maximal humidity percentage 19%, finish S45, whitened on 4 sides as per following standards:
 - 1.1 CAN/CSA-0141-91.
 - 1.2 NLGA (*Standard Grading Rules for Canadian Lumber*), printed in 1987.
 2. Furring, spacing shims, nailing strips, nailing grounds, false buck, cleats, etc.
 - 2.1 Planks: «standard» or superior category
 - 2.2 Dimension wood: classification «light frame», «standard» or superior category.
 - 2.3 Post and timber: «standard» or superior category.
 3. **All wooden pieces used must be pressure treated as per process CCA-050 and ACNOR-080.2a standards.**
- 2.2
Wooden panels
1. Douglas fir plywood: as per ACNOR 0121-M1978 standard, classification «construction», «standard» category.
 2. Canadian soft wood plywood: as per ACNOR 0151-M1978 standard, classification «construction», «standard» category.
 3. Exterior carpentry plywood: Eastern spruce, seven ply, water repellent glue, quality «PMAC Exterior», type «underlay», good on both sides.
 4. Unless stated otherwise, panels must measure 1220 mm x 2440 mm (4'-0" x 8'-0") and be square cut.
 5. Follow indications on details as per thickness specified.
 6. **All plywood used must be pressure treated as per process CCA-050 and ACNOR-080.2a standard.**

- 2.4 Roof support panels
1. Support panel in gypsum with fiberglass mast and moisture resistance, as per ASTM D3273
 2. Product Reference : DensDeck of Georgia Pacific.
- 2.5
Fastening devices
1. ATTACH TH SUPPORT PANEL :
 - a) Appropriate gauge screw and washer zinc 76mm dia. With embedment of 25mm minimum in the grooves of the decking.
 - b) Product Reference : System SOPRAFIX of Soprema or OMG Roofing products
 - c) Minimum quantity : To comply with the requirements FM Global, class 1-90.
 - Current part : 1 anchor / 4 ft2 either 1 anchor / 0,37m2 ;
 - Perimeter (1,83 m) : 1 anchor / 2 ft2 either 1 anchor / 0,19m2;
 - Corners (1,83 m) : 1 anchor / 1 ft2 either 1 anchor / 0,09m2;
 2. Spiral threaded nails, spikes and clips: as per ACNOR B111-1974 standard.
 3. Bolts: with nuts and washers and, unless stated otherwise, of 12,5 mm (½") in diameter.
 4. Patented fastening devices: toggle bolts, expanding buffers with pullers, lead or inorganic fiber cartridges with screws, explosive cartridge attachment, anticipated for this by manufacturer.
 5. Galvanized fastening devices: galvanization as per ACNOR G164-M1981 standard for exterior works, for interior works in humid areas and with works made with pressure treated wood.
 6. **All nails used in pressure treated wood will have to be hot galvanized. No « Electro-Galvanized » nails will be accepted.**
- 2.6
Rigid insulation panel
1. Closed cell rigid insulation type 4, and complies with ASTM C518 CAN/ULC-S701 with lap joints. Use of at least panels 610 x 2440mm having a compressive strength of 275 kPa.
 2. Product Reference: 400 FOAMULAR Owens Corning or approved equivalent
- 2.7
Rock wool insulation
1. Insulation mineral wool plug waterproof, fireproof and facilitate drainage, and conforms to ASTM C612 and CAN/ULC-S702.
 2. Product Reference: ROXUL CavityRock MD or approved equivalent.

PART 3 - Works

- 3.1
Carpentry
1. Install elements as per indicated lines, levels and elevations. Space uniformly.
 2. Make continuous elements from pieces having the longest possible length.

3. In any event, the rounded or curved face of elements resting on supports of frame must be place on upper part of the work.

3.3
Weather protection

1. The contractor's has the responsibility to adequately protect concrete panels against bad weather up to the moment of installation of waterproof membranes. All wet or humid panel sections will have to be replaced.

3.4
Temporary works

1. Provide and erect all scaffoldings, steps, ramps, ladders, platforms, fences, temporary closing of openings with tarps or polyethylene and all other works necessary to finish the works.

*****END*****

PART 1 - GENERAL

- 1.1**
Related sections
1. Carpentry/woodworking..... Section 06 10 11
 2. Metallic flashings and trimmings..... Section 07 62 00
 3. Waterproof products for joints..... Section 07 92 10
 4. Insulator and lightning conductor..... Section 26 41 13
- 1.2**
Range of works
- Non-limitative list of works for this section:
1. Supply and installation of all waterproof materials and roof insulation: membrane with surface dressing, insulation, filtering tarp and ballast.
- 1.3**
Contractor's qualifications
1. Roof contractor must be a member in due form of the Roof master of Quebec. Prior to starting work, he must be authorized by waterproof material manufacturer to apply their products.
 2. Manpower used must have a foreman with a minimum of five (5) years experience in installation of selected type of material. Three-quarters of manpower (75%) must have at least three (3) years experience in installation of selected materials.
- 1.4**
Selection of manufacturing
1. All membranes shall be selected from the brands accepted by the Master Roofers Association of Quebec, through its 10 year warranty.
- 1.5**
Competency
1. Membrane manufacturer must have been in business for at least fifteen (15) years in heat rubberized bituminous membrane application of waterproofing roof covering.
 2. Manufacturer must employ a competent technician to assist contractor in application of products and inspection of waterproofing roof covering system.
- 1.6**
Standards, documents and reference organisms
1. CGSB-37-GP-9Ma, Unfilled bitumen base layer for the roof coverings for waterproofing and moisture.
 2. CAN/CGSB-37.50-M89, Hot applied rubberized asphalt, for roofing and waterproofing.
 3. CAN/CGSB-37.51-M90, Hot application of rubberized bitumen for the coating of the roofing and waterproofing.
 4. CAN/ULC-S701-97, Thermal Insulation, polystyrene, boards and pipe covering.
 5. Canadian Association of roof contractors. Association Canadienne des Entrepreneurs en Couverture (ACEC).
 6. Master roof coverers of Quebec. Association des Maitres-Couvreurs du Québec (AMCO).
 7. FM (Factory Mutual Engineering Corporation) Roof Assembly Classifications.
 8. ULC (Underwriters Laboratories of Canada) Fire Hazard Classifications.

9. CCMC (Centre Canadien de Matériaux de Construction) No CCMC 06583-L. (Canadian Center for Construction materials)

**1.7
Guarantee**

1. At the end of work, Roof contractor must provide the Ministerial representative with a five (5) years guarantee in due form, covering all roof systems starting at bridge and new flashings and including all related works of the contract, beginning at date of definite reception by Ministerial representative.
2. Sub-contractor for bitumen works and manufacturer must provide a 20 years guarantee for the complex waterproofing.

**1.8
Shop drawings**

1. Provide shop drawings as per section 01 33 00.

**1.9
Storing and handling**

1. Store materials in a dry, free from weather and so they are not in contact with the ground.
2. Place felt and membrane material rolls in up-right position, in a place where temperature is above +10°C, for a minimum of 24 hours prior to installation.
3. Take out of warehouse only materials to be use on same day.
4. Place plywood panel on work so they form a pathway to allow handling of material and movements.
5. Store insulation away from sunlight and rain and any harmful substance.
6. Store materials in accordance with the manufacturers written recommendations.

**1.10
Identification and delivery**

1. Indicate following information on material containers and packaging:
 - 1.1 Name of manufacturer and commercial brand;
 - 1.2 Conformity of product or material to applicable manufacturing standards.
2. Deliver materials in original containers and bearing intact labels.
3. Deliver fastening devices in boxes or barrels. Keep them in a well protected place until moment of use. It is forbidden to oil or grease fastening devices.
4. Give purchase notes in three copies to Ministerial representative and include following information or documents:
 - 4.1 number of purchase notes;
 - 4.2 Name and address of supplier;
 - 4.3 Name and address of buyer;
 - 4.4 Numbers of project contract;
 - 4.5 Name of materials and characteristics, including type, quality, color, class and quantity;
 - 4.6 Expedition note of liquid bitumen, indicating temperature of ignition and final blowing temperature;

- 4.7 Information relative to material expedition;
- 4.8 Delivery address.

- 1.11 Condition for implementation**
- 1. When temperature is constantly under 5°C, including windshield factor, stop all work of application.
 - 2. Support must be dry, free of snow or ice. Use only dry materials. Apply only when atmospheric conditions will not cause humidity infiltration in waterproof coatings.
 - 3. Preparation and application of membrane must be done in well ventilated areas.
 - 4. Membrane and its accessories must not be exposed to a constant temperature over 82°C (ex: hot ducts, vents and vapor evacuation chimneys) during its life span.
 - 5. Primers have petrolatum distillates and are extremely flammable: do not breathe these vapors. Do not use near flame nor in rooms without ventilation. Consult container labels and technical data on safety to get information pertaining to this subject.
 - 6. Avoid all contact with wastes (petrol, greases, oils, solvents, mineral or vegetable oil animal fats) and waterproof membrane. If such is the case, inform manufacturer of exposure to some foreign matters or chemical discharge to appraise impact on performance of waterproofing covering system.
- 1.12 Manufacturer's representative**
- 1. At the request of Ministerial Representative, a representative from the manufacturer must be present on site during works. He will give necessary recommendations and will send a written report.
- 1.13 Trials certificates and quality control**
- 1. Provide assurance on request and to the satisfaction of the Ministerial representative that all materials used in the waterproofing system are compatible and contiguous with the products for their lifetime.
 - 2. To ensure total compatibility with one and the other all approved products in present section must come from same membrane manufacturer.
- 1.14 Temporary waterproofing**
- 1. When there is a work stoppage for whatever reason, being (snow, rain, strike, end of day's work etc) make sure that that roof is perfectly waterproof, as much for protection of materials as for other work already in place, inside and out, and to avoid penetration of water in building which could cause damages.
- 1.15 Fire safety**
- 1. Roof contractor must submit to project manager, his own fire safety program before starting works for approbation.
 - 2. Contractor shall organize all process to meet the requirements of the project, not using any fire source, whether to demolish the membrane, dry the support or apply materials. The project is a cold applied system with "flameless" application process.

PART 2 - PRODUCTS

- | | | |
|---|----------|--|
| 2.4
Cold Bitumen base for
base layer | 1.
2. | Bitumen adhesive without solvent;
Product reference: BURmastic SF , by Tremco |
| 2.5
Waterproofing membrane | 1.
2. | Polyester reinforced EPDM/SBR single ply membrane; 2.26mm thick; according to ASTM D-751. Résistance à la rupture MD : 1446N selon la méthode d'essai 37-GP-52M (500 N min.)
Product reference: TREMLINE TRA by Tremco |
| 2.6
Reinforcements mesh | 1.
2. | Vinyl-coated fiberglass mesh. Complying with 37-GP-63M de l'ONGC. Weight 85 g/m².
Product reference: Burmesh by Tremco |
| 2.7
Waterproofing mastic | 1.
2. | Sealant elastometric sinle component;
Product reference: POLYroof SF by Tremco |
| 2.8
Adhesive (if required) | 1.
2. | Single-component, solvent free, moisture curing, low VOC, asphaltic urethane adhesive; meeting ULC and tested by Factory Mutual;
Product reference: Fas-n-Free Adhesive by Tremco |
| 2.8
Sheet separation | 1. | Polyethylene sheet 0.15 mm thick (4 mils), complies to CAN/CGSB 51.34 M. |
| 2.9
Rigid thermal insulation | 1.
2. | Extruded polystyrene insulation, type 4 3 "thick rebated joint with a compressive strength of 35 lbs / square inch, according to CAN / ULC S701 01, as
Product reference: Foamular 350 of Owens Corning |
| 2.10
Filter cloth | 1.
2. | Polypropylene fabric 100% woven, black, UV-resistant, designed for installation in a roof system protected membrane, between the insulation and the ballast stone or concrete slabs, as appropriate.
Product reference: W200 by Géosynthétiques ZTG inc. |
| 2.11
Prefabricated expansion
joint | 1. | Expansion joint waterproof roof system and the building envelope formed of a membrane on a mattress of neoprene foam closed cell bands and aluminum metal fasteners. The dimensions must be validated on site. |

2. The measurement must be made to the site before ordering materials. All junctions and changes of plan should be shop-fabricated by the manufacturer.
 3. Reference product:
 1. **Expand-O-Flash** with membrane Type N (Neoprene 60 mils)
 2. **Wabo Flash** by **BASF** with membrane EPDM 60 mils.
- 2.12 Asphaltic panel**
1. Semi-rigid panel composed of mineral-reinforced asphalt core between two layers of asphalt saturated fiberglass.
 2. Panel dimensions : 1220 x 2440MM
 3. Reference product : SOPRABOARD of Soprema
- 2.13
Patio slab**
1. Precast, concrete patio-type standard precast concrete panels 24 "x 24" thick and 1 7/8"(76 lbs / unit). The surface shall have a textured anti-slip with a 5% water absorption maximum.
 2. Reference product: **Pedslab** by **BROOKLIN**, standard finish. Color choice by architect.
- 2.14 Slab drainage**
1. Precast slabs, aluminum 6mm perforated panels of 24" x 24" with thickness of 1 3/4".
 2. Reference product : Slab drainage roof terrace by Products Ltd. Murphco.
- 2.15
Copper drain**
1. New copper drain made of a 32 ounce copper apron welded to «Mig» with a bronze thread at rigid copper one piece mantle without seam, with interior diameter compatible with existing fastening ring and aluminum strainer.
 2. Reference product:
 1. Copper drain **ULTRA** and strainer **SUPER DÔME** by Products Ltd. Murphco
 2. Drain with hinged lid by **Lexcor**
- 2.16
Stone retainer**
1. Stainless stone retainer 6" tall and 8 1/2" diameter openings for the flow of water, as shaped by Les Produits Murphco Ltée. and distributed by the Centre de Toiture B. & S. Ltd.
- 2.17
Accessories**
1. Drain sealing collar consists of a nylon and a sealing membrane EPDM, of appropriate diameter to connect new drains to existing drainage system.
 2. Reference product: **Maxxflo** from **Lexcor**
- 2.18
Vent**
1. 1. Pre-moulded aluminum plumbing vent, turned in shop, circular mantle shape, including cap.

2. Height of new mantle will be 18" and diameter to be confirmed on site.
3. Reference product : **Pre-moulded MAXI** mantle from Les Produits **Murphco** Ltée.

2.19 Tacks

1. Rubber tack, 156mm diameter as "**WEGU TERRING**" with 3mm thick shims or equivalent of same nature and imperishable.

PART 3 - WORK

3.1 Preparation

1. Convene a preparatory meeting one week before the start of construction of this section.
2. Compel the attendance of representatives from inspection companies, the manufacturer, the applicator and the parties directly affected by the work of this section.
3. Review the installation requirements, installation procedures and coordination with related sections of the work. Use the manufacturer's requirements for approval of the membrane support.

3.2 Protection measures

1. Protect walls and adjacent structures of the places where we must raise or implement materials.
2. Supply and install signs and safety barriers and keep them in good condition until completion of the work.
3. Remove promptly drops and stains of bitumen.
4. Take steps to evacuate rainwater as far as possible from the building face, until drains or funnels are installed and connected.
5. Prevent any movement of the work and protect the membrane until the end of the work. Precautions deemed necessary by Ministerial Representative.
6. Construct flow paths in plywood over the membrane, in order to allow the movement of people and equipment.
7. At the end of each workday or when work is interrupted due to bad weather, protect materials that were removed from the warehouse.

Seal the edges and carry a ballast.

3.3 Measurement

1. In order to carry out the work continuously, it requires the contractor to mobilize and temporarily dismantle the panels for measuring some custom built systems.
2. Replace the panels temporarily until the beginning of the construction.
3. Without limitation, respecting the measurement of the following systems with the presence of the Departmental Representative and provide details on the shop drawings :

- Safety anchors;
- Seismic joints;
- Parapets jointing plates;
- Closing mouldings for finishing anchorages;
- Other moldings and accessories

3.4 Execution mode

1. Put the elements of roofing on clean, dry surfaces in accordance with the requirements and recommendations of the Association canadienne des entrepreneurs en couverture and the Association des Maîtres couvreurs du Québec.
2. Protect adjacent surfaces against damage that could cause the work.
4. Before laying the roof membrane, ensuring that the structural deck or insulation slope has the desired slope to drains.
5. Ensure that the elements through the membrane are secure and that the carpenters' and nailing strips are in place.

3.5 Inspection of support

1. Examine the support and inform the Ministerial representative of any defect, promptly and in writing
2. Before commencing work, ensure that:
 - 2.1 that the support is solid, level (positive slope), plain, dry and free of snow, ice, frost and other contamination; remove dust and debris;
 - 2.2 that carpentry work are completed and accepted;
 - 2.3 that the drains were installed at the appropriate level compared to that of the finished surface;
 - 2.4 that the sleeves, vents, pipes and other crossings of the support for receiving the work prescribed in this section are installed properly and securely.

3.6 Preparation

1. Before starting any work, ridding the coating support anything that may affect the bonding of membrane materials, among others rid them of the following: dust, paint, ice, form oil and loose particles.
2. Voids, cracks, holes and other damaged areas must be repaired before application of waterproofing membrane.
3. Crack isolation and construction joints of more than 1.5 mm and less than 6 mm wide: applying a layer of waterproofing mastic 300 mm wide and 3 mm thick, centered on the axis of the crack, and down a reinforcing mesh 150 mm wide, the ends of the strips will overlap and be glued to a length of 150 mm. Avoid air pockets.
4. Apply another layer of waterproofing mastic 3 mm thick on the backing sheet so that it is perfectly integrated into the membrane.

**3.9
Existing membrane**

1. Remove existing "Hydrotech" waterproofing membrane and dry substrate by hot air blowing to eliminate humidity and contaminants.
2. Ballast and insulation system must be dismantled gradually, according to the daily workload. If work is not done this way, the membrane may become warm, adhere to the concrete and make it more difficult to demolish.

**3.11
Membrane**

1. Install roof membrane in accordance with manufacturer's written installation guidelines.
2. Clean the entire surface and apply primer to the entire deck using the ratio of about 4.9 to 9.8 m² / L.
3. Once the primer is dry, use a squeegee to apply cold bitumen base, over the entire surface with a ratio of about 1.6 L/m².
4. Once applied, install the waterproofing membrane on the entire surface, from the lowest point of the slope. Overlap the previous membrane covering 100mm. The overlap joints are secured with a waterproofing mastic and reinforcement mesh.
5. Unrolling, push the membrane using a broom to remove air pockets and other defects. Ensure adherence of membrane with a floor roll 75 lbs.
6. The joints will be secured with a strip of reinforcing mesh (150mm width) , adhered with waterproofing mastic with a ratio of 3.3 L/m²
7. Cold applied Flashing installation :
 - .1 Membrane flashing builds with one ply waterproofing membrane, bonded with cold bitumen base with a ratio of about 1.6 L/m².
 - .2 Before installing the membrane, allow the solvent to evaporate for about 15 to 20 minutes, depending of the temperature.
 - .3 Ensure the membrane is in contact with the adhesive to prevent formation of wrinkles or folds. Vertically (wall flashing only) flashing membrane: Secure the membrane with a termination bar mechanically fastened 300mm c/c.

**3.12
Seismic joint**

1. Joints must be custom made and, after taking measurements on site. Changing angles are required to be fashioned in the workshop. Foresee the dismantling of panels before the start of construction to allow ordering early.
2. Ensure that sub-membrane layers, and the records are extended under the metal part of the joints.
3. Before planning the permanent installation of joints, set up all the corners, corners and changes of direction and a sample cross sections. The joints are then adjusted with the Departmental Representative to ensure the continuity of the air barrier system. If parts are found non-compliant, the contractor will order new parts. If necessary, the parts will have to

be redone at the expense of the contractor.

4. Trowel waterproofing mastic under system flange; down the metal part of the sealing gasket, mechanically fasten with a spacing of 100 mm c/c staggered.
5. Add a membrane for cutting reinforcing stops of the metal part.
6. Apply cap sheet until EPDM expansion joint.

3.13 Sheet separation

1. Install slip sheet over entire roof membrane surface.
2. Start laying at the lowest point of the support and overlap each sheet of 100 mm.

3.14 Thermal insulation installation

1. Reinstall the existing insulation panels recovered and completed with the installation of new signs, as estimated irrecoverable amounts, following the demolition. Lay the insulating panels in two rows of overlapping joints to a minimum of 150mm for parapets. Then, butt the panels so as to obtain tight joints, in parallel rows, and so that the end joints are staggered. Cut properly adjust to the periphery and penetrations.

3.15 Installation of filtering tarp

1. Install a new filtering tarp on the whole superficies of roof. Install so there is a continuous filtering tarp, without adherence on insulation. Overlap joints of at least 300mm lengthwise and 450mm crosswise in the direction of water drainage. Start installation at low part of support.
2. Cut tarp around throats, vents and other crossings. Bring up tarp against vertical side of crossings and recover with flashing

3.16 Ballast

1. Reinstall patio stone and gravel ballast as the original. Laying the slabs on blocks of uniform height of 13mm.
2. Replace damaged patio slabs when handling with new ones of same type as existing ones.
3. Clean river stone ballast, as specified in section 02 41 00.
4. The stone is to be retained and retrieved. It must be thoroughly cleaned by washing with water in tanks with approved sediment basins, to remove any dust.
5. Re-spread cleaned existing stone ballast as soon as filtering tarp is in place, respecting percentage of original application.
6. Replace the rest of the stone to get a uniform coat thickness on the whole surface. Overlap stone for at least 100mm on metallic flashing base.

3.17 Cleaning

1. At end of every day, clean work as recommended in general clauses.

3.18

1. All disconnecting, shifting, re-positioning, re-connecting, appliance tunings and

PART 1 - General

- 1.1 Related sections**
1. Protected membrane roof covering – Cold Applied Section 07 55 53
 2. Waterproofing product for joints Section 07 92 10
 3. Insulator and lightning arrester Section 26 41 13

- 1.2 Range of works**
1. Works in the present section include all metallic flashing and trimming works, flashing covering membrane flashings and all small metallic trimming works needed to achieve this contract (Restoration and repairs sections).

- 1.3 Handling and storage**
1. Handle and store prefinished materials with great care so they are not damaged.

- 1.4 Shop drawings**
1. Provide shop drawings as prescribed in general requirement section.

PART 2 - PRODUCTS

- 2.1 Metallic flashing**
1. Metallic flashing, pre-painted galvanized steel metallic series of caliber 24 (0.026"), as per ASTM A 525-65 T standards and distributed by Les Aciers Vicwest Inc., or approved equivalent, color: silver (QC 2624).

- 2.2 Aluminum panel**
1. New prefabricated aluminum panels such as Alucobond, 4 mm, painted as existing one: Duranar XL, silver, IF NECESSARY ONLY.

- 2.3 Aluminum accessories**
1. Aluminum tubes, profiles and plates for moldings, brackets and finishing parts and flashing.
 2. Thickness: 3 mm thick, unless otherwise specified
 3. Finish: clear anodized, unless otherwise specified

- 2.6 Fastening devices**
1. Where indicated on blueprints and details, pre-painted self-tapping neoprene head screws of appropriated length for mouldings anchoring.

- 2.7 Production**
1. Produce metallic flashings and any other sheet metal elements as prescribed in ACEF, series FL, as per indications.
 2. Produce pieces 2400mm long, at the most. Foresee necessary play for fastener where joints are.
 3. Reduce by 12.5mm apparent edges on counter-facing. Assemble mitered angles and block with waterproofing product.
 4. Produce elements square, as per anticipated precise dimensions, free of defect that could damage their appearance or make them less efficient.

PART 3 - Work

**3.1
Installation**

1. Perform sheet metal installation as per best practice, foreseeing enough anchorages and staples, where possible. Unless stated otherwise, galvanized anchorage, not apparent on sheet metal surface, are not to be used.
2. Separate flashings and aluminum plates with a separator sheet to prevent adherence on membrane.
3. All corners and angles will be stapled and sealed with a caulking ribbon of specified color.
3. Perform touch-ups, necessary cleaning to complement works and that, to the satisfaction of Ministerial representative.
4. At exits of each circular duct, produce and install new metallic flanges maintained in place with new clamping collar.
5. Follow recommendations for stated details.

**3.2
Parapets**

1. Before starting works, once waterproofing and insulation works are done, reinstall all existing aluminum crown.
2. Install insulation of appropriate thickness vertically and horizontally on parapets to fill all space between aluminum flashing and membrane.
3. Reinstall all original aluminum mouldings and new ones appropriated for fastening of original aluminum panels. All parts in contact with the membrane must be embedded in a bed of sealant. Anticipate supply and installation of new aluminum sheets to be inserted under joints between.

**3.3
Restoration of existing roofs**

1. Complete reinstallation of existing flashings and aluminum counter-flashings and finishing works as they were.
2. Foresee supply and installation of all new fastening under-laying mouldings required to finish works.
3. Redo new caulking finishing joints between panels and circular sleeper walls of water exits on roof and any other places necessary to finish the works.

*****END*****

PART 1 - GENERAL

- | | | |
|---|----|---|
| 1.1
Description | .1 | The present section is for waterproofing and caulking products that are not prescribed in any other section. Refer to pertinent sections to learn information concerning all waterproofing and caulking products not described hereafter. |
| 1.2
Reference standards | .1 | CAN/CGSB-19.13, One-component elastomeric waterproof putty with chemical polymerization. |
| | .2 | CGSB19-GP-14M, One-component butyl-polyisobutylene base with solvent evaporation by polymerization |
| | .3 | CAN/CGSB-19.18, one component waterproof product, silicone base with polymerization by solvent evaporation. |
| | .4 | CAN/CGSB-19.24, Multi-components waterproof putty with chemical polymerization. |
| | .5 | Federal standards: TT-S-001543A, type "NON SAG". |
| 1.3
Qualifications of applicator | .1 | Sealant works must be done by contractor specializing in sealant application and having at least three (3) years experience in this field. He must prove his competency before starting works. |
| 1.4
Samples, technical data of products | .1 | Submit required samples as prescribed in section 01 33 00 – Submittal procedures. |
| | .2 | Submit all technical data for products used as per section 01 33 00 – Submittal procedures. |
| 1.5
Work samples | .1 | Produce required samples as prescribed in section 01 33 00 – Submittal procedures. |
| | .2 | Samples must show the location, dimensions, profile and depth of joints, including back-up joint, primary, waterproofing and caulking product. Samples can be part of finished work. |
| | .3 | Wait 24 hours before starting waterproofing work so Ministerial representative can inspect samples. |
| 1.6
Delivery, handling and storage | .1 | Deliver and store materials in their original containers and packaging, bearing intact seal of manufacturer. Preserve materials from water and frost. Do not place directly on ground or floor. |
| 1.7
Requirements related to environment safety | .1 | Comply with requirements of information system concerning dangerous goods used at work (SIMDUT) pertaining to their use, handling, storage and disposal of dangerous goods also to labeling and supply of signalization data recognized by Work Canada. |

-
- .2 Respect recommendations from manufacturer concerning temperatures, relative humidity percentage and humidity content of support needed for application and drying of waterproofing products. Follow special directives relative to their use.
- .3 In building occupied by tenants, ventilate work area with adequate blowing fans and portable extraction appliances.
- 1.8 Management and disposal of garbage**
- .1 Sort and recycle garbage as per regulation in force.
- .2 All substances corresponding to definition of toxic or dangerous goods must be placed in designated containers.
- .3 In view of upcoming disposal, make sure that empty containers are sealed then stored correctly, out of reach of children.
- .4 Dispose of surplus finishing and chemical products as per governmental, federal, provincial and municipal regulations in force.
- .5 Return saturated oil or solvent cloths used during works so they are disposed of appropriately, cleaned or treated for recuperation of contaminants.
- .6 For accomplishment of works foreseen in this present section, use waterproofing products, adhesives, sealing, caulking and finishing products that are the least toxic possible.
- .7 Close and properly seal adhesive containers and waterproofing product that are partly used. Store them at moderate temperature in a well ventilated fireproof area.
- .8 After use, place containers and adhesive tubes, waterproof products in designated areas for storing dangerous goods products.
- 1.9 Manufacturer's representative**
- .1 Ask for a representative of the manufacturer of waterproof product to visit site before beginning works, so he can discuss procedure with designer and contractor.
- 1.10 Guarantee**
- .1 All waterproof works, including products and manpower must be guaranteed against lost of waterproofing due to bad installation of product, bad preparation of substrate or bad quality of product, for a five (5) year period, starting at date of definitive approval of certificate.
- PART 2 - PRODUCTS**
- 2.1 Waterproof products**
- .1 Caulking and waterproofing products used must satisfy following requirements:
- .1 Must be as per pertinent safety standards, industry performance and government regulation or better.

- .2 Must be produced and transported so all steps of procedure, including disposition of generated garbage, as per government laws and regulations are followed. In case of installation in Canada; they must also comply with Fish and game laws and Canadian environmental protection laws.
- .2 Caulking and waterproofing products must not contain following components nor be produced with them: aromatic solvents, talcum fibers or asbestos, formaldehyde, halogen solvents, mercury, lead, cadmium, hexavalent chromium, barium or derivatives, with the exception of barium sulphate.
- .3 Caulking and waterproofing products must not contain more than 5% in weight (total) of volatile organic components (COV), percentage calculated from stated quantities of components used in preparation of product.
- .4 With goal of minimizing health risks and maximize product performance, it is important that they are accompanied with detailed instructions concerning their application methods and necessary information regarding disposal of waste.
- .5 Caulking products having strong odors, containing toxic chemical products or not certified as being of type resisting to moulds must not be used in air treating appliances.
- .6 If it cannot be done otherwise, restrain use of toxic product to areas where emanations can be evacuated towards exterior or in areas where they can be confined in the back of air barrier, or again apply many months in advance, before premises are occupied to allow evacuation of emanation for the longest period possible.
- .7 Product chosen to do the works of present section must present the following characteristics: produced without any component susceptible of harming ozonosphere in high atmosphere.
- .8 Production process must be as per regulations for analysis of life span cycle stated in ISO 14040/14041 standard (t printed in 1998) and CSA Z760-94.
- .9 Selected waterproofing products must be on list of approved products published by Approval Commission of Waterproof Products of ONGC (CGSB). In the case of approved waterproof products with a primary, use only primary in question with said waterproof product.
- .1 Two component waterproof putty with urethane base
 - .1 None sagging product, as per CAN/CGSB-19.24 standard.
 - .2 Color identical to existing facing. (color : Aluminum).
 - .3 Acceptable product: Dymeric from Tremco or SONOLASTIC NP2 from SONNEBORN.
- .2 One component waterproof putty with urethane base.
 - .1 Non sagging product, as per CAN/CGSB-19.13 standard, of type 2, MCG-2-40 or meeting TT-S-001543A, type « NON SAG » standard.

2.2 Waterproof products - General description

- .2 Color identical to existing adjacent facing (color: gray, aluminum).
 - .3 Acceptable products: Dymonic from Tremco SIKAFLEX 15 LM from Sika and SONOLASTIC NP 1 from SONNEBORN.
- 2.3**
Waterproof products –
Locations
- .1 Around openings made on exterior walls;
 - .2 Dilatation and break joint made in exterior wall;
 - .3 Sealing at plan sealing vapor barrier;
 - .4 Sealing constituting a rainscreen in aluminum panels;
 - .5 Make a sealant joint at junction of all different materials.
- 2.4**
Back-up joint
- .1 Vertical and horizontal joints not exposed to circulation:
 - .1 Closed cell, polyethylene round rod foam, compressible, exterior covered with anti-adherent film, available in many widths between 3/8" and 4". Rods will be 25% bigger than openings to be filled.
 - .2 Horizontal joints exposed to pedestrian circulation:
 - .1 Loose cell polyethylene foam, high density, covered with anti-adherent film.
- 2.5**
Anti-adherent ribbon
- .1 Polyethylene ribbon not adhering to waterproof putty, available in required widths stated on drawings.
- 2.6**
Cleaning products for joints
- .1 Non-corrosive and non-messy cleaning products compatible with joints and waterproof products, recommended by product manufacturer.
- PART 3 - WORK**
- 3.1**
Protection of works
- .1 Protect works done by third party against dirt and contamination of all kinds.
- 3.2**
Joint touch-ups on existing surfaces
- .1 Remove existing sealant joint to be redone and existing back-up joints, where indicated on blueprints. Take all necessary precautions not to damage existing surfaces.
 - .2 Get rid of all trace of existing sealant on surfaces joints and of all undesirable matter, including dust, rust, oil, grease and any other foreign matter susceptible of being detrimental to achievement of works or its efficiency.
 - .3 See that joints surfaces are very dry and not frozen.
 - .4 Apply primer, back-up joint, separating ribbon and waterproof product as prescribed in present section.

3.3
Preparation of surfaces

- .1 Check dimensions of joints to be made and state of materials to obtain a good adequate report width-depth in regard to implementation of back-up joints and waterproofing products.
- .2 Get rid of joint on surfaces and all undesirable matter, including dust, rust, oil, grease and other foreign matter susceptible being detrimental to implementation or efficiency of works.
- .3 Do not apply waterproof products on joint surfaces having been treated with filler, a hardening product, water repellent product or any other type of coating unless tests were done beforehand and compatibility of these products is confirmed. Remove coatings already covering surfaces, if need be.
- .4 See that surfaces are very dry and not frozen.
- .5 Apply primer on surfaces as recommended by manufacturer

3.4
Application of primer

- .1 Before applying primer and caulking product, use masking tape on adjacent surfaces to prevent dirt marks, if need be.
- .2 Apply primer on lateral surfaces of joint immediately before putting waterproofing product, as per instruction of manufacturer.

3.5
Installation of back-up joint

- .1 Install an anti-solidarization ribbon in required areas, as per instruction of manufacturer.
- .2 By compressing it by about 30 %, install back-up joint as per depth and profile of joint desired.

3.6
Preparation of waterproof product

- .1 Mix materials respecting rigorously instruction from manufacturer for waterproofing product.

3.7
Implementation

- .1 Application of waterproof product
 - .1 Implementation of waterproof product as per written instruction from manufacturer.
 - .2 To make clear joints, install a masking tape on edges of surfaces to be jointed, if need be.
 - .3 Apply product forming a continuous waterproof cord.
 - .4 Apply waterproof product with a gun having a nozzle of proper dimension.
 - .5 Feeding pressure must be strong enough to allow filling of empty spaces and to produce perfect blocking of joints.

- .6 Make joints to form a continuous waterproof cord, free from crests, folds, sagging, empty air pockets and covered dirt.
 - .7 Before a skin if formed on joints, fashion apparent surfaces to give them a lightly concave profile.
 - .8 As work progresses, remove surplus of waterproof product up to the end of it.
- .2 Drying
- .1 Ensure drying and hardening of waterproofing products as per instructions of product manufacturer.
 - .2 Do not cover joints with waterproof products before they are completely dry.
- .3 Cleaning
- .1 Clean immediately all adjacent surfaces. Leave work clean and in perfect order.
 - .2 As work progresses, remove surplus and smears of waterproofing product with recommended cleaning products.
 - .3 Remove masking tape after joints are settled.

*****END*****

PART 1 – GENERAL

- 1.1
General conditions
1. General conditions are applicable to works described in this section.
- 1.2
Related work
1. Demolition works.....section 02 41 00
2. Carpentry/woodworkingsection 06 10 11
3. Protected membrane for roof covering – Cold Appliedsection 07 55 53
- 1.3
Range of works
1. Works described in this section include reinstallation of boundaries and cables for protection against lightning as per applicable standards.
2. Lightning protection system must have air boundaries, arresters connecting air boundaries between them and the required appliance bases, grounded with arresters passing through the building.
- 1.4
Handling and storing
1. All existing materials and equipments are kept and stored adequately.
2. Take great care when handling and storing all materials while preserving them from damage.
- 1.5
Manpower
1. Only specialized, qualified people for this type of intervention will be hired for this work.
- 1.6
Coordination
1. Specialized contractor must keep a close coordination with roof contractor to minimize delays and keep building protected at all times, in case of lightning.
- 1.7
Codes and regulations
1. Contractor must comply with regulation on lightning arresters, latest edition and as prescribed in ACNOR B72-1960 standard.

PART 2 - PRODUCTS

- 2.1
Conditions
1. If required, all new materials will be new, of first quality and with a minimum conductivity of 98%.
2. All materials must be especially made for protection against lightning, as per ACNOR standards or exceeding it.
- 2.2
Conductors
1. Lead coated copper interconnection arresters as twisted or braided cables with 1mm diameter wire or as applicable standards.
2. All equipment flanges and mechanical fasteners will be made with compatible materials, with a capacity of 250 newtons or as per applicable standards. Connections to arresters, bows or others will be done with exothermal welding.
3. Air boundaries made with material rods will be of identical dimensions as existing ones according to location and applicable standards. They will be held by

identical supports as existing ones, adapting them to the surfaces. Anticipate installation of new boundaries where they are missing.

4. New stainless steel anchorage bolt of same diameter and length, appropriate for replacing existing bolts of lightning rods.

2.3 Accessories

1. All other materials and accessories required to do the works as per established principles in blueprints and tender, not necessarily identified in present documents, but necessary to meet lightning protection standards.

PART 3 – WORK

3.1 Preparation

1. Dismantle fastening plates on parapets and bases while keeping building protected at all times.

3.2 Application

1. Proceed to installation of lightning protection system as per building category applicable in regulation on lightning protection, as per requirements and other indications.
2. Conductors will be reset as original with fewer curves possible. Minimum ray of curve will be 250mm. Arresters must detour obstacles in their path horizontally, but not pass over them.
3. It is forbidden to use incompatible materials between themselves. It is mandatory to use copper arresters specially twisted for use in lightning arresters.
4. Each perimetrical parapet boundary must be fixed into place in a bed of caulking against metallic counter flashing. Use appropriate new stainless steel anchorages.
5. Where some air boundaries are missing, install new ones identical in height as existing boundaries.
6. Connection of metallic bodies to lightning arrester system must be made as per state of the art and in conformity with requirements and regulation concerning lightning arresters.

3.3 Trial conformity

1. Perform strength testing and test relevant grounding required to ensure proper operation and compliance of the system in the presence of the project company and the roofing contractor and what the responsibility of the specialist contractor.
2. Resistance must be greater than or equal to the requirements in Regulation arresters.
3. At the end of works, specialized contractor must give a certificate of conformity of performance of lightning arrester system to the Project manager, responsible for the Ministerial representative.

*****END*****