



ARCHITECTURE | DESIGN URBAIN



Correctional Service  
Canada

Service correctionnel  
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**Port-Cartier Institution**  
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**ARCHITECTURE**  
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**Specification for Tender**  
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	<u>PAGES</u>
Section 00 01 07	Seals Page and signatures ..... 2
Section 00 01 10	Table Of Contents ..... 2
<u>DIVISION 01</u>	<u>GENERAL REQUIREMENTS</u>
Section 01 33 00	Submittal Procedures ..... 3
Section 01 35 30	Health And Safety Requirements ..... 4
Section 01 45 00	Quality Control ..... 3
Section 01 61 00	Common Product Requirements ..... 4
Section 01 73 03	Execution requirements ..... 2
Section 01 74 11	Cleaning ..... 2
Section 01 74 19	Waste Management And Disposal ..... 6
Section 01 77 00	Closeout Procedures ..... 1
Section 01 78 00	Closeout Submittals ..... 4
<u>DIVISION 02</u>	<u>EXISTING CONDITIONS</u>
Section 02 41 16	Structure demolition ..... 4
<u>DIVISION 03</u>	<u>CONCRETE</u>
Section 03 45 00.01	Concrete repair ..... 3
<u>DIVISION 04</u>	<u>MASONRY</u>
Section 04 05 10	Masonry general requirements ..... 4
Section 04 05 12	Masonry Mortar and Grouting ..... 3
Section 04 22 00	Concrete Unit Masonry ..... 2
<u>DIVISION 05</u>	<u>METALS</u>
Section 05 50 00	Metal Fabrications ..... 9
<u>DIVISION 06</u>	<u>WOOD, PLASTICS AND COMPOSITES</u>
Section 06 10 00	Carpentry ..... 5
<u>DIVISION 07</u>	<u>THERMAL AND MOISTURE PROTECTION</u>
Section 07 21 16	Blanket insulation ..... 1
Section 07 21 29.03	Sprayed insulation – Polyurethane foam ..... 4
Section 07 52 00	Membrane Sealing ..... 12
Section 07 62 00	Sheet metal flashing and trim ..... 4
Section 07 92 00	Joint Sealants ..... 6
<u>DIVISION 08</u>	<u>OPENINGS</u>
Section 08 11 00	Metal Doors And Frames ..... 7
Section 08 50 00	Aluminium Windows ..... 6

Section 08 80 50      Glazing .....5

DIVISION 09              FINISHES

Section 09 21 16      Gypsum board assemblies ..... 5  
Section 09 22 16      Non-structural metal framing..... 3  
Section 09 30 13      Ceramic Tiles..... 5  
Section 09 67 00      Fluid Applied Flooring..... 4  
Section 09 91 23      Interior Painting..... 13

DIVISION 10              SPECIALTIES

Section 10 28 10      Toilet and Bath Accessories ..... 2

END OF SECTION

DIVISION 00

Section 00 01 07 Seal page and signatures  
Section 00 01 10 Table Of Contents

DIVISION 01                    GENERAL REQUIREMENTS

Section 01 33 00 Submittal Procedures  
Section 01 35 30 Health And Safety Requirements  
Section 01 45 00 Quality Control  
Section 01 61 00 Common Product Requirements  
Section 01 73 03 Execution requirements  
Section 01 74 11 Cleaning  
Section 01 74 19 Waste Management And Disposal  
Section 01 77 00 Closeout Procedures  
Section 01 78 00 Closeout Submittals

DIVISION 02                    EXISTING CONDITIONS

Section 02 41 16 Structure demolition

DIVISION 03                    CONCRETE

Section 03 45 00.01 Concrete repair

DIVISION 04                    MASONRY

Section 04 05 10 Masonry general requirements  
Section 04 05 12 Masonry Mortar and Grouting  
Section 04 22 00 Concrete Unit Masonry

DIVISION 05                    METALS

Section 05 50 00 Metal Fabrications

DIVISION 06                    WOOD, PLASTICS AND COMPOSITES

Section 06 10 00 Carpentry

DIVISION 07                    THERMAL AND MOISTURE PROTECTION

Section 07 21 16 Blanket insulation  
Section 07 21 29.03 Sprayed insulation – Polyurethane foam  
Section 07 52 00 Membrane Sealing  
Section 07 62 00 Sheet metal flashing and trim  
Section 07 92 00 Joint Sealants

DIVISION 08                    OPENINGS

Section 08 11 00 Metal Doors And Frames  
Section 08 50 00 Windows

Section 08 80 50      Glazing

DIVISION 09      FINISHES

Section 09 21 16      Gypsum board assemblies  
Section 09 22 16      Non-structural metal framing  
Section 09 30 13      Ceramic Tiles  
Section 09 67 00      Fluid Applied Flooring  
Section 09 91 23      Interior Painting

DIVISION 10      SPECIALTIES

Section 10 28 10      Toilet and Bath Accessories

**FIN DE LA SECTION**

**Part 1            General**

**1.1            SECTION CONTENTS**

- .1    Shop drawings and product data.
- .2    Product samples and mock-ups.

**1.2            PRIORITY**

- .1    In the case of Work performed for the federal government, Division 1 sections take priority over the technical specifications of the other divisions.

**1.3            RELATED SECTIONS**

- .1    Section 01 78 00 – Closeout Submittals.

**1.4            ADMINISTRATIVE**

- .1    Submit to Ministry Representative submittals listed for review. Submit promptly and in orderly sequence as to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2    Do not proceed with Work affected by submittal until review is complete.
- .3    Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4    Where items or information is not produced in SI Metric units converted values are acceptable.
- .5    Notify Ministry Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .6    Review submittals prior to submission to Ministry Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .7    Verify that field measurements and affected adjacent Work are co-ordinated.
- .8    Contractor's responsibility for errors and omissions in submission is not relieved by Ministry Representative's review of submittals.
- .9    Contractor's responsibility to deliver submittals according to contract requirements is not relieved by Ministry Representative's review of submittals.
- .10    Keep one reviewed copy of each submission on site.

**1.5            SHOP DRAWINGS AND PRODUCT DATA**

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

- .2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross-references to design drawings and specifications.
- .3 Allow 15 work days for Ministry Representative's review of each submission.
- .4 Adjustments made on shop drawings by Ministry Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Ministry Representative prior to proceeding with Work.
- .5 Make changes in shop drawings as Ministry Representative may require, consistent with Contract Documents. When resubmitting, notify Ministry Representative in writing of revisions other than those requested.
- .6 Accompany submissions with transmittal letter, in duplicate, containing:
  - .1 Date.
  - .2 Project title and number.
  - .3 Contractor's name and address.
  - .4 Identification and quantity of each shop drawing, product data and sample.
  - .5 Other pertinent data.
- .7 Submissions include:
  - .1 Date and revision dates.
  - .2 Project title and number.
  - .3 Name and address of:
    - .1 Subcontractor.
    - .2 Supplier.
    - .3 Manufacturer.
  - .4 Details of appropriate portions of Work as applicable:
    - .1 Materials and Fabrication.
    - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
    - .3 Setting or erection details.
    - .4 Capacities.
    - .5 Performance characteristics.
    - .6 Standards.
    - .7 Operating weight.
    - .8 Wiring diagrams.
    - .9 Single line and schematic diagrams.
    - .10 Relationship to adjacent work.
- .8 Submit 2 printed copies or one PDF version of shop drawings requested in specification Sections.



- .9 Ministry Representative will return 1 copy to Contractor. Contractor will make 7 printed copies and distribute them to the appropriate persons.
- .10 Distribute shop drawing and product data copies only after Ministry Representative has finished review.
- .11 Delete information not applicable to project.
- .12 Supplement standard information to provide details applicable to project.
- .13 If upon review by Ministry Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

## **1.6 SAMPLES**

- .1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to Ministry Representative's business address.
- .3 Notify Ministry Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .4 Where colour, pattern or texture is criterion, submit full range of samples.
- .5 Adjustments made on samples by Ministry Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Ministry Representative prior to proceeding with Work.
- .6 Make changes in samples that Ministry Representative may require, consistent with Contract Documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

END OF SECTION



## **1 GENERAL**

### **1.01 RELATED SECTIONS**

- .1 Section 01 33 00 Submittal procedures

### **1.02 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit to Departmental Representative copies of following documents, including published updates:
  - .1 Before commencement of work, submit Health and Safety Plan, as specified in paragraph 1.9.
  - .2 Submit copies of reports or directions issued by competent authorities as soon as they are received.
  - .3 Submit copies of incident and accident reports within 24 hours.
- .2 Submit other data, information and documents upon request of Departmental Representative, as stipulated elsewhere in this section.

### **1.03 COMPLIANCE REQUIREMENTS**

- .1 Comply with latest version of Québec Act respecting occupational health and safety, and regulations made pursuant to the Act.
- .2 Observe and enforce construction safety measures required by:
  - .1 National Building Code of Canada (latest version).
  - .2 The Commission de la santé et de la sécurité au travail (or equivalent organization) of the province or territory in question.
  - .3 Municipal statutes and ordinances.
- .3 In event of conflict between any provisions of above authorities the most stringent provision will apply.
- .4 Provide and maintain workers compensation coverage for all employees, for duration of Contract work. Before commencement of work, at time of provisional execution and before final payment, submit to CDC Representative a letter (certificate) from the Commission de la santé et de la sécurité au travail (or equivalent organization), certifying that Contractor's account is in good standing.
  - .1 If Contractor is sole owner, give Departmental Representative documentary evidence, in a format acceptable to Departmental Representative, of other personal insurance coverage that meets or exceeds requirements stated above for workers' compensation insurance

### **1.04 RESPONSIBILITY**

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

conduct of Work.

- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.
- .3 Should any unforeseen or peculiar safety-related factor, hazard or condition become evident during performance of work, immediate measures must be taken to correct the situation and prevent any damage or injury. Inform Departmental Representative verbally and in writing of danger or situation.

#### **1.05 SITE CONTROL AND ACCESS**

- .1 Control work site and entry points to construction areas. Delineate and isolate construction areas from other areas of site Facility by use of appropriate means to maintain control of all site entry points.
- .2 Approve and grant access to site only to workers and authorized persons. Access authorization procedures must comply with Québec Act respecting occupational health and safety, regulations made pursuant to the Act and the Contractor's Health and Safety Plan.
- .3 Ensure persons granted access to site wear minimum personal protective equipment (PPE) specified in Contractor's Health and Safety Plan. Provide PPE to authorized persons who require access, the characteristics of which are more rigorous than minimal equipment indicated previously, and are designed specifically for construction site operations, ensure authorized persons have received training to use the PPE they wear. Ensure effectiveness of PPE provided, the characteristics of which are more rigorous than the stated minimum equipment.
- .4 Post notices and signage at entry points and at other strategic locations identifying entrance onto site to be restricted to authorized persons only. Signage must be professionally made and display internationally understood graphic symbols. Signs must not be used for advertising purposes, but for the express use of specifying information on site safety and main resource persons.
  - .1 Information to display on signage:
  - .2 Project name and description;
  - .3 Contractor name;
  - .4 Name and telephone number of project superintendent.
- .5 Secure site at all times to extent required to protect against unauthorized entry.
- .6 Contractor must provide for traffic lanes around construction site to also be used by visitors.
- .7 Contractor should keep an access way to site for PCA employees to allow for inspections.

#### **1.06 FILING OF NOTICE**

- .1 File Notice of Project with Provincial or Territorial authorities prior to beginning of Work and submit 1 (1) copy to Departmental Representative.

### **1.07 PERMITS**

- .1 Obtain permits, licences and compliance certificates when and as frequently specified by competent authorities.
- .2 Post all permits, licences and compliance certificates on the site and provide copies to Departmental Representative.

### **1.08 PROJECT/SITE CONDITIONS**

- .1 The following are known or potential project related health, environmental and safety hazards at site which must be properly managed if encountered during course of work:
  - .1 Contractors must take into account known hazardous substances and conditions and must include in their price proposal all work that must be performed in or near the danger zone in the presence of hazardous substances.
  - .2 Above list shall not be construed as being complete and inclusive of potential health, and safety hazards encountered during work. Include above items into hazard assessment process.

### **1.09 MEETINGS**

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work. Ensure presence of Contractor's Site Superintendent. Departmental Representative must specify time, date and location of meeting and draft and distribute minutes.
- .2 Hold site-specific Health and Safety meetings as required by the Québec Act respecting occupational health and safety and the regulations made pursuant to the Act.
- .3 Draft and post in on site the minutes of all meetings. Ensure that Departmental Representative can obtain copies upon request.

### **1.10 HEALTH AND SAFETY PLAN**

- .1 Under the Québec Act respecting occupational health and safety and the regulations made pursuant to the Act, Contractors must have a Health and Safety Plan. Compliance requirements regarding content, details and implementation of the plan are under provincial/territorial jurisdiction. For the purposes of this Contract, Health and Safety Plan must include a site-specific Health and Safety Plan that recognizes, assesses and discusses the known hazardous substances and conditions specified in 1.7 above, as well as ongoing assessments of hazards executed during performance of work, and documenting, new or eventual, unknown and previously unidentified health and safety risks.
- .2 Before commencement of work, give Departmental Representative one (1) copy of Health and Safety Plan. The copy given to Departmental Representative must serve to review the plan based on Contract requirements regarding known hazardous substances and conditions. The review must not be interpreted to suggest that Departmental Representative approves the plan as complete, accurate and legally compliant to the Québec Act respecting occupational health and safety and regulations made pursuant to the Act, and must not release Contractor of

his legal obligations under said Act.

### **1.11 ACCIDENT REPORTING**

- .1 Investigate and report incidents and accidents as required under Québec Act respecting occupational health and safety, and regulations made pursuant to the Act.
- .2 For the purposes of this Contract, immediately investigate accidents or incidents involving the following situations and submit report to Departmental Representative:
  - .1 Injury requiring medical aid or not, but resulting in lost work time for the injured person(s);
  - .2 Exposure to toxic substances or chemical products;
  - .3 Material damages, and
  - .4 Interruption of operations within the infrastructure or adjacent to it likely to result in losses.
- .3 During investigation and reporting of incidents and accidents, Contractor is bound to intervene quickly in order to correct the actions deemed as being the cause of the accident or incident and must provide a written notice of measures taken to prevent the incident or accident from recurring.

### **1.12 SITE RECORDS**

- .1 Maintain on site one (1) copy of all health and safety documentation and reports specified to be produced as part of the work and received from authorities having jurisdiction.
- .2 Upon request, make available to Departmental Representative.

## **2 PRODUCTS**

### **2.01 NOT USED**

- .1 Not used.

## **3 EXECUTION**

### **3.01 NOT USED**

- .1 Not used.

**END OF SECTION**

**Part 1            General**

**1.1                INSPECTION**

- .1        Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Work Site, allow access to such Work whenever it is in progress.
- .2        Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative.
- .3        If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4        Departmental Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

**1.2                INDEPENDENT INSPECTION AGENCIES**

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

**1.3                ACCESS TO WORK SITE**

- .1        Allow inspection/testing agencies access to Work Site, and off site manufacturing and fabrication plants.
- .2        Co-operate to provide reasonable means for such access.

**1.4                PROCEDURES**

- .1        Notify appropriate agency and Departmental Representative in advance of requirement for tests, so that attendance arrangements can be made.
- .2        Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.

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

## **1.5 REJECTED WORK**

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Promptly make good other Contractor's work damaged by such removals or replacements.
- .3 If the Departmental Representative judges it not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

## **1.6 REPORTS**

- .1 Submit three (3) copies of inspection and test reports to [Departmental Representative].

## **1.7 MOCK-UPS**

- .1 Prepare mock-ups for Work specifically requested in specifications. Requirements laid out in this subsection apply to all sections of the Specifications that call for the production of mock-ups.
- .2 Construct in locations acceptable to Departmental Representative as specified in specific Section.
- .3 Prepare mock-ups for Departmental Representative's review with reasonable promptness and in orderly sequence, to not cause delays in Work.
- .4 Failure to prepare mock-ups in due time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such delay will be allowed.
- .5 If requested, Departmental Representative will assist in preparing schedule of dates for preparation of mock-ups.
- .6 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

## **1.8 MILL TESTS**

- .1 Submit mill test certificates as required in Specification Sections.

## **1.9 EQUIPMENT AND SYSTEMS**

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



**Part 2            Products**

**2.1                NOT USED**

.1                Not Used.

**Part 3            Execution**

**3.1                NOT USED**

.1                Not used.

**END OF SECTION**



**Part 1            General**

**1.1            SECTION CONTENTS**

- .1    Quality, availability, storage, handling, protection and transportation of products.
- .2    Manufacturer's instructions.
- .3    Installation, coordination and fasteners;

**1.2            PRIORITY**

- .1    In the case of Work performed for the federal government, Division 1 sections take priority over the technical specifications of the other divisions.

**1.3            RELATED SECTIONS**

- .1    Section 01 73 03 – Execution Requirements.

**1.4            REFERENCES**

- .1    Within text of each specifications section, reference may be made to reference standards.
- .2    Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .3    If there is question as to whether products or systems are in conformance with applicable standards, the Ministry Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .4    Cost for such testing will be born by the Ministry Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.
- .5    If no specific date or edition is indicated, conform to most recent applicable norms.

**1.5            QUALITY**

- .1    Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality (in accordance with the specification terms) for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2    Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .3    Should disputes arise as to quality or fitness of products, decision rests strictly with the Ministry Representative based upon requirements of Contract Documents.
- .4    Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .5    Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

**1.6 AVAILABILITY**

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Ministry Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In event of failure to notify Ministry Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Ministry Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

**1.7 STORAGE, HANDLING AND PROTECTION**

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Sand for mortar and grout shall remain dry and clean. Store on wood pallets and cover with waterproof tarps during inclement weather.
- .6 Store sheet materials and lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Replace damaged products at own expense and to satisfaction of Ministry Representative.
- .9 Touch-up damaged factory finished surfaces to Ministry Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

**1.8 TRANSPORTATION**

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

**1.9 MANUFACTURER'S INSTRUCTIONS**

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

**1.10 QUALITY OF WORK**

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Ministry Representative if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Ministry Representative reserves right to require dismissal from site, workers deemed incompetent, negligent, insubordinate, careless or whose presence will not be permitted on the Work site.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Ministry Representative, whose decision is final.

**1.11 COORDINATION**

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

**1.12 CONCEALMENT**

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

**1.13 REMEDIAL WORK**

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

**1.14 LOCATION OF FIXTURES**

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

**1.15 FASTENINGS**

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

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

**1.16 FASTENINGS - EQUIPMENT**

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi finished unless otherwise specified. Use No. 316 stainless steel for exterior areas.
- .3 Bolts may not project more than one diameter beyond nuts.
- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use stainless steel washers for stainless steel sheet.

**1.17 PROTECTION OF WORK IN PROGRESS**

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

END OF SECTION

**Part 1            General**

**1.1            SECTION CONTENTS**

- .1    Exigences et restrictions regarding cutting and patching.

**1.2            PRIORITY**

- .1    In the case of Work performed for the federal government, Division 1 sections take priority over the technical specifications of the other divisions.

**1.3            RELATED SECTIONS**

- .1    Section 01 33 00 – Submittal Procedures.
- .2    Technical sections of specifications, regarding cutting and patching necessary for this project. Advise sub-trades in advance.

**1.4            REQUEST FOR CUTTING AND PATCHING WORK**

- .1    Submit written request before cutting or patching if the following may be affected:
  - .1    Structural integrity of any element.
  - .2    Integrity of waterproofed elements or elements exposed to weather.
  - .3    Effectiveness, maintenance, or safety of any functional element.
  - .4    Aesthetic qualities of visible elements.
- .2    Request must include and specify following:
  - .1    Project name.
  - .2    Location and description of affected elements.
  - .3    Explanation of need to perform cutting and patching work being requested.
  - .4    Description of work to be performed and products to be used.
  - .5    Alternative solutions.
  - .6    Written permission of other contractor.
  - .7    Date and time that work will be performed.

**1.5            MATERIALS**

- .1    Materials required to perform work identical to existing adjacent work.
- .2    Change in Materials: submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

**1.6            PREPARATION**

- .1    Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2    After uncovering, inspect conditions affecting performance of Work.

- .3 Beginning of cutting or patching means acceptance of existing conditions.
- .4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .5 Provide protection from elements for areas that are to be exposed by uncovering work; maintain excavations free of water.

**1.7 EXECUTION**

- .1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.
- .2 Fit several parts together, to integrate with other Work.
- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .7 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- .8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- .9 Restore work with new products in accordance with requirements of Contract Documents.
- .10 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .11 At penetrations through fire-resistant walls, ceilings or floors, completely fill voids around with fireproof material over the entire thickness of the penetrated element.
- .12 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.
- .13 Unless otherwise specified, cover all conduits, ducts, and cables in walls, ceilings or floors in finished rooms.

END OF SECTION



**Part 1            General**

**1.1                SECTION CONTENTS**

- .1    Project cleanliness
- .2    Final cleaning

**1.2                PRIORITY**

- .1    In the case of Work performed for the federal government, Division 1 sections take priority over the technical specifications of the other divisions.

**1.3                SECTIONS CONNEXES**

- .1    Section 01 77 00 - Closeout Procedures.

**1.4                PROJECT CLEANLINESS**

- .1    Maintain Work in tidy condition, free from accumulation of waste products and debris.
- .2    Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .3    Clear snow and ice from access to building, bank/pile snow in designated areas only.
- .4    Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5    Provide on-site containers for collection of waste materials and debris. Dispose of waste and debris at designated off site facilities each day.
- .6    Provide and use marked separate bins for recycling.
- .7    Dispose of waste materials and debris off site in containers at the end of each work shift.
- .8    Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .9    Store volatile waste in covered metal containers, and remove from premises at end of each working day. Sw
- .10   Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .11   Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .12   Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

**1.5                FINAL CLEANING**

- .1    Remove waste products and debris other than that caused by others, and leave Work clean and ready for occupancy.

- .2 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .3 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
- .4 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls and floors.
- .5 Clean lighting reflectors, lenses, and other lighting surfaces.
- .6 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
- .7 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.
- .8 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .9 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .10 Remove dirt and other disfiguration from exterior surfaces.
- .11 Clean and sweep roofs, gutters, areaways, and sunken wells.
- .12 Sweep and wash clean paved areas.
- .13 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.
- .14 Clean roofs, downspouts, and drainage systems.
- .15 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.
- .16 Remove snow and ice from access to building.

END OF SECTION

## **Part 1      General**

### **1.1      WASTE MANAGEMENT GOALS**

- .1 Prior to start of Work conduct meeting with Departmental Representative to review and discuss Contractor's proposed Waste Reduction Work plan for Construction, Renovation and /or Demolition (CRD) waste to be project generated.
- .2 Departmental Representative waste management goal: to divert a minimum 25 percent of total Project Waste from landfill site.
- .3 Target percentage goals are achievable for waste diversion. Contractor to review and confirm Departmental Representative's Waste Audit acceptable values.
- .4 Minimize amount of non-hazardous solid waste generated by project and accomplish maximum source reduction, reuse and recycling of solid waste produced by CRD activities.
- .5 Protect environment and prevent environmental pollution damage.

### **1.2      REFERENCES**

- .1 Definitions
  - .1 Approved/Authorized recycling facility: waste recycler approved by applicable provincial authority or other users of material for recycling approved by the Departmental Representative.
  - .2 Class III: non-hazardous waste - construction renovation and demolition waste.
  - .3 Construction, Renovation and/or Demolition (CRD) Waste: Class III solid, non-hazardous waste materials generated during construction, demolition, and/or renovation activities.
  - .4 Cost/Revenue Analysis Workplan (CRAW): based on information from Waste Reduction Workplan, and intended as financial tracking tool for determining economic status of waste management practices (Schedule E).
  - .5 Inert Fill: inert waste - exclusively asphalt and concrete.
  - .6 Waste Source Separation Program (WSSP): implementation and co-ordination of ongoing activities to ensure designated waste materials will be sorted into pre-defined categories and sent for recycling and reuse, maximizing diversion and potential to reduce disposal costs.
  - .7 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.
  - .8 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
  - .9 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
  - .10 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
    - .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.

- .2 Returning reusable items including pallets or unused products to vendors.
- .11 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
- .12 Separate Condition: refers to waste sorted into individual types.
- .13 Source Separation: act of keeping different types of waste materials separate beginning from the point they became waste.
- .14 Waste Audit (WA): detailed inventory of estimated quantities of waste materials that will be generated during construction, demolition, deconstruction and/or renovation. Involves quantifying by volume/weight amounts of materials and wastes that will be reused, recycled or landfilled.
- .15 Waste Diversion Report: detailed report of final results, quantifying cumulative weights and percentages of waste materials reused, recycled and landfilled over course of project. Measures success against Waste Reduction Workplan (WRW) goals and identifies lessons learned.
- .16 Waste Management Co-ordinator (WMC): contractor representative responsible for supervising waste management activities as well as co-ordinating required submittal and reporting requirements.
- .17 Waste Reduction Workplan (WRW): written report that addresses opportunities for reduction, reuse, or recycling of materials generated by project. Specifies diversion goals, implementation and reporting procedures, anticipated results and responsibilities. Waste Reduction Workplan information acquired from Waste Audit.

### **1.3 DOCUMENTS**

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

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

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare and submit following prior to project start-up.
  - .1 One (1) copy and one (1) electronic copy of completed Waste Audit (WA).
- .3 Prepare and submit on monthly basis, throughout project or at intervals agreed to by Departmental Representative the following:
  - .1 Receipts, scale tickets, waybills, and/or waste disposal receipts that show quantities and types of materials reused, recycled, or disposed of.
  - .2 Updated Waste Materials Tracking form.
  - .3 Written monthly summary report detailing cumulative amounts of waste materials reused, recycled and landfilled, and brief status of ongoing waste management activities.
- .4 Submit prior to final payment the following:
  - .1 Waste Diversion Report, indicating final quantities [in tones] by material types salvaged for reuse, recycling or disposal in landfill and recycling centres, re-use depots, landfills and other waste processors that received waste materials.
  - .2 Provide receipts, scale tickets, waybills, waste disposal receipts that confirm quantities and types of materials reused, recycled or disposed of and destination.

## **1.5 WASTE AUDIT (WA)**

- .1 Departmental Representative will prepare WA prior to project start-up. WA will be provided with bid documentation (Schedule A).
- .2 WA provides detailed inventory, estimated quantities and types of waste materials that will be generated as well as their potential to be reused and/or recycled and project's waste diversion goals and objectives.
- .3 After award of contract, contractor to review WA and confirm that anticipated quantities of waste generated are accurate and goals achievable.
- .4 If after review, contractor determines that indicated quantities or opportunities in WA are not accurate or achievable, contractor to provide written details of discrepancies and revised quantities for areas of concern. Contractor to meet with Departmental Representative to review and justify revisions.
- .5 Post on-site WA where contractor and sub-contractors are able to review content.

## **1.6 WASTE REDUCTION WORKPLAN (WRW)**

- .1 Prepare and submit WRW (Schedule B) at least 10 days prior to project start-up.
- .2 WRW identifies strategies to optimize diversion through reduction, reuse, and recycling of materials and comply with applicable regulations, based on information acquired from WA.
- .3 WRW should include but not limited to:
  - .1 Applicable regulations.
  - .2 Specific goals for waste reduction identify existing barriers and develop strategies to overcome them.
  - .3 Destination of materials identified.
  - .4 Deconstruction/disassembly techniques and schedules.
  - .5 Methods to collect, separate, and reduce generated wastes.
  - .6 Location of waste bins on-site.
  - .7 Security of on-site stock piles and waste bins.
  - .8 Protection of personnel, sub-contractors.
  - .9 Clear labelling of storage areas.
  - .10 Training plan for contractor and sub-contractors.
  - .11 Methods to track and report results reliably (Schedule D).
  - .12 Details on materials handling and removal procedures.
  - .13 Recycler and reclaimer requirements.
  - .14 Quantities of materials to be salvaged for reuse or recycled and materials sent to landfill.
  - .15 Requirements for monitoring on-site wastes management activities.
- .4 Structure WRW to prioritize actions and follow 3R's hierarchy, with Reduction as first priority, followed by Reuse, then Recycle.
- .5 Post WRW or summary on site where workers are able to review content.
- .6 Monitor and report on waste reduction by documenting total volume (in tonnes) and cost of actual waste removed from project (Schedule D).

## **1.7 USE OF SITE AND FACILITIES**

- .1 Execute Work with minimal interference and disturbance to normal use of premises.
- .2 Maintain security measures established by facility provide temporary security measures approved by Departmental Representative.

## **1.8 WASTE PROCESSING SITES**

- .1 Contractor is responsible to research and locate waste diversion resources and service providers. Salvaged materials are to be transported off site to approved and/or authorized recycling facilities or to users of material for recycling.

## **1.9 USE OF SITE AND FACILITIES**

- .1 After award of Contract, a mandatory site examination will be held for this Project for Contractor responsible for construction, renovation demolition/deconstruction waste management.
  - .1 Departmental Representative will arrange date, time and location.

## **1.10 STORAGE, HANDLING AND PROTECTION**

- .1 Store, materials to be reused, recycled and salvaged in locations as directed by Departmental Representative.
- .2 Unless specified otherwise, materials for removal become Contractor's property.
- .3 Protect, stockpile, store and catalogue salvaged items.
- .4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
- .5 Protect structural components not removed and salvaged materials from movement or damage.
- .6 Support affected structures. If safety of building is endangered, cease operations and immediately notify Departmental Representative.
- .7 Provide on-site facilities and containers for collection and storage of reusable and recyclable materials.
- .8 Separate and store materials produced during project in designated areas.
- .9 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated processing facilities.
  - .1 On-site source separation is recommended.
  - .2 Remove co-mingled materials to off site processing facility for separation.
  - .3 Obtain waybills, receipts and/or scale tickets for separated materials removed from site.
  - .4 Materials reused on-site are considered to be diverted from landfill and as such are to be included in all reporting.
- .10 Cover or contain reusable and recyclable material to prevent any from being blown away,

colliding with an airplane or affecting air visibility.

- .11 Keep materials in closed containers, inaccessible to birds.

## **1.11 DISPOSAL OF WASTES**

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

## **1.12 SCHEDULING**

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

## **Part 2 Products**

### **2.1 NOT USED**

- .1 Not Used.

## **Part 3 Execution**

### **3.1 GENERAL**

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

### **3.2 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
  - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

- .2 Waste Management: separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
  - .2 Source separate materials to be reused/recycled into specified sort areas.

### **3.3 MAIN ENVIRONMENTAL AUTHORITIES**

- .1 Ministère du Développement durable, Environnement et Lutttes contre les changements climatiques, 675, boulevard René-Lévesque Est, Québec (Québec) G1R 5V7 Tél. : 1 800 561-1616
- .2 Ministère du développement Ministère du développement durable, de l'environnement et des Parcs: *Québec Residual Materials Management Policy 1998-2008*
- .3 RECYC-QUÉBEC: Répertoire québécois des récupérateurs, recycleurs et valorisateurs  
<http://www.recyc-quebec.gouv.qc.ca/client/fr/repertoires/rep-recuperateurs.asp>
- .4 Public Services and Procurement Canada: Sustainable Development Strategy 2017-2020.
- .5 Conseil de la conservation et de l'environnement, 800, Place d'Youville, 19<sup>ème</sup> étage, Québec QC G1R 3P4 Tél. : (418) 643-3818.
- .6 Service de l'ingénierie et division de l'environnement, Ville de Sept-Îles, 601, boul. des Montagnais, Sept-Îles, QC, G4R 2R4 Tél. (418) 964-3225

**END OF SECTION**



**Part 1            General**

**1.1                SECTION CONTENTS**

- .1            Administrative requirements prior to the preliminary and final inspections.

**1.2                PRIORITY**

- .1            In the case of Work performed for the federal government, Division 1 sections take priority over the technical specifications of the other divisions.

**1.3                RELATED SECTIONS**

- .1            Section 01 78 00 – Closeout Submittals.

**1.4                INSPECTION AND DECLARATION**

- .1            Contractor's Inspection: Contractor and sub-contractors must inspect their work, identify defects and make necessary repairs to ensure conformance to contract documents.
  - .1            Notify Ministry Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
  - .2            Request Ministry Representative's Inspection.
- .2            Ministry Representative's Inspection: the Ministry Representative and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor to correct Work accordingly.
- .3            Completion: submit written certificate that following have been performed:
  - .1            Work has been completed and inspected for compliance with Contract Documents.
  - .2            Defects have been corrected and deficiencies have been completed.
  - .3            Equipment and systems have been tested, set-up and calibrated, and are completely operational.
  - .4            Certificates required by utility companies have been submitted.
  - .5            Work is complete and ready for final inspection.
- .4            Final Inspection: when items noted above are completed, request final inspection of Work by Departmental Representative, and Contractor. If Work is deemed incomplete by Ministry Representative, complete outstanding items and request reinspection.

END OF SECTION



**Part 1            General**

**1.1                SECTION CONTENTS**

- .1    Project file, samples and specification.
- .2    Materials and Equipment.
- .3    Product data, samples, materials and related information.
- .4    Spare parts, maintenance materials and special tools.
- .5    Warranties and bonds.

**1.2                PRIORITY**

- .1    In the case of Work performed for the federal government, Division 1 sections take priority over the technical specifications of the other divisions.

**1.3                SUBMITTALS**

- .1    Instructions to be prepared by competent persons with necessary knowledge of operation and maintenance of products or systems described.
- .2    Copy will be returned after final inspection, with Ministry Representative's comments.
- .3    Revise content of documents as required prior to final submittal.
- .4    Two (2) weeks prior to Substantial Performance of the Work, submit to the Ministry Representative, two (2) final copies of operating and maintenance manuals in French.
- .5    Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.
- .6    Furnish evidence, if requested, for type, source and quality of products provided.
- .7    Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
- .8    Pay costs of transportation.
- .9    When existing equipment is dismantled or replaced, the existing blue lamicoids on the equipment must be handed to the Ministry Representative.

**1.4                FORMAT**

- .1    Organize data as instructional manual.
- .2    Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
- .3    When multiple binders are used correlate data into related consistent groupings. Identify contents of each binder on spine.
- .4    Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

- .5 Arrange content by systems, under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

## **1.5 CONTENTS - EACH VOLUME**

- .1 Table of Contents: provide title of project
  - .1 Addresses and telephone numbers of Ministry Representative and Contractor name of responsible parties.
  - .2 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system
  - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

## **1.6 AS-BUILTS AND SAMPLES**

- .1 Maintain, in addition to requirements in General Conditions, at site for Ministry Representative one record copy of:
  - .1 Contract Drawings.
  - .2 Specifications.
  - .3 Addenda.
  - .4 Change Orders and other modifications to Contract.
  - .5 Reviewed shop drawings, product data, and samples.
  - .6 Field test records.
  - .7 Inspection certificates.
  - .8 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.

- .5 Keep record documents and samples available for inspection by Ministry Representative.

## **1.7 RECORDING ACTUAL SITE CONDITIONS (AS BUILT)**

- .1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Ministry Representative.
- .2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
  - .1 Field changes of dimension and detail.
  - .2 Changes made by change orders.
  - .3 Details not on original Contract Drawings.
  - .4 References to related shop drawings and modifications.

## **1.8 EQUIPMENT AND SYSTEMS**

- .1 For each item of equipment and each system: Include description of unit or system, and component parts. Give function, normal operation characteristics and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
- .3 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- .4 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .5 Provide servicing and lubrication schedule, and list of lubricants required.
- .6 Include manufacturer's printed operation and maintenance instructions.
- .7 Include sequence of operation by controls manufacturer.
- .8 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .9 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .10 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

- .11 Additional requirements: as specified in individual specification sections.

**1.9 MATERIALS AND FINISHES**

- .1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and color and texture designations. Give the information necessary to order special products.
- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .3 Additional requirements: as specified in individual specifications sections.
- .4 Collaborate with Ministry Representative in work scheduling to reduce conflicts and facilitate site use by CSC.

**1.10 STORAGE, HANDLING AND PROTECTION**

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store paints and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged products at own expense and to satisfaction of Ministry Representative.

**1.11 WARRANTIES AND BONDS**

- .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
- .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- .3 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .4 Verify that documents are in proper form, contain full information, and are notarized.

END OF SECTION

## **Part 1      General**

### **1.1      ACTION AND INFORMATIONAL REQUIREMENTS**

- .1      When requested by the competent authorities, submit for approval the shoring and bracing designs before undertaking the demolition work. These drawings must be prepared by a qualified engineer authorized to practice in Canada in the province and must illustrate the proposed method of work.

### **1.2      SCOPE OF WORK**

- .1      This section includes the demolition and dismantling of building parts to enable work to be done on the construction of a new outdoor courtyard with observation tower, an adapted cell and an adapted shower.
- .2      The work includes:
  - .1      The demolition of sections of exterior walls for the construction of the new tower
  - .2      Demolition of an interior concrete partition between 2 cells
  - .3      The demolition of concrete block partitions in the existing shower
  - .4      The demolition of the existing shower
  - .5      Any other element indicated in the drawings.

### **1.3      REFERENCES**

- .1      CSST: current labor standards.
- .2      Canadian Standards Association (CSA International).
  - .1      CSA S350-M1980 (R1998), Code of Practice for Safety in Demolition of Structures

### **1.4      DEFINITIONS**

- .1      Hazardous Materials: Dangerous substances, dangerous goods, hazardous commodities and hazardous products that may include, but are not limited to, poisons, corrosive agents, inflammable substances, ammunition, explosives, radioactive substances, or other material that can endanger human health or well-being or the environment if handled improperly.
- .2      Remove: uninstall a component of a construction. In the case of a temporary removal, the removal work must be carried out with care to allow relocation at a later date.
- .3      Demolish: dismantle or disassemble a building or component thereof regardless of the condition of the materials after the work and remove the waste from the site.
- .4      Disassemble: dismantle or disassemble a construction or component thereof with care for full or partial recovery.

### **1.5      ENVIRONMENTAL PROTECTION**

- .1      Ensure that demolition works do not cause adverse effects on wildlife, groundwater and adjacent streams and that they do not generate excessive levels of air or noise pollution.
- .2      It is forbidden to burn waste and materials on the site.

- .3 Do not discharge waste or volatile materials, such as mineral spirits, oils, petroleum-based lubricants or toxic cleaning solutions into watercourses or storm or sanitary sewers.
  - .1 Ensure that appropriate methods for the disposal of this type of waste are maintained throughout the duration of the work.
- .4 Do not discharge water containing suspended solids into streams, storm sewers, or sanitary sewers or on adjacent land, by pumping or otherwise.

## **1.6 EXISTING CONDITIONS**

- .1 If a material resembling asbestos applied by projection or trowel or other materials designated and listed as hazardous is discovered during the execution of the work (other than the materials already identified in the asbestos report), suspend work, take appropriate precautions and inform the departmental representative immediately. Do not resume work until you have received written instructions from the Ministry Representative.
- .2 Notify the Ministry Representative before obstructing access to the building or interrupting services.

## **1.7 WASTE PROCESSING SITES**

- .1 Send all excess materials to a regulatory approved site.

## **1.8 SCHEDULING**

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

## **Part 2 Products**

### **2.1 EQUIPMENT**

- .1 Leave machinery running only while in use, except where extreme temperatures prohibit shutting machinery down.
- .2 Demonstrates that tools, equipment and machinery are used in a manner that permits the recovery of materials in the best condition possible.
- .3 Provide for all demolition conditions related to repairs that may interfere with or affect work schedule.
- .4 Provide all necessary material, equipment and tools for demolition and reconstruction.

## **Part 3 Execution**

### **3.1 PROTECTIVE MEASURES**

- .1 Take steps to prevent movement or collapse of structures, utility pipelines, sidewalks, pavements, trees, landscaping, adjacent soils and parts of buildings to be preserved, and prevent them from being damaged.
  - .1 Provide and install bracing and shoring parts and carry out the necessary work.
  - .2 If necessary, repair structures damaged by demolition work as directed by the Departmental Representative.



- .2 Properly support structures or works described and, if it appears that demolition poses a danger to the rest of the structure or pipeline works, take appropriate precautionary measures, stop work and notify the Ministerial Representative.
- .3 Ensure that demolition will not block the surface water drainage system or the electrical and mechanical systems that must remain in function.

### **3.2 PRELIMINARY WORK**

- .1 Protection
  - .1 Minimize dust and noise from work and inconvenience to occupants.
  - .2 Protect appliances, mechanical and electrical installations and utilities.
  - .3 Provide dust shields, tarpaulins, guard rails, support elements and other necessary protective devices.
  - .4 As the demolition progresses, the contractor will be required to coordinate the reconstruction to keep the building protected from the weather.
- .2 Disconnect and redirect electrical, telephone and telecommunication mains. Provide warning marks on piping and electrical equipment that must remain live during demolition to supply other structures.
- .3 Identify and protect utility lines. Do not touch any utility lines that are in service or under voltage and that cross the premises and should not be moved.
- .4 Débrancher et obturer les canalisations désignées des installations mécaniques.

### **3.3 GENERAL CONDITIONS**

- .1 Carry out demolition work in accordance with CNESST standards.

### **3.4 REMOVAL OF HAZARDOUS WASTES**

- .1 Remove materials defined by environmental protection authorities as contaminated or dangerous from site and dispose of safely so as to minimize danger at the site or during disposal.
- .2 Prior to the start of demolition work, remove contaminated or hazardous materials from site as directed by the appropriate authorities according to the Departmental Representative and disposed of by way of the designated facilities, in a manner that is safe and in accordance with regulatory requirements.

### **3.5 DEMOLITION**

- .1 Dismantle parts of existing building that are required to permit new construction or installation of new finishes.
- .2 Shrink the edges of partially demolished components of the building within the tolerances specified by the Consultant to facilitate the installation of the new components.
- .3 Turn all concrete debris generated by foundation demolition work in to materials of appropriate size for recycling.
- .4 Remove material, piping and other items that interfere with the rehabilitation or repair of existing surfaces and reinsert them as work progresses.
- .5 At the end of each workday, ensure that the work is safe and stable.

- .1 Protect at all times against exterior elements all interior surfaces of parts not to be demolished
- .6 Carry out demolition work in a manner to minimize dust.
- .7 Contain fibrous materials (e.g. insulation) to minimize the release of fibers into the air during transportation within facilities.
- .8 Unless otherwise specified, demolition materials shall be removed and disposed of from the site in accordance with the requirements of the competent authorities.
- .9 Where temporary removal of existing materials, equipment or appliances is indicated in the drawings, carefully remove the items in question and store them in a safe place until reinstated.

### **3.6 STORAGE**

- .1 During storing of items to be re-installed, follow these instructions:
  - .1 Clearly label all recovered materials, indicating their nature and quantity.
  - .2 Take appropriate safety measures and allocate sufficient resources to prevent theft, vandalism and deterioration of materials.

### **3.7 DISPOSAL OF CONSTRUCTION MATERIALS**

- .1 If it interferes with the progress of work, any material set aside must be removed as directed by the Ministerial Representative.
- .2 Remove similar materials set aside and to be disposed of using the same environmental method, once the collection of these materials is complete.
- .3 Transport materials intended for environmental disposal through approved waste-accepting organizations in accordance with relevant regulations.
- .4 Dispose of materials not designated for environmental disposal in accordance with applicable regulations.

### **3.8 CLEANING AND RESTORATION**

- .1 Keep the premises clean and in good order throughout the duration of the demolition work.
- .2 Upon completion of work, resurface areas, parking areas, pedestrian walkways and light poles that have been affected by the work will be returned to a condition consistent with that of adjacent undisturbed surfaces.

END OF SECTION

**PARTIE 1. General**

**1.1 RELATED REQUIREMENTS**

- .1 Division 01 - General Requirements
- .2 Section 04 22 00 – Concrete Unit Masonry
- .3 Section 09 30 13 - Ceramic Tiling

**1.2 REFERENCES**

- .1 ASTM International
  - .1 ASTM C469, Standard Test Method for Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression;
  - .2 ASTM C496, Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens;
  - .3 ASTM C882, Standard Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete By Slant Shear;
  - .4 ASTM D412, Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension;
  - .5 ASTM C711, Standard Test Method for Low-Temperature Flexibility and Tenacity of One-Part, Elastomeric, Solvent-Release Type Sealants;
  - .6 ASTM G 109, Standard Test Method for Determining Effects of Chemical Admixtures on Corrosion of Embedded Steel Reinforcement in Concrete Exposed to Chloride Environments

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit required samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Data sheets
  - .1 Submit the required data sheets as well as the Manufacturer's instructions and documentation for concrete mixes. Data sheets must indicate product characteristics, performance criteria, size, limitations and finish.
- .3 A sample of the work is required on all laying surfaces of this contract. These must be recommended by the Professional and the Manufacturer of the product.

**1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver the materials in their original, sealed and undamaged containers with the Manufacturer's name, labels, product identification and production numbers.

- .2 Store materials in a dry, closed and moisture-proof area. The storage temperature to be maintained between 5° C and 32° C.

## **1.5 SITE CONDITIONS**

- .1 Ensure that ambient temperature is above 7°C for a period of 24 hours before and after laying or until curing.
- .2 Make sure the substrate temperature is at least 7°C.
- .3 Installation areas must be released from other trades during the installation and curing of the system.

## **1.6 WARRANTY**

- .1 The contractor is to provide a 5 year warranty on all surface preparation and application of all products, and storage in a suitable location from the date of completion.
- .2 The manufacturer's warranty is limited to products and manufacturing defects for a period of 5 years from the date of completion of work.
- .3 The Installer is responsible for having his work sample approved by the Manufacturer's representative before completion of the work and to allow the warranty to be issued by the Manufacturer from the end date of the work.

## **PARTIE 2. Products**

### **2.1 MATERIALS AND EQUIPMENT**

- .1 Slope in the shower: Execute the new floor slope in the shower using a fast curing concrete repair mortar for applications from 0 to 25mm of thickness: single-component, quick setting cementitious mortar:
  - .1 Such as SikaQuick-1000 from Sika Canada Inc., or approved equivalent.
- .2 It is the responsibility of the Contractor to ensure compatibility between them of the different products used (protective coating, expansion joint, gasket, repair of concrete etc.)

## **PARTIE 3. Execution**

### **3.1 GENERAL**

- .1 All products of the different repair systems must be applied according to the manufacturer's recommendations. If there are inconsistencies between the manufacturer's recommendations and the instructions in this sub-section, the contractor shall advise the Manufacturer's representative and the Consultant and the latter shall indicate the method to be used.

### **3.2 PREPARATORY WORK**

- .1 Before commencing work, inspect surfaces and immediately notify the Consultant in writing of any condition not indicated in the contract documents.
- .1 Remove deteriorated concrete, impurities, oils, grease and other materials that interfere with adhesion.
- .2 The concrete surface to be treated must be in good condition and prepared in such a way that it is free from loose or deteriorated concrete, grease, oil, curing agents, efflorescence, laitance dust, dirt, paint and other contaminants that would prevent proper adhesion. All old coatings must be removed from the surface to provide an absorbent surface.
- .3 The concrete surface to be repaired using repair mortar must be prepared mechanically to obtain a surface profile corresponding to a CSP 4 to 10 in accordance with ICRI Guideline 310.2.
- .4 Surfaces must be clean and sound. The substrate should be saturated with water, but superficially dry (SSS) and without standing water before proceeding with the application.
- .5 Protect all surfaces that should not receive the products. No soiling or trace of products will be accepted.

### **3.3 APPLICATIONS**

- .1 Repair Mortar (slope):
  - .1 Prime the prepared surface by spreading a thin layer of brushed or rubbed adhesive mortar. The repair mortar must be applied before the adhesion layer dries.
  - .2 Brush the mortar once prepared against the substrate. Make sure to penetrate the pores and seal the voids. Remove excess mortar once the slope is complete. Allow the mortar to cure to the desired consistency before finishing the surface. Mixing, application and finishing must not take more than 30 minutes.
  - .3 The temperature of the product at the time of mixing and application must be between 18 and 29°C.

**END OF SECTION**



**PART 1      General**

**1.1            RELATED SECTIONS**

- .1      Section 04 05 12 – Masonry mortar and grouting
- .2      Section 04 22 00 - Concrete Unit Masonry.
- .3      Section 07 92 00 - Joint Sealants.

**1.2            REFERENCES**

- .1      Canadian Standards Association (CSA International).
  - .1      CSA A179-94(R1999), Mortar and Grout for Unit Masonry.
  - .2      CSA-A371-94 (R1999), Masonry Construction for Buildings.

**1.3            SCOPE OF WORK**

- .1      In general, without being limited by this list, and other than those prescribed in demolition, the masonry work consists of:
  - .1      Supply and installation of new concrete bloc walls.
  - .2      Supply and construction openings of existing block walls to be closed off.
  - .3      Any other work described in the documents and required in order to achieve complete and finished Work.

**1.4            SAMPLES**

- .1      Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2      Submit samples as follows:
  - .1      Two of each type of masonry unit specified.
  - .2      One of each type of masonry accessory specified.
  - .3      Minimum required for testing purposes.

**1.5            TEST REPORTS**

- .1      Submit laboratory test reports in accordance Section 01 33 00 – Submittal Procedures.
- .2      Submit laboratory test reports certifying compliance of masonry units and mortar ingredients with specification requirements.
- .3      For clay elements, respect CSA and ASTM requirements mentioned above. Specify initial absorption rate of proposed elements.

**1.6            DELIVERY, STORAGE, AND HANDLING**

- .1      Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2      Deliver materials to job site in dry condition.

- .3 Keep materials dry until use except where wetting of bricks is specified.
- .4 Store under waterproof cover on pallets or plank platforms held off ground by means of plank or timber skids.
- .5 Eliminate broken, warped, scratched and defective items.

### **1.7 WASTE MANAGEMENT AND DISPOSAL**

- .1 Collect and separate for disposal paper, plastic and corrugated cardboard packaging material in accordance with Waste Management Plan.

### **1.8 PROTECTION OF WORK**

- .1 Protect masonry work and adjacent work from dirt and damage.
- .2 Protect finished work from mortar spatter with non-staining tarps.
- .3 Provide temporary shoring of masonry work until permanent lateral support is in place.

## **PART 2 Products**

### **2.1 MATERIALS**

- .1 Masonry materials are specified in Related Sections mentioned in 1.1.
- .2 When preparing the mortar and handling the masonry elements, take all necessary precautions to eliminate any possibility of efflorescence.

## **PART 3 Execution**

### **3.1 INSTALLATION**

- .1 Do masonry work in accordance with CSA-A371 except where specified otherwise.
- .2 Build masonry plumb, level, and true to line, with vertical joints in alignment.

### **3.2 CONSTRUCTION**

- .1 Jointing.
  - .1 Allow joints to set just enough to remove excess water, then tool with round jointer to provide smooth, joints true to line, compressed, uniformly concave joints where concave joints are indicated.
  - .2 When raked joints are prescribed, allow the mortar to harden sufficiently to remove excess water, and then rake the joints evenly with a flat mirror to compress the mortar and make smooth surface seals of uniform depth of 6 mm.
  - .3 Flush all concealed or coated wall joints, tiles, insulation or any other similar material, except paint or a thin film finish of the same type. Run flush all vertical joints on 150 mm high, at the base of the walls receiving a rubber baseboard.



- .2 Exposed Masonry Units
  - .1 Remove chipped, cracked or otherwise damaged units from exposed structures and replace with units in good condition.
- .3 Cutting.
  - .1 Cut out for electrical switches, outlet boxes, and other recessed or built-in objects.
  - .2 Make cuts straight, clean, and free from uneven edges.
- .4 Building-In.
  - .1 Build in items required to be built into masonry.
  - .2 Prevent displacement of built-in items during construction. Check plumb, location and alignment frequently, as work progresses.
  - .3 Brace door jambs to maintain plumb. Fill spaces between jambs and masonry with mortar.
- .5 Joints: When work is interrupted in mid-course or at building corners:
  - .1 Step-back blocks starting from most recent full course.
  - .2 At no time shall a section of wall under construction be more than 1220 mm higher than an adjacent section of wall.
- .6 Support of loads.
  - .1 Use grout to CSA A179 where grout is used in lieu of solid units.
  - .2 Install building paper below voids to be filled with concrete; keep paper 25 mm back from faces of units.
- .7 Provision for movement.
  - .1 Leave 3 mm space below shelf angles.
  - .2 Leave 6 mm space between top of non-load bearing walls and partitions and structural elements. Do not use wedges.
  - .3 Built masonry to tie in with stabilizers, with provision for vertical movement.
- .8 Control joints.
  - .1 Construct continuous control joints as indicated.
- .9 Expansion joints.
  - .1 Build-in continuous expansion joints as indicated.

### **3.3 SITE TOLERANCES**

- .1 Tolerances in notes to Clause 5.3 of CSA-A371 apply.
- .2 The following tolerances are permitted for visible masonry work:
  - .1 From fixed reference point: 3 mm for length of 2.5 meters.
  - .2 At openings: additional 6 mm.
- .3 Assume full responsibility for precision of dimensions, plumbing and leveling of Work, and continuous verification with graduated rod.

- .4 Masonry courses shall be of equal height, horizontal and vertical joints shall be of constant width, and both coursing and jointing shall match existing pattern.
- .5 Place first masonry course without mortar for Ministerial representative's approval of joint locations.

### **3.4 WORK ON EXISTING STRUCTURES**

- .1 Make openings in the existing structure as indicated.
- .2 Openings in the walls must be approved by the Architect.
- .3 Rehabilitate existing structures for this purpose, use materials that harmonize with those already in place.

### **3.5 OPENINGS TO CLOSE**

- .1 Close all openings around elements that cross the wall to preserve the fire resistance and acoustic properties of the masonry walls.

### **3.6 COOPERATION WITH OTHER TRADES**

- .1 Make openings in masonry where necessary or where indicated.
- .2 Carefully execute, at indicated locations and dimensions, housings and openings for conduits.
- .3 Where masonry encloses conduits or plumbing, ensure flush setting as required. Do not close openings or housings for plumbing or conduits until receiving confirmation that inspections and tests have taken place.
- .4 In cooperation with all other trades, verify if all elements to be integrated into masonry walls are in place, or if they are to be installed prior to or at the time of wall construction. To this end, check all mechanical, electrical, and structural documents, as well as documents of any other consultant.

### **3.7 CLEANING**

- .1 When masonry work is finished, remove all stains, spatters, or surplus mortar with wooden paddle.
- .2 As needed. Patch or replace defective mortar with fresh mortar to match existing mortar, according to requirements of these specifications.
- .3 Rub surfaces with non-darkening alkaline cleaning solution in accordance with manufacturer's recommendations.

END OF SECTION

**PART 1      General**

**1.1          RELATED SECTIONS**

- .1      All sections of division 04.

**1.2          REFERENCES**

- .1      Canadian Standards Association (CSA International).
  - .1      CSA A179-94(R1999), Mortar and Grout for Unit Masonry.

**1.3          PRODUCT DATA**

- .1      Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
- .2      Provide instructions for:
  - .1      Reference standards for product in question.
  - .2      "Factory-prepared mix standards" table indicating mortar characteristics (compression strength, water retention, air contents).
  - .3      Test certificates for mortar mix batches delivered to site for use in work.

**1.4          SAMPLES**

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

**1.5          WASTE MANAGEMENT AND DISPOSAL**

- .1      Collect and separate for disposal paper, and corrugated cardboard packaging material in accordance with Waste Management Plan.

**PART 2      Products**

**2.1          MATERIALS**

- .1      Use same brands of materials and source of aggregate for entire project.
- .2      Mortar and grout: to CSA A179 standard.
- .3      Grout for filling the cells of the blocks: see structure documents.
- .4      Type 10 Portland cement, to CAN/CSA-A5 standard.
- .5      Type "S" hydrated lime, to ASTM C270-91 (1997) standard.
- .6      Water: Drinking water, clean, free from ice, oil, acid, alkalis, organic matter, sediment or any other harmful material.

- .7 Use of admixtures in not permitted.

## **2.2 MORTAR TYPES**

- .1 Factory-mixed mortar with compression strength similar to adjacent masonry elements. Mortar may be delivered with sand mixed into matrix: add water according to instructions.
- .2 Mortar for interior concrete blocks.
  - .1 Non-Loadbearing: type M based on Property specifications.
- .3 Grout: to CSA A179, Table 3.

## **2.3 COLOUR**

- .1 Concrete block masonry: colourless mortar.

## **PART 3 Execution**

### **3.1 CONSTRUCTION**

- .1 Do masonry mortar and grout work in accordance with CSA A179 except where otherwise specified.

### **3.2 MIXING**

- .1 Mixing to be done with mechanical mixer; clean and free of dried mortar, rust, or other contaminant; do not defrost equipment with salt or antifreeze.
- .2 Use 1 cubic foot containers for precision measurement of required quantity of sand according to grout type. Measuring sand with shovel is not permitted.
- .3 Prepare mortars according to supplier's instructions in regards to proportion of water to cementitious materials, as well as steps to follow in mixing. Perfectly respect water quantities required per sack of mortar as prescribed by manufacturer.
- .4 Total mixing time to be no less than 8 minutes and no more than 10 minutes. Let rest 2 minutes and remix 2 minutes. For mortar coloured on-site, mixing to be between 8 and 12 minutes to ensure complete and uniform dispersion of pigments.

### **3.3 INSTALLATION TIMEFRAME FOR MORTAR AND GROUT**

- .1 Mortar to be used and applied within 2.5 hours following mixing; when air temperature is equal or higher than 25°C, timeframe is reduced to 1.5 hours. Past these limits, mortar must be rejected.

### **3.4 REMIXING**

- .1 Remixing of mortar stiffened due to evaporation is not permitted; such mortar must be rejected.

### **3.5 COLOUR UNIFORMITY**

- .1 In order to ensure uniformity of mortar colour, Contractor should:
  - .1 Use clean water from a single source.
  - .2 Avoid adding water after initial mixing in order to make mortar more workable.
  - .3 Always smooth joints within the same time after initial application of mortar.

END OF SECTION



**Part 1 General**

**1.1 RELATED SECTIONS**

- .1 All sections of this division.
- .2 See structure for frame, grout and head anchors.

**1.2 REFERENCES**

- .1 Canadian Standards Association (CSA International)
  - .1 CAN3 A165 SERIES-94(R2000), CSA Standards on Concrete Masonry Units covers: A165.1, A165.2, A165.3.

**1.3 WASTE MANAGEMENT AND DISPOSAL**

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Collect and separate for disposal paper, plastic, polystyrene or corrugated cardboard packaging material in appropriate on-site containers for recycling in accordance with Waste Management Plan.
- .3 Divert damaged or unused concrete materials from landfill to local recycling facility approved by Ministerial representative.

**Part 2 Products**

**2.1 MATERIALS**

- .1 Standard concrete elements, type H / 15 / A / M: in accordance with CAN3-A165.1 series standards.
  - .1 Dimensions: 140 x 190 x 390 mm, 56% solid
  - .2 and dimensions as existing.
- .2 Special-shaped units: rounded-edged units must be used for exposed corners, and specially shaped units for lintels and connecting beams; other special shaped units must be provided as indicated.
- .3 Concrete units for wall ties (lintel blocks), type S / 15 / A / M: in accordance with CAN3-A165.1.
  - .1 Dimensions: 140 x 190 x 390 mm and 190 x 190 x 390mm (as existing).

**Part 3 Execution**

**3.1 GENERAL**

- .1 Concrete Units
  - .1 Brickwork: stretcher bond or as existing work
  - .2 Seat height: 200 mm for a row of elements and a joint.

- .3 Seams: concave throughout the height of the masonry walls
- .2 Lintels for concrete masonry units:
  - .1 When no steel or reinforced concrete lintel is prescribed, install lintels of reinforced concrete over the openings in the masonry.
  - .2 Support at the ends of the lintels: at least 200 mm.

### **3.2 CLEANING**

- .1 Allow mortar splatters on masonry work to partially dry and then remove with a trowel. Finish by lightly rubbing the surface of the joints with a small piece of concrete and then with a brush.

END OF SECTION



## **PARTIE 1      GENERAL**

### **1.1            SCOPE OF WORK**

- .1      The work described in this section includes, but is not limited to, the supply and installation of:
  - .1      Wall and ceiling coverings of stainless steel showers, including its structure (angles).
  - .2      Anchor plates for plumbing fixtures.
  - .3      Jambs of cells in painted steel.
  - .4      Support bars as shown in the drawings.
  - .5      Shower curtain supports as shown in the drawings.
  - .6      The screen door of the new shower, including its structure and hardware, as shown in the drawings.
  - .7      The shower door sill as shown in the drawings.
  - .8      New protection grating for tower windows.
  - .9      New galvanized steel exterior cladding of the new tower.

### **1.2            RELATED REQUIREMENTS**

### **1.3            REFERENCES**

- .1      ASTM International
  - .1      ASTM A 53 / A 53M-07, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
  - .2      ASTM A 269-08, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
  - .3      ASTM A 307-07b, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
- .2      CSA Group
  - .1      CSA G40.20-13 / G40.21-13, General requirements for rolled or welded structural quality steel / Structural quality steel
  - .2      CAN / CSA G164-18, Hot dip galvanizing of irregularly shaped articles.
  - .3      CSA S16-14, Design of Steel Structures.
  - .4      CSA W48-14, Filler metals and allied materials for metal arc welding (prepared in collaboration with the Canadian Welding Bureau).
  - .5      CSA W59-13 UP4, Welded steel construction (metal arc welding).
- .3      Health Canada - Workplace Hazardous Materials Information System (WHMIS)
  - .1      Material Safety Data Sheets (MSDS).
- .4      Canadian General Standards Board (CGSB)
  - .1      CAN / CGSB-1.40-97, Anticorrosive Structural Steel Alkyd Primer.
  - .2      CAN / CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.
- .5      Green Seal Environmental Standards (GS)

.6 National Association of Architectural Metal Manufactures (NAAMM)

- .1 AMP 510-92, Metal Stair Manual
- .2 CAN / CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.

**1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit the required documents and samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Data sheets
  - .1 Submit required data sheets and manufacturer's instructions and documentation for the proposed profiles, plates, pipes, tubes and bolts. Data sheets must indicate product characteristics, performance criteria, size, limitations and finish.
  - .2 Submit two (2) copies of Material Safety Data Sheets (MSDS) required by WHMIS, in accordance with Section 01 35 29.06 - Health and Safety and 01 35 43 - Environmental Protection.
    - .1 For coatings, primers, paints and other finishes applied on work site, indicate the VOC content (in g / L).
  - .3 Sealed Shop drawings
    - .1 Shop drawings must indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details and accessories.
    - .2 Take into account all related work when preparing shop drawings. Perform coordination necessary to avoid any conflict.
    - .3 Shop drawings must bear the seal and signature of a structural engineer certified competent for external envelopes and member of Ordre des Ingénieurs du Québec.
      - .1 This seal certifies that the design of the support elements ("Z" bars) and the ventilated steel plate facade system meets the requirements of the applicable contract documents and codes of laws.

**1.5 CALCULATION CRITERIA**

- .1 All fasteners must be designed to withstand live loads in the vertical and horizontal directions as required by the NBC.
- .2 The dimensions provided in the documents are advisory only. They must be verified and validated by the supplier's Structural Engineer.

**1.6 QUALITY ASSURANCE**

- .1 Test reports: Submit certified test reports showing compliance of products, materials and equipment with specified physical properties and performance criteria.
- .2 Certificates: Submit Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

**1.7 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and manufacturer's written instructions.

- .2 Delivery and Acceptance: Deliver materials and equipment to work site in their original packaging, which must be labeled with the name and address of the manufacturer.
- .3 Storage and handling
  - .1 Store materials and equipment so that they do not sit on the floor, in a dry, clean, well-ventilated, indoor area, as recommended by the manufacturer
  - .2 Replace damaged materials and equipment with new materials and equipment.

## **1.8 MEASUREMENT**

- .1 Verify all existing dimensions, clearances and spacings on work site prior to all shop fabrication.
- .2 Notify the Departmental Representative of any significant changes from the verified shop drawings.

## **1.9 PROTECTION**

- .1 The exposed surfaces of stainless steel elements must be covered with a strong self-adhesive paper or peelable plastic film prior to shipping the items to the work site. Surfaces should be removed from their protective coating only at the time of final cleaning of the building. Provide the instructions necessary to remove the protections.
- .2 Special attention will be given to exposed "galvanized finish" elements to prevent these parts from being damaged during transport and installation. These units must have a uniform appearance without stains, without brand identifications, etc. The aesthetic quality of the appearance of these units is very important and the Architect will be demanding on the result.

## **PARTIE 2 PRODUCTS**

### **2.1 MATERIALS/EQUIPMENT**

- .1 Steel profiles and plates: 300W grade, to CSA G40.20 / G40.21.
- .2 Grade 304 stainless steel profiles and plates, commercial quality.
- .3 Steel Pipe: To ASTM A53-99b standards, standard weight, galvanized Type E, Grade A, seamless.
- .4 Steel tubes: according to CAN / CSA-G40.20 / G40.21 standard, 300W, square or rectangular, of configuration and dimensions according to the indications or according to the nature of the work.
- .5 Welding:
  - .1 Welding materials: CSA W59 compliant
  - .2 Welding electrodes: to CSA W48 series standards.
- .6 Bolts, fasteners and anchors
  - .1 Bolts and anchor bolts: to ASTM A307
  - .2 High strength bolts when required: to ASTM A325
  - .3 Exposed fasteners must be compatible with material that they cross or to which they are attached, and with the same finish.

- .4 Provide all fasteners required for the proper manufacture of the works.
- .7 Grout: non-shrink, non-metallic, fluid, having a strength of 15 MPa and a tensile strength of 7.9 MPa at 24 hours.
- .8 Any other steel element required to complete the work.

## **2.2 METAL FABRICATIONS – GENERAL**

- .1 Structures must be straight, square, true to line and conform to specified dimensions; joints must be tight and properly secured.
- .2 Use self-tapping shake-proof flat headed screws on items requiring connections by screws, unless otherwise specified.
- .3 Whenever possible, the structures must be adjusted and assembled in the workshop and delivered ready to be erected.
- .4 Exposed welds must be continuous over the entire length of the joint; they must be ground smooth and flush with adjacent finished surfaces.

## **2.3 FINISH**

- .1 Stainless steel: to ASTM A167-99A, grade 304, commercial grade, brushed finish.
- .2 Galvanization: 600 g / m<sup>2</sup> hot dip galvanizing process according to CAN / CSA-G164.
- .3 Factory applied primer: According to CAN / CGSB 1.40.
- .4 Zinc primer: Zinc rich paint, prepared to CAN / CGSB-1.181.

## **2.4 INSULATION COATING**

- .1 Aluminum members and surfaces must be isolated from the materials listed below using bituminous paint.
  - .1 Metallic members and surfaces of different types, except stainless steel, zinc and small white bronze members and surfaces.
  - .2 Concrete, mortar and other masonry materials.
  - .3 Wood.

## **2.5 SECURITY ANCHORS**

- .1 All equipment and accessories provided for in this project must be anchored with secure and tamper-proof fasteners.
- .2 All accessories in concrete must be fastened using HILTI "HVA" or HIT HY 150 chemical anchors for lighter work.
- .3 In concrete blocks, all accessories must be fastened using HILTI HIT HY 20 Adhesive, for masonry work.

## **2.6 SHOP PAINTING**

- .1 Primary: VOC content up to 250 g / L according to GS-11.
- .2 Surfaces must be cleaned according to the instructions in Volume 2 of the Steel Structures Painting Council manual.
- .3 Metal members, unless they are galvanized or bedded in concrete, must be coated with one (1) layer of primer applied in the shop.
- .4 Surfaces inaccessible after assembly must be coated with two (2) layers of distinctly coloured sealer.
- .5 The primer must be used as supplied by the manufacturer, without any modification. It must be applied to dry surfaces, free of rust, grease and deposits, at a temperature of at least 7 degrees Celsius.
- .6 Surfaces to be welded on site must be cleaned and must not be painted.
- .7 For painting of metal elements, see section 09 91 23 Interior Painting.

## **2.7 CELL JAMBS**

- .1 Provide and install stainless steel folded jamb. 14 to cover the concrete cut to the jamb of the cell door, according to the detail of the plans.

## **2.8 ANCHOR PLATE FOR PLUMBING FIXTURES**

- .1 Provide and install all anchor and fastening plates required for plumbing fixtures. Coordinate the installation of these reinforcements with the installation of plumbing fixtures. 16MM threaded rods and steel plate according to the information on drawings and dimensions required for installation.

## **2.9 CLADDING OF WALL AND CEILINGS OF SHOWERS IN STAINLESS STEEL**

- .1 At the locations indicated on the plans, cover the walls and ceilings of the showers with 1.6 mm 316 grade stainless steel panels laminated to concrete panels
- .2 Concrete panels: see reference section 06 10 00 - Carpentry.
- .3 Construction adhesive to bond stainless steel sheets to concrete panels such as LEPAGE, PL PREMIUM. Adhesive should be used according to the manufacturer's recommendations.
- .4 Provide inviolable mechanical fasteners to help with adhesion. Have the Architect approve beforehand.

## **2.10 PROTECTION OF DUCTS**

- .1 Provide and install a steel boxing consisting of 6mm folded steel plate, painted finish.

## **2.11 GRAB BARS AND SHOWER CURTAIN RODS**

- .1 Provide and install 304 stainless steel heavy-duty grab bars and shower curtain rods, finish no. 4, of

dimensions indicated on the plans.

- .2 The grab bars and curtain rods should have a smooth and impeccable finish, welds should be ground and polished.

## **2.12 SCREENED DOOR (shower)**

- .1 Supply and install a stainless steel HSS 50 x 50 x 6 mm screen door.
- .2 Stainless steel fixing angle 38x38x6mm for wall anchoring.
- .3 Stainless steel flat expanded metal door mesh, grade 304, 19 mm # 9, 10 gauge. All edges must be ground and softened.
- .4 Lock recovered from the existing door, cleaned and stripped before reinstallation.
- .5 Three (3) FULGER ADAM 4½ FM stainless steel hinges. Tamperproof or welded fasteners.
- .6 Anchoring with HY 20 adhesive.

## **2.13 DOOR SILL (shower)**

- .1 Provide and install a door sill with profile and dimension as shown in the drawings, in 304 stainless steel, non-slip.
  - .1 Thickness: 3mm minimum, excluding reliefs;
  - .2 Pattern: 5 bars

## **2.14 WINDOW PROTECTION GRIDS (tower)**

- .1 Construct and install protective grids, in front of each new windows, of hot-dip galvanized steel, of profiles as indicated on the drawings, shaped to the shapes and dimensions indicated
  - .1 The grids must be made of galvanized steel tubes.
  - .2 The exposed ends of the protective grids must be closed and welded.
  - .3 End flanges should be used to secure the protection grids to the walls.
- .2 Protective grids must be galvanized once assembled.

## **2.15 STEEL COVER (tower)**

- .1 Cladding boards: Smooth surface class, for vertical installation, in accordance with CGSB 93.4.
  - .1 Finish: F1S category.
  - .2 Color: at the discretion of the Departmental Representative.
  - .3 Finish: little shine.
  - .4 Thickness of bare metal: 3mm.
  - .5 Insulating filler element: polyurethane, as indicated in the drawings, see prescriptions in section 07 21 29.03 - Insulation spray - polyurethane foam.
  - .6 Profile: shaped interlocking edge boards pre-drilled to receive fasteners.
- .2 Soffit: smooth surface category, perforated, in accordance with CGSB 93.4.

- .1 Finish: F1S category.
  - .2 Color: at the discretion of the Departmental Representative.
  - .3 Finish: little shine.
  - .4 Thickness of bare metal: 3mm.
  - .5 Insulating filler element: polyurethane, as indicated in the drawings, see prescriptions in section 07 21 29.03 - Insulation spray - polyurethane foam.
  - .6 Profile: shaped interlocking edge boards pre-drilled to receive fasteners.
  - .7 Perforations: as shown in the drawings.
- .3 Exposed trim (interior and exterior trim moldings):
- .1 Finish: F1S category.
  - .2 Color: at the discretion of the Departmental Representative.
  - .3 Finish: little shine.
  - .4 Thickness of bare metal: 3mm.
  - .5 Dimension and profile: see drawings.
- .4 Accessories:
- .1 Exposed trim: interior and exterior corners, counter flashings, trim strips, bibs, star strips and window frames should be of the same material as the cladding, and be pre-drilled to receive the fasteners.
- .5 Fasteners:
- .1 Nails and screws must comply with CSA B111 and ANSI B18.6.4, respectively. Special fabrication, these fasteners must be stainless steel.

## **2.16 SUB-GIRT**

- .1 "Z" or "J" bars in galvanized steel. Provide "L" galvanized steel wire stiffeners the width of the "Z" bar, if required. Spacing as shown in the drawings.
- .2 All horizontal and vertical "Z" sub-entremises must be adjustable and perforated (horizontal only), and must be Z-275 zinc coated (G-90) grade A steel.
- .3 Caliber of the sub-girts to be according to the load and the calculations of the engineer.
- .4 Attachment faces to be 50 mm, in length and maximum effective depth according to the dimensions and spacing in the drawings, maximum assembly deflection of  $L / 180$ .

## **PARTIE 3 EXECUTION**

### **3.1 EXAMINATION**

- .1 Verification of conditions: confirm that conditions of the surfaces / substrates previously implemented under other sections or contracts are acceptable for work in accordance with the manufacturer's written instructions, prior to proceeding with work.
  - .1 Visually inspect surfaces / substrates in the presence of the Departmental Representative.

- .2 Inform the Departmental Representative of any unacceptable conditions immediately upon discovery.
- .3 Do not proceed with work until unacceptable conditions have been corrected.

### **3.2 ERECTION**

- .1 Perform welding work in accordance with CSA W59, unless otherwise specified.
- .2 Welding companies must be certified either under the provisions of Division 1, or pursuant to section 2.1 of CSA W47.1 in the case of fusion welding or CSA W55.3 in the case resistance welding.
- .3 Provide a certificate that all welded joints are certified by the Canadian Welding Bureau.
- .4 Erect metalwork square, plumb, straight and true, accurately fitted, with tight joints and intersections.
- .5 Provide and install secure and tamper-proof anchors approved by the Architect and Correctional Service Canada, such as studs, staples, anchor rods, bolts and expansion bushings, wing bolts, and rocking anchors. Exposed fasteners must be compatible have the same finish as the material they pass through or are attached to.
- .6 Provide necessary components for work done by sub trades, in accordance with the nomenclature and submitted shop drawings.
- .7 Perform on site connections using bolts according to CSA S16 standard or by welding.
- .8 Deliver jigs and parts to be bedded in concrete and embedded into masonry to the appropriate location.
- .9 Spot prime rivets, welds, bolts and burnt or scratched surfaces, after completion of erection.
  - .1 Primer: VOC content up to 250 g / L, according to GS-11.
- .10 Touch-up galvanized surfaces with zinc primer where burned by field welding.
  - .1 Primer: VOC content up to 250 g / L, according to GS-11.

### **3.3 INSTALLATION OF STEEL CLADDING**

- .1 Install exterior finishes in accordance with the requirements of CGSB 93.5 and the written instructions of the manufacturer.
- .2 Continuously lay out starter strips, interior corner pieces, curbs, soffits, bibs, flashings and sills and window bay flashings and trims as indicated.
- .3 Carefully place exterior angle pieces, filler pieces and closure pieces so as to obtain a well-shaped and contoured work.
- .4 Lay the soffits as shown in the drawings.



- .5 Make sure the joints of the exterior cladding are perfectly aligned and butted.
- .6 Fix units in such a way that they do not interfere with the thermal movements of contraction and dilation.
- .7 Caulk joints between adjacent elements and structures with sealant in accordance with Section 07 92 00 - Joint Sealants.

### **3.4 CLEANING**

- .1 Progress cleaning: Perform cleaning according to Section 01 74 00 - Cleaning.
- .2 Leave site clean at the end of each work day.
- .3 Final Cleaning: Remove surplus materials, rubbish, tools, and equipment from work site in accordance with Section 01 74 00 - Cleaning.
- .4 Clean metal structures as soon as possible after installation to remove dust from construction work or the surrounding environment.
- .5 Waste Management: Sort waste for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
- .6 Remove bins and recycling bins from site and dispose of materials at appropriate facilities.

### **3.6 PROTECTION**

- .1 Protect equipment and installed elements from damage during work.
- .2 Repair damage caused by metalwork installation to adjacent materials and equipment.

**END OF SECTION**



## **1 GENERAL**

### **1.01 RELATED SECTIONS**

- .1 Section 05 50 00 – Metal fabrication
- .2 Section 07 21 29.03 – Sprayed Insulation
- .3 Section 07 52 00 – Membrane sealing
- .4 Section 07 62 00 – Sheet Metal flashing and trim
- .5 Section 07 92 00 – Joint sealants
- .6 Section 08 50 00 – Aluminium windows
- .7 Section 10 28 10 – Restroom accessoires

### **1.02 REFERENCES**

- .1 CSA B111 1974 (R1998), Wire Nails, Spikes and Staples.
- .2 CAN/CSA G164 FM92 (C1998), Hot Dip Galvanizing of Irregularly Shaped Articles.
- .3 CSA O121 FM1978 (C1998), Douglas Fir Plywood.
- .4 CAN/CSA O141 F91 (C1999), Softwood Lumber.
- .5 CSA O151 FM1978 (C1998), Canadian Softwood Plywood.
- .6 CAN/CSA-O80 SERIES-08 (R2012) CONSOLIDATED - Wood Preservation
- .7 CAN/CSA O325.0 F92 (C1998), Construction Sheathing.
- .8 ASTM D-3201, Standard Test Method for Hygroscopic Properties of Fire-Retardant Wood and Wood-Based Products
- .9 NLGA Standard Grading Rules for Canadian Lumber, 2000.

### **1.03 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit samples in accordance with Client's general conditions and as specified.

### **1.04 QUALITY ASSURANCE**

- .1 Lumber by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood in accordance with CSA standards.

## **1.05 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Pile wood in separate rows separated by sticks to enable air circulation.
- .3 Store prefabricated works in ventilated area protected from humidity or extreme temperature variations.

## **2 PRODUCTS**

### **2.01 CONSTRUCTION LUMBER**

- .1 Wood other than what is specified in Engineering.
- .2 Structural timber: Unless otherwise indicated, must be softwood, S4S finish (surfaced all four sides), moisture content not exceeding 19 %, and in accordance with:
  - .1 ACNOR O141;
  - .2 NLGA, (Standard Grading Rules for Canadian Lumber), 1987 edition.
- .3 Furrings, spacers, nailing strips, nailing base, nailing, subframes, battens.
  - .1 S2S finish elements are acceptable.
  - .2 Dim wood: light framing classification, standard or superior category.
  - .3 Boards: Standard or superior category.
- .4 MSR lumber based on acceptable constraint for all work.
- .5 Abutting glued elements (finger-jointed) are not acceptable.

### **2.02 PANELS**

- .1 Canadian softwood plywood: according to CSA standard O151, classification "construction", "standard" grade.
- .2 Concrete panel: "BETFLEX" 13 mm mechanically fixed to concrete walls and concrete blocks. Stainless steel fasteners every 250 mm c / c.
- .3 Lightweight concrete panels : composite fiber cement panel consisting of Portland cement compound reinforced with synthetic fibers and additives, such Finex panel or approved equivalent.

### **2.03 ACCESSORIES**

- .1 Joint sealing tape: self-adhesive, air-tight adhesive tape of the type recommended by the manufacturer of the vapor barrier, 75mm wide.
- .2 Screen door: stainless steel, opening percentage 44%.

- .3 Self-adhesive membranes:
  - .1 Self-adhesive membrane such as Henry Bakor's Blueskin SA or approved equivalent.
  - .2 Type of primer recommended by the manufacturer, depending on the type of substrate where the membrane will be applied.
  - .3 Priming on galvanized steel sheet: apply a self-adhesive membrane strip to all joints between two (2) sheets.
    - .1 Reference product: Blueskin LCV Henry Bakor or approved equivalent.

## **2.04 FASTENERS**

- .1 Nails, spikes and staples: to CSA B111 standard.
- .2 Nails for bridging (existing boards and new plywood): twisted nails 4.05mm in diameter x 86mm in length, for pneumatic nailer.
- .3 Bolts: with nuts and washers and, unless otherwise stated, 12.5mm diameter.
- .4 Proprietary fasteners: rocker bolts, expansion pads with lag screws, lead sleeves or inorganic fiber sleeves with screws, approved by the Departmental Representative.
- .5 Fasteners: galvanized steel for outdoor elements, and interior elements in very humid places. Galvanization compliant with ACNOR G164 standard.
- .6 All Purpose Adhesive: to CSA O112 series standards.
  - .1 VOC content of no more than 140 g / L.
  - .2 According to the requirements of the cladding's manufacturer.

## **2.05 PAINT**

- .1 See section 09 91 23 – Interior Painting.

## **3 EXECUTION**

### **3.01 EXAMINATION**

- .1 Vérifier si les supports et les ouvertures murales sont prêts à recevoir les éléments. S'assurer que les supports sont de niveau, d'aplombs, solides et aptes à recevoir les éléments.
- .2 Report all defects to Professional. Proceed with installation only after unacceptable conditions have been remedied.

### **3.02 MANUFACTURER INSTRUCTIONS**

- .1 Comply with written manufacturer requirements, recommendations and specifications, including all technical bulletins available, handling, storage and application instructions of products, and information on data sheets.

### **3.03 ASSEMBLY OF ELEMENTS**

- .1 Comply with the requirements of Part 9 of the NBC 2005 Edition and the following requirements.
- .2 Install elements according to the lines, elevations and levels indicated.
- .3 Construct the continuous members from pieces of longest practical length.
- .4 The curved side of the members resting on the support points of the frame must be at the top of the element.
- .5 Install members square and plumb, true to line, levels and elevation.
- .6 Install the joist elements so that their camber is upward.
- .7 Install a waterproof membrane between the wood elements and the masonry or concrete surfaces.
- .8 Assemble, anchor, fasten and brace members to provide the necessary strength and rigidity.
- .9 Countersink where necessary so that bolt heads do not protrude.

### **3.04 TEMPORARY PROTECTION**

- .1 Construct all protective work for workers, such as parapets, ladders, ramps, platforms, tiers, walkways, etc.; Change, move and repair as needed during performance of work in accordance with requirements in of applicable regulations in force.
- .2 Provide and install all temporary partitions and enclosures required to prevent loss of heat, unauthorized intrusion and inconveniences caused by inclement weather, weather variations or dispersion of debris and dust.

### **3.05 ROOF**

- .1 Carpentry work on the roof according to the details of the drawings:
  - .1 Build fascia; install battens, nailing bases, nailing rods, and other wooden supports to receive the cover and secure them.
  - .2 Roof framing members must be securely fastened to the underlying frame with galvanized steel bolts, washers and nuts so that they resist the stresses of the roofing elements. Coordinate the installation of these elements with the roof works with which they are intimately connected.

### **3.06 FURRINGS AND SPACERS**

- .1 Install furrings and spacers necessary to remove from wall and support sashes, heating cabinets, wall and ceiling finishing elements, overlays, borders, soffits, sidings and any other type of work.
- .2 Install elements plumb, aligned and level. Maximum admissible deviation is 1:600.

### **3.07 SUBFRAMES AND NAILING BASES**

- .1 Provide and install all filler pieces, subframes and nailing bases required for work from other trades, including for windows, soffits and all other elements requiring solid and rigid fastening.
- .2 Cut and adjust filler pieces and nailing bases to underlying framing elements.
- .3 All elements installed must be verified and accepted by Departmental Representative before being concealed by other work.

### **3.08 FASTENERS**

- .1 Assemble, anchor, fasten, attach and brace elements to ensure required solidity and rigidity.
- .2 Unless otherwise indicated, fasteners must be installed in accordance with requirements of part 9 of NBD.
- .3 As needed, countersink holes so bolt heads are below surface.

### **3.09 VARIOUS WORK**

- .1 Perform all work necessary for complete performance of project.

### **3.10 CLEANING**

- .1 Once installation is complete, remove surplus materials and equipment, waste materials, tools and safety barriers from the work site.

### **3.11 PROTECTION**

- .1 Protect equipment and installed elements from damage during work.
- .2 Repair any damage caused by carpentry work to adjacent materials and equipment.

**END OF SECTION**





**PART 1      General**

**1.1          REFERENCES**

- .1      CAN/ULC-S702-97, Mineral Fibre Thermal Insulation for Buildings.

**1.2          TECHNICAL DATA SHEETS**

- .1      Submit the technical data sheets in compliance with requirements of Section 01 33 00 – Submittal Procedures.

**PART 2      Products**

**2.1          INSULATION MATERIALS**

- .1      Mineral fibre thermal insulation :
  - .1      In accordance with CAN/ULC-S702 standards, mineral fibre thermal insulation, for buildings;
  - .2      Thermal resistance ( $m^2 K/W$ ) : 3.5 / 152mm thickness;
  - .3      Reference product : Pink inorganic Fiberglass thermal insulation, preformed batt without membrane such as FiberGlas EcoTouch Insulation by Owens Corning or approved equivalent.

**PART 3      Execution**

**3.1          INSTALLATION OF INSULATION**

- .1      Install the insulation in such a way as to ensure continuous thermal protection for the components and empty construction spaces of the building.
- .2      Do not compress the insulation to make it fit in the spaces to be insulated.
- .3      Do not cover the insulation until the installation work has been inspected and approved by the ministerial representative.

END OF SECTION



## **1 GENERAL**

### **1.01 RELATED SECTIONS**

- .1 Section 05 50 00 – Metal fabrications
- .2 Section 06 10 00 – Carpentry.
- .3 Section 07 62 00 – Joint sealants
- .4 Section 08 50 00 - Windows

### **1.02 REFERENCES**

- .1 Canadian Urethane Foam Contractors' Association (CUFCA)
- .2 Underwriters Laboratories of Canada (ULC)
  - .1 CAN/ULC S101 89, Standard Methods of Fire Tests of Building Construction and Materials.
  - .2 CAN/ULC S102 1988 C2000, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
  - .3 CAN/ULC S705.1 01, Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Material Specification. Includes Amendment 1.2.
  - .4 CAN/ULC S705.2- Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Application .
  - .5 CCMC 13244-L, Spray-Applied Rigid Polyurethane Foam Insulation.
  - .6 AIR INS inc. Report AS-00201-A Water Vapour Transmission
  - .7 AIR INS inc. Report A1-02627-A Air Barrier
  - .8 GREENGUARD Certification level, school and child

### **1.03 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit product descriptions, samples and data sheets in accordance with Client's general conditions.

### **1.04 QUALITY ASSURANCE**

- .1 Applicators to conform to CUFCA Quality Assurance Program.
- .2 Upon request of Department Representative, apply insulation to a section at least 10 m<sup>2</sup> in size with typical characteristics of entire project; this sample may be part of the final Work.

### **1.05 DELIVERY, STORAGE AND HANDLING**

- .1 Delivery and Acceptance Requirements: deliver materials to site in original factory

packaging, labelled with manufacturer's name, product, expiration date, weight, applicable standards and other instructions or appropriate technical reference.

- .2 Store materials and in accordance with manufacturer's temperature recommendations.
- .3 Remove off-site empty isocyanate and resin containers as specified in CAN/ULC S705.2.

#### **1.06 SITE CONDITIONS**

- .1 At commencement of work and at all times during performance of work, allow access to site to representative or any other people designated by Departmental Representative so they may provide required technical assistance.
- .2 Perform work from this section when temperature of surfaces and ambient air temperature fall within requirements in the manufacturer's technical bulletin.
- .3 Perform work from this section when relative ambient air humidity is below 80%.
- .4 Prepare surfaces in accordance with CAN/ULC S705.2 and with manufacturer recommendations.

#### **1.07 PROTECTION**

- .1 Ensure adequate ventilation in zone in which insulation is applied to guarantee safe work environment.
- .2 Ensure protection of workers in accordance with local regulations and manufacturer standards and recommendations.
- .3 Protect adjacent surfaces and material from damage likely to be caused by projection outside planned limits.

### **2 PRODUCTS**

#### **2.01 ENVIRONMENTAL REQUIREMENTS**

- .1 Product must not contain any CFCs and HCFCs and no Ozone-depleting Substances, ZERO ODS.
- .2 Product must comply with GREENGUARD certification, level, school and child requirements.

#### **2.02 MATERIALS**

- .1 On Site Foamed Insulation: Thermal insulation made of closed cell spray polyurethane foam, made from recycled plastic; compliant with CAN / ULC S705.1-01, and having the following characteristics:

- .1 Thermal resistance at 90 days / 23° C: RSI 1.05 by 25 mm
  - .2 Airtightness (25 mm): 0.00004 L / (s • m<sup>2</sup>) @ 75 Pa
  - .3 OACS content: 0
  - .4 Flame Spread (CAN / ULC-S102.2): <500
- .2 Primer: Compliant with insulation manufacturer's recommendations, considering the nature and condition of the surfaces of the structures to be insulated.
  - .3 Oily metal surface primer: according to the manufacturer's recommendations.
  - .4 Membrane Primer: As recommended by the membrane manufacturer.

### **3 EXECUTION**

#### **3.01 APPLICATION**

- .1 Apply insulation to clean surfaces in accordance with CAN/ULC S705 and manufacturer's printed instructions. Use primer where recommended by manufacturer.
- .2 Apply insulation to areas shown in plan details to ensure uniform thermal insulation of building elements.

#### **3.02 VERIFICATION**

- .1 Verify whether work already performed is in a condition to receive work described in this section. Report any anomaly or non-concordance. Only undertake work once corrective actions have been taken.
- .2 To provisions of CAN/ULC S705.2 and following requirements, verify these conditions:
  - .1 Surfaces that must be covered with thermal foam insulation must be free of excess humidity, frost, oil, rust and any other foreign matter that could have a negative impact on the product's adherence. In case of doubt, apply primer.
  - .2 Ensure the complete curing of substrates: concrete, mortar, sealers, membranes, primers or any other potential surfaces, before spraying foam.
  - .3 Ensure adherence of membranes and sealers to various substrates is adequate by taking into account weather conditions for applying membranes, sealers and spray insulation.
- .3 Respect acceptable humidity levels for the different materials.
- .4 In the event of particular conditions, report situation in writing and follow manufacturer recommendations.
- .5 Ensure that all work that must be completed before application of insulation is completed.

#### **3.03 INSTALLATION**

- .1 Follow recommendations of CAN/ULC S705.2 with regard to use of primer.

- .2 Apply insulation to clean and dry surfaces when weather conditions comply with prescriptions of CAN/ULC S705.2 and manufacturer instructions.
- .3 Spray insulation in successive layers at least 15mm thick each in order to obtain a minimum total thickness indicated in drawings.
- .4 Do not spray insulation closer to 75 mm (3 in) from chimneys, vapour conduits, built-in light fixtures and other heat sources.

### **3.04 TOLERANCE**

- .1 Apply product to have a total average thickness (9 readings on a 1 m<sup>2</sup> surface) of  $\pm 6$ mm based on specifications in drawings. Perform at least one test every 150 m<sup>2</sup> of sprayed surface.
- .2 Apply insulation to ensure that insulating value is uniform across entire surface, as stipulated in NBC 1995 article 9.25.2.3. 1).

### **3.05 FIELD QUALITY CONTROL**

- .1 Upon request of consultant, manufacturer must prepare field quality control report.

### **3.06 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
  - .1 Remove insulation material spilled during installation and leave work area ready for application of wall board.

**END OF SECTION**

## **PARTIE 1      General**

### **1.1            RELATED REQUIREMENTS**

- .1      See engineering documents
- .2      Section 05 50 00 - Metal Fabrications
- .3      Section 06 10 00 - Rough Carpentry
- .4      Section 07 62 00 - Sheet Metal Flashings and Trim
- .5      Section 07 92 00 - Joint Sealants

### **1.2            REFERENCES**

- .1      Submit a document issued by a body accredited by the Standards Council of Canada certifying that the proposed waterproofing system meets the requirements of CAN / ULC-S107-M.
- .2      The standards and recommendations contained in the instructions of these associations will be considered as part of this section, unless otherwise stated in this specification. Said recommendations will then become requirements of this specification.
- .3      CGSB-37.56-m 9th version, prefabricated and reinforced modified bituminous membrane for roofing.

### **1.3            SCOPE OF WORK**

- .1      The roofing work includes the labor, supply, tools and equipment necessary for the complete execution of the roofing, waterproofing and roofing works of the new tower, including the reworking of existing membranes as shown in the drawings.

### **1.4            SUBMITAL PROCEDURES**

- .1      Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2      Submit data sheets and samples of specified products.
- .3      Illustrate details, materials, finish and thickness of flashings.

### **1.5            REQUEST FOR EQUIVALENCE**

- .1      Any request for equivalence concerning the roofing products and systems specified in this section must be submitted to the Departmental Representative in writing at least 5 working days before the closing date and time. These applications must be accompanied by technical sheets demonstrating the equivalence of the products offered and a copy of the Manufacturer's certificate.

## **1.6 REFERENCE STANDARDS**

- .1 Submit a document issued by a certified testing laboratory demonstrating that the specified roofing system has been tested to CSA A 123.21-04, Standard Test Method for Dynamic Resistance to Wind Pull-out systems. The test results must demonstrate that the roof system withstands wind pressures of -1.5 kPa for the current surface, -2.1 kPa at the perimeter and -3 kPa at the corners of the roof.
- .2 Submit a document issued by an organization officially recognized by the Standards Council of Canada which certifies that the proposed waterproofing system meets the requirements of CAN / ULC-S107-03 Fire Resistance Test for Building Materials, Class A.
- .3 CSA B35.3-1962, Tapping and Drive Screws (Slotted and Recessed Head, Threading Forming and Threading Cutting Screws, and Metallic Drive Screws).
- .4 CGSB 37.56-M (9<sup>th</sup> version), Modified bituminous membrane, prefabricated and reinforced for roofing
- .5 CAN4-S102-M83, Standard Method of Testing for Surface Burning Characteristics of Building Materials and Assemblies

## **1.7 QUALIFICATIONS OF THE CONTRACTOR**

- .1 The roofing contractor must, at the time of tenders and during construction, be officially recognized as a roofing contractor authorized by the manufacturer of waterproofing materials, be a member in good standing of the Association des Maîtres Couvreur du Québec.
- .2 Only qualified labor, employed by a company with adequate equipment for such work, may perform the work.
- .3 Applicators of weldable membranes must have taken the fire safety course given by the Quebec Fire Prevention Institute, and at least 50% of them must have followed the Safe Welding course developed by the AMCQ.

## **1.8 MATERIALS**

- .1 The materials and work must comply with the relevant requirements contained in the Devis Couvertures manual of the Association des Maîtres Couvreur du Québec and the manufacturer of the membrane system.

## **1.9 QUALITY CONTROL OF MATERIALS AND WARRANTIES**

- .1 The inspection of roofing work described in this section and the relevant tests will be performed by the Manufacturer of the membrane system.
- .2 The Manufacturer will have to carry out a preliminary inspection to verify the support to receive the roofing materials, the slopes, the solidity, the cleanliness, the preparation and the approval of the related works such as: walls, parapets, eaves, downspouts, plumbing vents, and any other required work.



- .3 In addition, the supplier must, before the start of the work, check the conformity between the specifications and the manufacturer's minimum requirements in relation to the Soprema "Platinum" warranty, in order to ensure the issuance of the warranty.
- .4 Inspection of the roofing work by the Manufacturer will ensure compliance with the plans and specifications and will include among others the following checks.
  - .1 The nature, thickness, weight and number of waterproof membranes.
  - .2 Overlap and tightness of member joints.
  - .3 Construction of asphalt and metal flashings on walls or control and expansion joints.
  - .4 The waterproofness of the base for mechanical, electrical or other equipment on the roofs.
  - .5 The flow of rainwater towards the low bridges of the slopes.

#### **1.10 WARRANTY**

- .1 After acceptance of the work by the manufacturer of bilayer membranes, the latter will provide a written and signed document guaranteeing that the membranes are free from any manufacturing defects for a period of ten (10) years from the date of membrane installation. This warranty will cover the removal and replacement of defective roof membrane products, including labor. The warranty will be full and complete for the entire warranty period specified. No manufacturer's letter modifying its standard warranty will be accepted, the warranty certificate must reflect these requirements.
  - .1 Such as Soprema's 10 year Platinum warranty.
- .2 This warranty will state that it will repair any leakage in the membrane to restore the roof system to a dry, watertight state to the extent that manufacturing or installation defects have resulted in water infiltration.
- .3 The warranty will cover all repair expenses during the entire warranty period. The warranty must be transferable, at no additional cost, to subsequent purchasers of the building.
- .4 The total warranty period will therefore be ten (10) years, during which time three inspections are scheduled by the Manufacturer and the reports will be sent to the Owner. These inspections will be managed by the Manufacturer and executed in the presence of the Architect.
- .5 Any labor deficiencies noted during these inspections must be corrected at no cost to the Owner. Maintenance remains at the expense of the Owner.
- .6 Provide a written document, signed and issued in the name of the Owner, stating that the sealants in this section is warranted against leakage, cracking, crumbling, loss of adhesion, contraction, loss of consistency and fading of adjacent areas for a period of three (3) years from the date of issue of the Certificate of Work Completion.

### **1.11 REPRESENTATIVE OF THE MANUFACTURER**

- .1 At the beginning of the waterproofing work, a representative of the Manufacturer of waterproofing materials must be present on site.
- .2 The Contractor must allow and facilitate at all times access to the site and on the roofs to any representative of the Manufacturer mentioned above.

### **1.12 STORAGE AND HANDLING**

- .1 All materials will be delivered and stored in their original packaging, bearing the manufacturer's name, product name, weight, related standards and any other indication or reference accepted as standard.
- .2 The materials will be properly protected and stored permanently in a dry, ventilated shelter, protected from open flame and welding sparks, and protected from the weather and any harmful substances. Only materials that will be used on the same day will be taken out of this shelter. During the winter, the materials will preferably be stored in a shelter heated to 10° C minimum and taken out as and when they are implemented. If the rolls cannot be stored in a heated shelter, they can be reheated at the time of installation, using a torch.
- .3 Store emulsion adhesives and sealants at a temperature of at least +5° C. Store solvent-based adhesives and sealants at a temperature high enough to provide the malleability required for their application.
- .4 Materials delivered in rolls will be carefully stored upright. Flashings will be stored to prevent wrinkling, twisting, scratching and other damage.
- .5 Avoid the accumulation of materials on roofs, which could, in specific places, compromise the solidity of the structures by imposing to them loads higher than the admissible loads.
- .6 Insulating materials must be protected from daylight, inclement weather and any harmful substances.

### **1.13 SITE-SPECIFIC CONDITIONS**

- .1 Do not install roofing materials when the temperature is below -18°C, in the case of a membrane glued by torch welding, or when the temperature is below -10°C, according to the manufacturer's recommendations, in the case of a membrane applied to bitumen with a mop.
- .2 Solvent-based adhesives must be applied at a temperature equal to or greater than -5°C.
- .3 Cover support must be dry, and free of snow and ice. Use only dry materials, and apply them only when weather conditions will not cause moisture penetration into the sealing layers.

### **1.14 SITE PROTECTION**

- .1 When transporting roof materials and performing roofing work, protect exposed surfaces of finished walls with canvases to prevent damage. Assume full responsibility for any damage.

- .2 Wherever workers will move or work, and where materials and equipment will be stored, cover the surface of roofs already constructed with 13 mm thick plywood panels. Keep these panels in good condition throughout the work.

### **1.15 COMPATIBILITY**

- .1 All materials forming part of the roofing system will be supplied by the same manufacturer and will be compatible with each other. Provide the Architect with a written statement certifying that the materials and components of the roofing system are compatible with each other.

### **1.16 FIRE SAFETY**

- .1 Observe the safety instructions and applicable local requirements.
- .2 At the end of each working day, use a heat detector gun to detect any fire that may be smoldering. Site organization must allow the presence of the workers at least one hour after the end of the welding work.
- .3 Never solder directly on old dry wood. See the manufacturer's and the AMCQ's fire safety recommendations.
- .4 Care must be taken to ensure the cleanliness of the site and to always have at least one ULC Class A, B and C approved fire extinguisher loaded and in perfect condition throughout the implementation, at least 6 meters from each torch. Observe the safety instructions accompanying the sealant data sheets. Ensure that the location where the torch is placed is not located near flammable or combustible products.

### **1.17 TEMPORARY SEALING**

- .1 Ensure at any break in the work for whatever reason that the roof remains perfectly sealed, both for the protection of roofing materials already installed inside and outside and to prevent any water penetration into the building and any subsequent damage.

## **PARTIE 2 Products**

### **2.1 CARPENTRY**

- .1 See Section 06 10 00 - Rough Carpentry.

### **2.2 SUPPORT FOR VAPOUR RETARDER**

- .1 Support panel with non-combustible fiberglass matt surface, gypsum core treated to withstand moisture, 12.7mm thick, 1220x2440mm.
  - .1 Reference Product: Georgia Pacific Densdeck Panel or Approved Equivalent.

### **2.3 VAPOUR RETARDER**

- .1 Self-adhesive vapour retarder: composed of SBS-modified bitumen and a trilaminar polyethylene woven fabric on the surface with self-adhesive underside, and having the following characteristics:

- .1 Roll format (width x length): 134 " x 3.7 '(4080 mm x 11400 mm)
- .2 Thickness 0.8 mm
- .3 Tensile Strength (ASTM D5147): 54/74 lbf / in (9.5 / 13 Kn / m)
- .4 Elongation at Break (ASTM D5147): 33/25%
- .5 Tear Resistance (ASTM 1970): 95/103 lbf (423/458 N)
- .6 Flexibility Based on Temperature (ASTM D5147) -50°C
- .7 Puncture Resistance (ASTM D5602): 400N (90lbf)
- .8 Air Permeability (ASTM E2178) <0.001 L / S • m<sup>2</sup>
- .9 Permeability to Water Vapor (ASTM E96-B) <0.03 perms
- .10 Reference Product: Soprema Sopravap'R or approved equivalent.

## 2.4 INSULATING MATERIALS

- .1 Polyisocyanurate insulation, in accordance with ASTM C 1289 Type 2, having the following characteristics:
  - .1 Panel Dimensions: 1220x1220mm, straight edges, indicated thickness.
  - .2 Thermal Resistance: RSI of 1.00 for 25mm
  - .3 Reference Products: Soprema Sopra-iso or approved equivalent.

## 2.5 MEMBRANE SUPPORT PANEL

- .1 High performance insulating underlayment panel consisting of an SBS-modified bitumen membrane and a non-woven polyester reinforcement.
  - .1 Total thickness (membrane and panel): 14.9mm
  - .2 Panel size: 915mm x 2440mm
  - .3 Reference product: Soprasmart Iso HD 180 from Soprema or approved equivalent.

## 2.6 MECHANICAL FASTENING OF THE SYSTEM

- .1 Pre-assembled anchors with # 14 self-tapping screws for steel decking and for wood for wood decking, in cadmium steel with flat head, covered with anticorrosive coating with embossed plates of 50mm diameter, galvalume, cal 20, such as approved by FM for the specified system and installed in accordance with ASTM A-123.21
  - .1 Reference Product: Soprema Soprafix System Screws and Inserts or approved equivalent.
- .1 Attachment to metal decking: self-tapping flat head screws, cadmium plated, No. 14, Type A or AB, to CSA B35.3.

## 2.7 MEMBRANES

- .1 Choice of Colors:
  - .1 The granules of the cap membranes will be gray
  - .2 The granules of the base membranes will be gray

- .2 SBS modified bitumen heat-sealing tape 2.5 mm thick and 330 mm (13 ") wide. The upper surface is composed of a composite reinforcement with the film covering its upper surface dissolving during the laying of the cap under the action of the torch and the lower surface thermofusible film.
  - .1 Reference product: Soprema Sopralap tape or approved equivalent.
- .3 Underlayment membrane for curbs and repairs (membrane recovery):
  - .1 Composed of bitumen modified with SBS polymers and a composite reinforcement. The surface is covered with a thermofusible plastic film and the underside is covered with a protective sheet, in accordance with CAN / CGSB 37.56-M 9<sup>th</sup> draft.
  - .2 Reference Product: Sopralene Flam Soprema Stick Equivalent Approved.
- .4 Finishing membrane for the regular part, raised sections and the base membrane:
  - .1 Composed of bitumen modified with SBS polymers and a nonwoven polyester reinforcement. The surface is protected by colored granules and the underside is covered with a heat-sealable plastic film, conforming to CAN / CGSB 37.56-M 9<sup>th</sup> draft.
    - .1 Reference Product: Sopralene Flam 250 Gr of Soprema or approved equivalent.
    - .2 Color: the choice of the Architect among the full range of manufacturers
- .5 Reinforcement membrane for metal flashing and roof periphery:
  - .1 Sheets prefabricated, conforming to CAN / CGSB 37.56-M 9<sup>th</sup> draft, consisting of a non-woven polyester reinforcement and SBS modified bitumen.
  - .2 Reference Product: Sopralene Flam 180 Gr of Soprema or approved equivalent.

## 2.8 OTHER MEMBRANES

- .1 Parapet fascia membrane:
  - .1 Self-adhesive membrane based on SBS modified bitumen for use as underlayment membrane. When required, the LASTOBOND SHIELD HT membrane can be used as an intramural flashing. Its surface, consisting of a complex woven polyethylene, offers excellent anti-slip power.
    - .1 Specified product: Lastobond Shield HT from Soprema or Blueskin PE 200 HT from Henry Bakor or equivalent approved by the Architect

## 2.9 PRIMER FOR SELF-ADHESIVE MEMBRANE AND FOR MEMBRANE LIFTS

- .1 Adhesive primer based on synthetic rubber forming a flame retardant film, having the following characteristics:
  - .1 Solid content ..... ..24% (approx)
  - .2 Density at 20 degrees ..... ..0.79 kg / L
- .2 Reference product: Elastocol stick of Soprema or approved equivalent.

## **2.10 FASTENERS**

- .1 Drive screw with 25 mm diameter steel washer head and 3 mm diameter rod. The nails provided by the membrane manufacturer are long enough to sink at least 38 mm into the solid wood supports.

## **2.11 SEALING COMPOUND**

- .1 Sealants: SBS modified bitumen, fiber, mineral and solvent based grout sealant in accordance with CAN / CGSB-37.5-M89 and ASTM D4586.
- .2 Reference Product: Sopramastic Soprema or approved equivalent.

## **2.12 BULK GRANULES**

- .1 Provide loose granules of the same color as the membranes.

## **2.13 ROOF FLASHING**

- .1 Hot-dipped galvanized sheet steel, commercial grade, to ASTM A526 standard, zinc-plated Z275, pre-painted on one side, minimum 24 gauge or as indicated on the drawings.
- .2 Paint System: Enamelled steel surfaces shall be primed on the finished side with a two part polyurethane paint to meet the latest Prolux Series 8000 AAMA-2604 standard. This covering system includes: cleaning of the surfaces to be painted according to the paint manufacturer's recommendations, surface sandblasting of the surfaces and electrostatic finishing with a 8000 Series two-component polyurethane paint, of the color chosen by the Departmental Representative.

## **2.14 FLASHINGS AND METAL TRIM**

- .1 In accordance with Section 07 62 00 - Sheet Metal Flashings and Trim.

## **PARTIE 3 Execution**

### **3.1 QUALITY OF EXECUTION**

- .1 Unless otherwise indicated, complete the covering in accordance with the relevant instructions in the "Devis, couvertures" document of the Association des Maîtres Couvresseurs du Québec (AMCQ) and according to the specifications of the factory mutual (FM).

### **3.2 EXAMINATION AND SURFACE PREPARATION**

- .1 The examination and preparation of the surfaces must be done according to the instructions contained in the technical documentation of the manufacturer, particularly with regard to fire safety.

- .2 Prior to the commencement of the work, the Owner's Representative and the Roofing Foreman will be responsible for inspecting and approving in particular the condition of the support (if any, slopes and nailing grounds) as well as wall and other construction joints. If applicable, a notice of non-compliance will be provided to the Contractor for correction. The commencement of the work will be considered as an acceptance of the conditions relating to the realization of this work.
- .3 Do not start any part of the work until the surfaces are clean, smooth, dry and free from ice, snow and scrap materials. The use of salts and calcium is prohibited to remove ice or snow.
- .4 Ensure that carpentry and other work has been properly completed.
- .5 Do not place materials in rainy or snowy weather.

### **3.3 MODE OF EXECUTION**

- .1 Lay the roofing elements on clean, dry surfaces in accordance with the manufacturer's instructions and recommendations.
- .2 Roofing work must be carried out continuously as surfaces are ready and weather conditions permit.
- .3 Seal all joints of underlayment that are not covered with a finishing membrane on the same day. Under no circumstances should there be moisture trapped in the joints before laying a second membrane.
- .4 In all cases where the membrane is laid with a blowtorch, a bead of continuously melted bitumen of constant thickness must be visible at the front of the rollers during welding.
- .5 Maintain waterproof roofing at all times, including during the work of other trades and as work is performed.

### **3.4 SITE PROTECTION**

- .1 When transporting roof materials and performing roofing work, protect exposed surfaces of finished structures with canvases to prevent damage. Make sidewalks in rigid panels on the roofs, over implemented materials, to allow workers to come and go and transport equipment. Assume full responsibility for any damage.

### **3.5 CLEANING**

- .1 Regularly clean the site of waste or other materials that may affect work performance and performance.

### **3.6 EQUIPMENT FOR THE EXECUTION OF WORK**

- .1 Maintain equipment and tools to perform roofing work in a good condition for use.
- .2 Use the types of torches recommended by the manufacturer.

### **3.7 APPLICATION OF PRIMER**

- .1 Apply to the concrete, metal, wood, masonry or gypsum surfaces a layer of synthetic elastomer primer at 330 ft.<sup>2</sup> / gal. All surfaces are free of dust, residue or rust, which is harmful to adhesion.
- .2 Cover surface treated with primer on the same day. Observe the application temperature limits.

### **3.8 INSTALLATION OF THE VAPOUR RETARDER**

- .1 The primer should be dry when installing the vapour retarder.
- .2 Start at the low point, moving perpendicular to the slope axis, unroll the vapour barrier, align it, let it relax and then wind it from both ends.
- .3 Unroll the vapour retarder and remove the plastic film covering the self-adhesive tape.
- .4 Overlap the sheets at least 90 mm on the sides, 150 mm at the ends.
- .5 The vapour retarder must not show any swelling or wrinkling.
- .6 Ensure complete continuity of the vapour retarder under control joints, expansion joints, bases or fixtures, and with the vapour retarder of the wall.

### **3.9 FLAT INSULATION INSTALLATION**

- .1 Place the panels in close contact, in parallel rows and without deformations or gaps, and fill joints of more than 5 mm.
- .2 Temporarily fix the insulation.

### **3.10 MEMBRANE SUPPORT PANEL INSTALLATION**

- .1 Fix the composite panels with mechanical fasteners at the rate of 12 per 24 sq. 6 in the center with a reinforcing strip and 6 on the side under the overlap band (18 " spacing).
- .2 Secure the panels against each other without leaving voids and align the joints for the installation of the polytape tape 9" transverse seal.
- .3 Remove the protective film under the overlapping strip and glue it. In cold weather, activate the glue by lightly passing the torch.
- .4 Seal the transverse joints with a heat-sealable elastomeric strip.

### **3.11 INSTALLATION OF MEMBRANES**

- .1 Underlayment on curbs:



- .1 Unroll the underlayment in strips of one (1) meter width perpendicular to the axis of the parapets, on the vertical and horizontal portions of the curbs.
  - .2 Fold down the underlayment on the outside.
  - .3 Overlap the underlayment of the main section by 100 mm. Overlap the longitudinal joints by 90 mm.
  - .4 Shift these at least 100 mm from those of the underlayment of the main section.
  - .5 Paste this underlayment directly onto the support of the previously prepared curbs. Proceed from top to bottom.
  - .6 Nail the underlayment at the top of the parapet and curbs every 300 mm center to center using nails and washers.
  - .7 Unroll the 9.75" wide heat seal tape to cover the joints in the cross direction of the system panels.
  - .8 Weld a reinforcement strip diagonally one (1) meter by one (1) meter on the underlayment and on the pre-primed collar.
  - .9 Lay the reinforcement and finishing layer to the edge of the opening.
- .2 Application of the cap sheet on the main section:
- .1 Start at the low point, moving perpendicular to the slope axis.
  - .2 Unroll the finishing membrane, align it, and wrap it from both ends.
  - .3 Unroll the finishing membrane and torch it on the underlayment. Avoid burning the membrane or its frame.
  - .4 Overlap the sheets at least 90 mm on the sides and 150 mm at the ends.
  - .5 The joints in the finishing membrane must be offset by at least 300 mm from those in the underlayment.
  - .6 Maintain a distance of 300 mm between the joints of the underlayment and the cap sheet.
  - .7 The finishing membrane must not show any swelling or wrinkling.
- .3 Application of the cap sheet on curbs:
- .1 Unroll the cap sheet in strips of one (1) meter width perpendicular to the curb axis on the vertical and horizontal sections.
  - .2 Overlap the longitudinal joints 90 mm and offset 100 mm from those of the current part.
  - .3 Draw a chalk line at 150 mm on the running portion parallel to the edge of the parapet.
  - .4 Degranulate the surface of the cap sheet of the main section between the chalk line and the membrane curb.
  - .5 From bottom to top, weld this cap sheet. Do not overheat the membrane or create burrs at the joints.
- .4 Application of the cap sheet for membrane recovery:

- .1 Clean the membrane with a mechanical brush and a blower.
- .2 Degranulate the membrane at least 150mm at the perimeter of the opening.
- .3 Apply a primer to the entire membrane.
- .4 Unroll the finishing membrane, align it, and wrap it from both ends.
- .5 Unroll the finishing membrane and torch it on the underlayment. Avoid burning the membrane or its frame.
- .6 Overlap the sheets at least 90mm on the sides and 150mm at the ends.
- .7 The joints of the finishing membrane must be offset by at least 300mm from those of the underlayment.
- .8 Maintain a distance of 300 mm between the joints of the underlayment and the cap sheet.
- .9 The finishing membrane must not show any swelling or wrinkling.

### **3.12 SEALING**

- .1 When encountering the membrane and metal fascia or other areas to be apparent, seal with the prescribed sealant and sprinkle loose colored granules of the same color as the membrane.
- .2 In hidden areas, the aluminum pigment sealant may be used.

### **3.13 FLASHING, METAL FASCIAS AND SHEET METAL**

- .1 Perform all sheet metal work carefully in accordance with the details, in clearly defined brackets and free of deformation or other deficiencies that may impair appearance in accordance with Section 07 62 00 - Sheet Metal Flashings and Trim.

### **3.14 EXECUTION OF SEALING IN VARIOUS DETAILS**

- .1 Install the waterproofing membranes to the various roofing details as indicated in the typical details shown in the drawings, as well as in the manufacturer's and / or AMCQ's manuals.

**END OF SECTION**

## **1 GENERAL**

### **1.01 SCOPE OF WORK**

- .1 Flashing for roofing.
- .2 Flashings and moldings at the perimeter of openings.
- .3 All other flashings and metal trims needed for a complete work.

### **1.02 REFERENCES**

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM A 167, Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
  - .2 ASTM A 240/A 240M, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
  - .3 ASTM A 606, Standard Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance.
  - .4 ASTM A 653/A 653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - .5 ASTM A 792/A 792M, Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
  - .6 ASTM B 32, Standard Specification for Solder Metal.
  - .7 ASTM B 370, Standard Specification for Copper Sheet and Strip for Building Construction.
  - .8 ASTM D 523, Standard Test Method for Specular Gloss.
  - .9 ASTM D 822, Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.
- .2 Canadian Standards Association (CSA International)
  - .1 CSA A123.3, Asphalt Saturated Organic Roofing Felt.
  - .2 CSA B111 1974(R2003), Wire Nails, Spikes and Staples.

### **1.03 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Client's general conditions.
- .2 Submit manufacturer's printed product literature for sheet metal flashing systems materials, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Drawings must show profiles, dimensions, types of materials and finishes, thickness of all elements used and must indicate where they will be installed.

- .4 Submit duplicate 300 mm x 300 mm samples of each type of sheet metal material, finishes and colours.

#### **1.04 COMPATIBILITY OF MATERIALS**

- .1 Materials must be protected from damaging chemical and electrolytic reactions.

#### **1.05 DELIVERY, STORAGE AND HANDLING**

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

### **2 PRODUCTS**

#### **2.01 SHEET METAL**

- .1 Prepainted enamelled steel sheet: 24 gauge (not less than 0.6 mm thick), unless otherwise indicated on the drawings, in the dimensions indicated on the plans.
  - .1 The thickness prescribed for the sheet applies to the raw metal.
  - .2 Allow two (2) colors to be chosen by the Departmental Representative from Viewest's full color range.
- .2 Galvanized steel sheet:
  - .1 Hot-dip galvanized steel, commercial grade, in accordance with ASTM A526, zinc-plated Z275, 24 gauge and above or as indicated on drawings.
- .3 Roofing Flashing:
  - .1 Flashing and fascia must be made to the prescribed profile with pre-painted enamelled steel sheet of at least 24 gauge thickness (unless otherwise indicated on the drawings) of the dimensions indicated on the plans
  - .2 Colors: One (1) color chosen by the Departmental Representative from the entire QC range.

#### **2.02 ACCESSORIES**

- .1 Fasteners: of same material as sheet metal, to CSA B111, flat head roofing nails of length and thickness suitable for application.
- .2 Wood screws: stainless steel, countersunk head, length required depending on material.
- .3 Bolts, nuts: stainless steel, size shown on drawings.
- .4 Sealants: in accordance with Section 07 92 00 - Joint Sealants.
- .5 Plastic putty: in accordance with CAN / CGSB-37.5.
- .6 Metal flashing underlay: as specified in Section 07 52 00 - Membrane Sealing.
- .7 Washers: the same material as the sheet or sheet metal used, 1 mm thick, supplied with

rubber gaskets.

- .8 Nailing tabs and staples: same material and same hardening as used sheet, minimum width of 100mm of 24 gauge.
- .9 Touch-up paint: as recommended by pre-finished materials manufacturer.

### **2.03 CLADDING**

- .1 After taking all necessary measures of the elements to be covered, perform the overlaps as indicated.
- .2 Machine parts of a single length, square, level and accurately to the intended dimensions so that they are free from deformation or other defects that could affect their appearance or effectiveness.

### **2.04 FABRICATION**

- .1 Fabricate metal flashings and other sheet metal work in accordance with indications on drawings, and with Canadian Roofing Contractors Association (CRCA) standards.
- .2 Form pieces in 2400 mm maximum lengths.
  - .1 Make allowance for expansion at joints.
- .3 Hem exposed edges on underside 12 mm.
  - .1 Mitre and seal corners with sealant.
- .4 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.
- .5 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.
- .6 Assembly Joints: "S" lock, filled with sealant during installation.

## **3 EXECUTION**

### **3.01 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: Comply with the manufacturer's written recommendations, including any available technical bulletins, instructions for handling, storage, and installation, and data sheet instructions.

### **3.02 INSTALLATION**

- .1 Install sheet metal work in accordance with details.
- .2 Use concealed fastenings except where approved by Departmental Representative before installation.
- .3 Install surface mounted reglets true and level, and caulk top of reglet with sealant at 300mm

maximum centres.

- .4 Close end joints and seal with sealant.
- .5 Make joints in direction of water flow and make watertight.
- .6 Caulk flashing at with sea.

### **3.03 SEALANTS**

- .1 Provide and install required sealants around structures in this section.
- .2 Apply sealant in accordance with Section 07 92 00 - Joint Sealants.

### **3.04 CLEANING**

- .1 Clean according to section 01 74 11 - Cleaning.
- .2 If finished surfaces are soiled as a result of the work in this section, contact the manufacturer of the affected area for cleaning directions.
- .3 Repair or replace finished surfaces that have been altered or otherwise damaged as a result of the work covered by this section
- .4 After completion of implementation and performance monitoring, remove surplus materials and equipment, waste, tools and equipment from the work site.
- .5 Leave work areas clean, free from grease, finger marks and stains.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED SECTIONS**

- .1 Sealants and caulking.
- .2 Paragraph for completing other sections with provisions regarding sealing or caulking of work.
- .3 When caulking work with sealant materials are shown in cross section or on details, it is understood that the joint(s) must sealed around entire perimeter and/or length of work to be sealed.

### **1.02 REFERENCES**

- .1 Canadian General Standards Board (CGSB)
  - .1 CGSB 19-GP-5M, Sealing Compound, One Component, Acrylic Base, Solvent Curing (Issue of 1976 reaffirmed, incorporating Amendment No. 1).
  - .2 CAN/CGSB-19.13, Sealing Compound, One-component, Elastomeric, Chemical Curing.
  - .3 CGSB 19-GP-14M, Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing (Reaffirmation of April 1976).
  - .4 CAN/CGSB-19.17, One-Component Acrylic Emulsion Base Sealing Compound.
  - .5 CAN/CGSB-19.24, Multi-component, Chemical Curing Sealing Compound.

### **1.03 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit required data sheets in accordance with Client's general conditions.
- .2 Manufacturer's data sheets to describe:
  - .1 Caulking compound.
  - .2 Primers.
  - .2 Sealing compound, each type, including compatibility when different sealants are in contact with each other.
- .3 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Submit 2 samples of each type of material and colour.
- .5 Cured samples of exposed sealants for each colour where required to match adjacent material.
- .6 Submit manufacturer's instructions in accordance with 01 33 00 - Submittal Procedures.

#### **1.04 QUALITY ASSURANCE/COMPETENCE**

- .1 Installer competence: company specialized in performance of work described in this section.
- .2 In addition to manufacturer specifications, ensure that sealing work meets requirements of Applicator Training Manual from the Sealant, Waterproofing & Restoration Institute (SWR Institute).
- .3 Workers on site will need to possess the required competence certificates (CCQ training and cards) to execute work in this section.
- .4 The Departmental representative can reject any worker that does not demonstrate the adequate competence or thoroughness for this type of work.

#### **1.05 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name. Store materials off ground and protect against water, humidity and frost.

#### **1.06 SITE CONDITIONS**

- .1 Ambient Conditions
  - .1 Proceed with installation of joint sealants only when:
    - .1 Ambient and substrate temperature conditions are within limits permitted by joint sealant manufacturer or are above 5 degrees Celsius;
    - .2 Joint substrates are dry.
- .2 Joint-Width Conditions
  - .1 Proceed with installation of joint sealants only where joint widths are more than those allowed by joint sealant manufacturer for applications indicated or more than 6 mm.
- .3 Joint-Substrate Conditions
  - .1 Proceed with installation of joint sealants only after contaminants capable of interfering with adhesion are removed from joint substrates.

### **2 PRODUCTS**

#### **2.01 SEALANT MATERIALS - GENERAL**



- .1 Sealant materials for each location must be of same type and from same manufacturer.
- .2 For sealant materials that must be used with primer, use primer recommended by manufacturer.
- .3 Unless otherwise specified, the colour of each sealant material for each location will be chosen by Departmental Representative from standard manufacturer colours.
- .4 The list of products below is not limitative and does not constitute a list of quantities or a list of single source products. The products are provided as a guide to establish the type, function, quality and finish of required items. All other acceptable product corresponding to same requirements may be approved by Departmental Representative.
- .5 The list is an exhaustive list of sealant materials, verify the application of these products according to instructions on drawings and article 2.4 *Sealant Materials - Location*. Also provide and install any product that is not on this list but is required to complete the work as intended in documents.

## 2.02 SEALANT MATERIALS – DESCRIPTION

- .1 Type 1: Sealant for peripheral joints around frames of steel doors and non-contacting aluminum exterior windows with waterproofing membranes:
  - .1 Single-component, high-performance, medium modulus silicone sealant;
  - .2 Classification according to ASTM-C920: Type S, Grade NS, Class 25, NT, M, A, and O (eg granite)
  - .3 Additional movement capacity of  $\pm 40\%$  compared to the original size of the joint.
  - .4 Color: at the discretion of the Departmental Representative.
  - .5 Manufacturer's warranty: 5 years;
  - .6 Such as DOWSIL™ CWS (Contractors Weatherproofing Sealant) or approved equivalent.
- .2 Type 2: Sealant for joints at the top of concrete block walls (under the existing concrete slab):
  - .1 Silicone sealant with low coefficient of resistance, single-component;
  - .2 Classification according to ASTM-C920: Type S, Grade NS, Class 50, T, NT, M, G, A and O
  - .3 Additional movement capacity of  $\pm 50\%$  compared to the original size of the joint.
  - .4 Color: at the discretion of the Departmental Representative.
  - .5 Manufacturer's warranty: 5 years;
  - .6 Such as DOWSIL™ CCS (Contractors Concrete Sealant) or approved equivalent.
- .3 Type 3: Sealant for interior joints on countertops, around sinks or washbasins, in personal care rooms (bathrooms, etc.) and all interior joints requiring mold resistance:
  - .1 Silicone sealant, single-component, mold resistant

- .2 Color chosen by the architect
  - .3 Manufacturer's warranty: 5 years
  - .4 Such as DOWSIL™ 786, or approved equivalent.
- .4 Type 4: High-resistance, single-component, neutral-curing sealant:
- .1 Color chosen by the architect
  - .2 Manufacturer's warranty: 5 years
  - .3 Such as DOWSIL™ 795 (Silicone Structural Sealant), or approved equivalent.

### **2.03 COMPRESSIBLE AND NON-COMPRESSIBLE PREFORMED BACKER RODS**

- .1 Backup strips must be compatible with appropriate sealant materials and be the type recommended by manufacturer.
- .2 Foam polyethylene, urethane, neoprene or vinyl elements.
  - .1 Closed-cell extruded foam backer rods.
  - .2 Oversized elements by 30 to 50%.
- .3 Neoprene or butyl rubber elements.
  - .1 Round and full backer rods, Shore A hardness of 70.
- .4 High density foam elements.
  - .1 Elements in extruded closed-cell PVC foam, extruded closed-cell polyethylene foam with Shore A hardness of 20 and with tensile strength of 140 to 200 kPa, in extruded polyolefin foam, density of 32 kg/m<sup>3</sup>, or neoprene, dimensions recommended by manufacturer.
- .5 Anticorrosion tape.
  - .1 Polyethylene tape that does not adhere to sealant materials.

### **2.04 SEALANT MATERIALS - LOCATION**

- .1 Perimeter of interior steel frames, as indicated and detailed (between new or existing steel frames and concrete or cast concrete blocks): Type 1 product.
- .2 Joints at the top of new non-load-bearing concrete block walls, interior, under cast-in-place concrete elements (existing concrete slab): Type 2 product.
- .3 Around sanitary fixtures (sinks): Product type 3 Around the new aluminum windows, on the inside, in contact with galvanized steel: Product type 1.
- .4 Joint in the shower area:
  - .1 Sealing joint between two (2) stainless steel sheets: product type 4.
  - .2 Sealant between the new steel frame (window) and the stainless steel sheet (inside shower): product type 4.
- .5 Around new aluminum windows, exterior side (contact between aluminum and enamelled

steel flashing): type 1 product.

- .6 Selaing joint between enamelled steel flashing and existing concrete wall: type 2 product.

## **2.05 JOINT CLEANER**

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

## **3 EXECUTION**

### **3.01 PROTECTION OF WORK**

- .1 Protect installed work performed by third parties against dirt or other forms of contamination.

### **3.02 SURFACE PREPARATION**

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

### **3.03 PREPARATION OF EXISTING SURFACES**

- .1 Remove each application of sealant materials to full depth.
- .2 Grind with diamond-grinding wheel stone, concrete block masonry, brick masonry, prefabricated concrete, concrete and other hard surfaces to remove traces of sealants and contaminants.
- .3 Do not change profile of joints without notifying Departmental Representative and only if width/depth ratios cannot be respected.

### **3.04 PRIMING**

- .1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.
- .2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately

prior to caulking.

### **3.05 BACKUP MATERIAL**

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

### **3.06 MIXING**

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

### **3.07 APPLICATION**

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

**END OF SECTION**

**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1        Section 04 22 00 – Concrete unit masonry
- .2        Section 07 92 00 - Joint Sealants;
- .3        Section 08 80 00 – Glazing;
- .4        Section 09 91 23 - Interior Painting.

**1.2                REFERENCES**

- .1        ASTM International
  - .1        ASTM A123 / A 123M-12, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - .2        ASTM A 653 / A 653M-06a, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - .3        ASTM A924M-94, Specification General Requirements for Steel Sheet, Metallic-Coated by Hot-Dip Process.
  - .4        ASTM E152-81a, Method for Fire Test of Door Assemblies.
- .2        Canadian General Standards Board (CGSB)
  - .1        CAN / CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.
  - .2        CGSB 41-GP-19Ma-84, Rigid Vinyl Extrusions for Windows and Doors.
- .3        Canadian Standards Association (CSA) / CSA Group
  - .1        CSA-G40.20-13 / G40.21-13, General requirements for rolled or welded structural quality steel / Structural quality steel.
  - .2        CSA W59-13 UP4, Welded steel construction (metal arc welding)
- .4        Canadian Steel Door Manufacturers Association (CSDMA)
  - .1        CSDMA, Recommended Specifications for Commercial Steel Doors and Frames, 2000.
  - .2        CSDMA, Selection and Usage Guide for Commercial Steel Doors, 1990.
- .5        National Fire Protection Association (NFPA)
  - .1        NFPA 80-99, Standard for Fire Doors and Fir Windows.
  - .2        NFPA 252-03, Standard Methods of Fire Tests of Door Assemblies.
- .6        Underwriters Laboratories of Canada (ULC)
  - .1        CAN / ULC-S70.1:2017, Standard for Thermal Insulation, Polystyrene Boards.
  - .2        CAN / ULC-S702-14, Standard for Mineral Fibre Thermal Insulation for Buildings.

- .3 CAN / ULC-S704.1:2017, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate, Boards, Faced
- .4 CAN4-S104-M80, Standard Method for Fire Test of Door Assemblies.
- .5 CAN / ULC-S101-14, Standard Methods of Fire Endurance Tests of Building Construction and Materials.
- .6 CAN / ULC-S105:2016, Standard Specification for Fire Door Frames Meeting the Performance Required by CAN/ULC-S104.

### **1.3 DESIGN REQUIREMENTS**

- .1 Frames installed in exterior walls must be designed so that the elements (doors and frames) can expand and contract freely when their surface is subjected to temperatures ranging from -35 degrees Celsius to 35 degrees Celsius.
- .2 The maximum deflection for bay closing elements under 1.2 kPa wind load must not exceed 1/175 of the span.
- .3 Fire Rated Doors and Frames: certified by a Standards Council of Canada accredited body, to CAN / ULC-S104, NFPA 252 and ASTM E152 standards for prescribed or indicated fire ratings, and bearing the certifying body's label.
- .4 Certified fire-stops must be provided for openings to be closed by fire rated elements. Products must be tested in accordance with CAN / ULC-S104, ASTM E152, NFPA 252 and be certified by a nationally recognized organization providing factory inspection services.
- .5 Notify the Departmental Representative prior to fabrication if the specified frames do not meet the fire resistance certification requirements because the model, detail, finishing hardware, glazing or any other reason.

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

- .1 Submit required documents and samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit required data sheets in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 The shop drawings must indicate each type of door proposed, the nature of the materials used, the thickness of the bare metal, the mortise joints, the reinforcing members, the location of anchors and exposed fastenings, the openings intended to receive glazing or louver, the hardware layout, the fire rating and the finishes.
  - .2 The shop drawings must indicate each type of frame proposed, the nature of the materials used, the thickness of the bare metal, the reinforcing pieces, the glazing beads, the location of the anchors and exposed fastenings and the types of finishes .
  - .3 The shop drawings must include a nomenclature of doors with markings and numbers corresponding to those used on the drawings and on the list of doors.
  - .4 Submit test results, technical data and installation instructions.
- .4 Submit required samples in accordance with Section 01 33 00 - Submittal Procedures.

- .5 Submit, as mock-up, a 300 mm x 300 mm corner for each type of frame proposed.
  - .1 The mock-up must show all assembly details, including a hinge cutout, glazing beads, a 300 mm long mullion connection and a pressure molding, with brackets.

## **1.5 TEMPORARY IDENTIFICATIONS**

- .1 Do not mark exposed faces of frames or doors with a felt pencil.

## **1.6 DELIVERY, STORAGE AND HANDLING**

- .1 Transport, store and handle materials and equipment in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Waste management and disposal
  - .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

## **1.7 WARRANTY**

- .1 Provide a written document, signed and issued to the owner stating that all steel doors and door frames are guaranteed against any material or labor defect for a period of 1 (one) year starting from date of work completion

## **Part 2 Products**

### **2.1 MATERIALS AND EQUIPMENT**

- .1 Hot-Dip Galvanized Steel Sheet: to ASTM A653M, zinc plated ZF75; minimum thickness of bare metal conforming to the relevant CSDMA standard, Table 1 - Thickness for Component Parts.
- .2 Extrusions and reinforcements: in steel conforming to CSA-G40.20 / G40.21, grade 44W, zinc-plated ZF75 according to ASTM A 653M.

### **2.2 DOOR CORES**

- .1 Honeycomb type core, with cells of not more than 24.5 mm, made of Kraft paper having a mass of not less than 36.3 kg per ream and a density of no less than 16.5 kg / m<sup>3</sup>, sanded to obtain the required thickness

### **2.3 ADHESIVES**

- .1 Honeycomb Cores and Steel Elements: Heat-resistant contact adhesive spray, based on neoprene rubber (polychloroprene) with resin filler incorporated, low viscosity, contact adhesive.

### **2.4 PRIMER**

- .1 Anti-rust touch-up coating, to CAN / CGSB-1.181.

### **2.5 PAINTING**

- .1 Steel doors and frames to be painted in accordance with Section 09 91 99 – Minor

Interior Painting. Weatherstrips are not to be painted. Finished surfaces must be free from scratches or other imperfections.

## **2.6 ACCESSORIES**

- .1 Accessories for doors and frames: meet the minimum requirements of the AMCCPA.
- .2 Shock absorbers for doors: rubber, insert type, gray colour.
  - .1 Provide three (3) shock absorbers on the jamb strike for single frames and two (2) dampers on the head of double frames.
- .3 U-shaped extrusions at top and bottom of doors: 1.6mm thick.
- .4 Glazing beads must be made from shaped extrusions at least 16 mm high; they must be properly fitted, headed at corners and fastened to frame members with countersunk oval headed screws.
- .5 Metal filler: according to the manufacturer's specifications.
- .6 Stiffening extrusions: hot-dip galvanized steel with a minimum coating weight of 0.4 kg / m<sup>2</sup>, to CAN3-G40.20-M81.
- .7 Sealant: see section 07 92 00 - Joint Sealants.
- .8 Glazing: see section 08 80 00 - Glazing.
- .9 Plan installation of glazing, as specified, and provide the necessary glazing beads.
  - .1 Glazing must be secured by means of removable steel glazing beads for use with glazing tape and putty and fastened with countersunk stainless steel tamperproof screws allowing dry glazing by simple pressure.

## **2.7 FABRICATION OF FRAMES - GENERAL**

- .1 Frames must be manufactured in accordance with CSDMA standards.
- .2 Frames must be manufactured to the maximum frontal dimensions and profiles shown.
- .3 Frames: 16 gauge, removable, 3 parts.
- .4 Frames must be cut, reinforced, drilled and threaded to receive shaped and mortised hardware and the necessary electronic equipment, using the jigs provided by the hardware supplier. Frames must be reinforced as needed to accommodate surface-mounted hardware.
  - .1 Frames must be engineered to receive the hinges and strike as specified for the mechanical frames.
  - .2 Hinge reinforcements must be protected by metal boxes when installed in concrete block walls.
- .5 The mortises must be protected by means of steel mortise covers.
- .6 Single door frames must be fitted with three dampers, and two-leaf door frames with two dampers installed on the top rail.



- .7 Manufacturer's identification plates must not be placed on frames and panels.
- .8 Fasteners must be concealed, unless otherwise specified.
- .9 Retouch frames with primer where zinc coating has been damaged during fabrication.

## **2.8 FRAME ANCHORING**

- .1 Appropriate devices to secure the frames to walls and floors must be provided and installed.
- .2 Wall anchors must be placed immediately above or below each hinge brace on the hinge side jamb, and directly opposite of the lock stile.
- .3 Jambs with a rabbet height equal to or less than 1520 mm must be fitted with 2 anchors; additional anchorage must be provided for each additional segment or segment portion of 760 mm.
- .4 Anchors that will be embedded in frames of bays made before the installation of door frames must be placed at most 150 mm from the top and bottom of each jamb, and then at a maximum center to center distance of 660 mm.

## **2.9 REMOVABLE FRAMES (3 PARTS) FOR DOORS**

- .1 Removable frames must be delivered disassembled.
- .2 Frames must be made of solidly interlocking members with mechanical joints, and must have satisfactory functional performance once assembled and installed in accordance with the requirements of the "Recommended Installation Guide for Steel Doors and Frames", published by the CSDMA.
- .3 Ground anchors must be securely fastened inside each jamb.

## **2.10 DOOR FABRICATION - GENERAL**

- .1 Doors must be flat, swinging and must have an opening for the installation of glazing or louvers, as indicated.
- .2 Steel interior doors must have a honeycomb core.
- .3 The longitudinal edges of the doors must be welded. Longitudinal joint must be made flush, filled with metal filler, and sanded to a smooth, even finish.
- .4 A 16 "U-shaped steel cap must be electrically welded at the top and bottom of the door every 152mm center to center.
- .5 Doors must be of special construction, tested and / or designed to be part of a fully functional assembly including a door, frame, packing and hardware, to ASTM E330.
- .6 Doors must be cut, reinforced and threaded to accommodate the mortised and shaped hardware and electronic equipment required.
- .7 Openings with a diameter of 12.7 mm or greater must be drilled at the factory, except for

those intended to accommodate mounting bolts and through bolts, which must be drilled in place at the time of installation of the hardware.

- .8 Doors must be reinforced where hardware is to be mounted. Inner doors shall be provided at the top and at the bottom with a recessed, spot welded extrusion.
- .9 Spot prime doors where zinc coating has been damaged during fabrication.
- .10 Do not place manufacturer identification plates on doors.

### **Part 3 Execution**

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

- .1 Compliance: Comply with manufacturer's written requirements, recommendations, and specifications, including any available technical bulletins, instructions for handling, storing, and installations, and data sheet instructions.

#### **3.2 INSTALLATION - GENERAL**

- .1 Install fire rated doors and racks bearing the appropriate certification label in accordance with NFPA 80, unless otherwise specified.
- .2 Install doors and frames in accordance with the CSDMA Installation Guide.

#### **3.3 INSTALLATION OF FRAMES**

- .1 Install elements plumb, square, level and at the appropriate height.
- .2 Fasten anchors to adjacent building elements.
- .3 Hold frames securely in position using braces until installation is complete. Install temporary bridging horizontally, at the thirds of the opening to keep width constant. Install a vertical shore under the top rail in the center of the bay when the width of the bay is greater than 1200 mm. Remove wooden spacers once the frames are in place.
- .4 Leave clearances necessary for bending to prevent live loads exerted by the building framing to be transmitted to the frames.
- .5 Caulk perimeter between frames and adjacent elements.

#### **3.4 INSTALLATION OF DOORS**

- .1 Install doors and hardware using the jigs provided, in accordance with the manufacturer's instructions and the requirements of Section 08 71 00 - Door Hardware.
- .2 Provide a uniform spacing between doors and jambs and between doors and the finished floor, as follows:
  - .1 hinge side: 1.0 mm;
  - .2 lock side and top rail: 1.5 mm;
  - .3 finished floor: 13 mm.

- .3 Adjust moving parts so that doors operate smoothly.

**3.5 EXECUTION OF TOUCH-UPS**

- .1 Spot-prime surfaces that were damaged during installation.
- .2 Cover the exposed surface of frame anchors and surfaces showing metal fill imperfections, then sand down to a smooth, even finish.

**3.6 INSTALLATION OF GLAZING**

- .1 Install glazing in accordance with Section 08 80 00 - Glazing.

**END OF SECTION**



**Partie 1      General**

**1.1            RELATED WORK**

- .1      Section 05 50 00 - Metal Fabrications
- .2      Section 06 10 00 - Rough Carpentry
- .3      Section 07 62 00 - Sheet Metal Flashing and Trim
- .4      Section 07 92 10 - Joint Sealants
- .5      Section 08 80 50 - Glazing

**1.2            REFERENCES**

- .1      Unless otherwise indicated, construct and install aluminum windows in accordance with the requirements of A3-B7 and C-5 of CSA-A440-M00.

**1.3            SAMPLES**

- .1      Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2      Shop drawings must clearly indicate the nature of the materials and show in close detail the jambs and sill and the elevations of the structure.
- .3      Submit color samples prior to fabrication and commissioning.

**1.4            SHOP DRAWINGS**

- .1      Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2      Shop drawings must clearly illustrate: the nature of the materials; the full-size details, in plan and in section, of the crosshead, uprights and support of each type of frame. Movement joints in the frames and mullions as well as the details provided at the head to absorb the movements of the frame. Glazed tiles with shims and interior and exterior trim. Elements such as caulks and seal bottoms, membranes, insulating caulk. Interaction between frames and wooden elements provided by others. Exposed finishes. Dimensions of the structure, the details of anchors and fixing devices. Location of the Manufacturer's nameplate. Exposed and hidden hardware. Junctions of composite windows, separated by mullions or crosspieces.

## 1.5 TEST REPORTS

- .1 Submit a recent report from an independent and approved testing laboratory certifying that the windows meet the requirements of A3-B7 and C-5 of CSA-A440-M00:
  - .1 Wind Tightness - Category A-3.
  - .2 Watertightness - Category B-7 (Static Differential Pressure (Pa) 700. Wind live load resistance - Category C-5 (static differential pressure across the window (kPa) +2.5).

## 1.6 TESTS IN SITU

- .1 Water penetration resistance tests shall be conducted in accordance with ASTM Standard Test Procedure E-1105 - Standard Test Method for Field Determination of Installed Exterior Windows, Curtain Walls and Doors by Uniform or Cyclic Static Air Pressure Difference.
- .2 Required Performance Level: Category B-5

## 1.7 MAINTENANCE DATA

- .1 Provide instructions for cleaning and maintenance of aluminum windows.

## 1.8 GUARANTEE

- .1 Provide a written document, signed and issued in the name of the Owner, stating that aluminum windows are warranted against defects and leaks under normal conditions of use for a period of five (5) years and twenty years. (20) years for exterior finishes and five (5) years for interior finishes from the date of completion.

## 1.9 EQUIVALENCES

- .1 A proposition of equivalence to the type of window prescribed in this section and therefore to the elements and materials that compose it must be made in writing according to the following procedures so that there may be, if necessary, possibility of substitution.
- .2 Bidders must submit their proposal in writing to the Engineer's Office no later than seven (7) business days prior to the bid closing date with the required samples. **ANY EQUIVALENCE PROPOSAL RECEIVED AFTER THE OPENING OF THE SUBMISSIONS WILL BE SYSTEMATICALLY REFUSED.**
- .3 Proposals must include the following information:
  - .1 The reasons for the proposal.
  - .2 Proof of equivalence in each particular case.

- .3 The main criteria on which the proposal will be judged are: compliance with aesthetic criteria (the guillotine-style model) and technical performance, achievement or exceeding of required performance levels, quality of materials, nature of finishes, availability OF replacement parts and materials, maintenance problems and procedures, warranties, experience and skill of Installers and Manufacturers.
- .4 The Architect alone will decide whether or not there is equivalence allowing substitution of elements and materials prescribed in this section.
- .5 The Architect will issue an addendum to all bidders and interested parties prior to the opening of bids to confirm products deemed equivalent.

## **Partie 2 Products**

### **2.1 TYPE OF WINDOWS**

- .1 Interior opening casement windows with thermal break aluminum frame:
  - .1 All windows must be from the same Manufacturer.
- .2 Acceptable product: model such as Alumico Series 68 STH or approved equivalent.
- .3 Overall assembly of the window frame to have a depth of 114 mm. Refer to drawings and table of windows for location.

### **2.2 TYPE AND CLASSIFICATION OF WINDOWS**

- .1 All windows must be from the same Manufacturer.
- .2 Class and Category of Performance: to AAMA / WDMA / CSA 101 / IS2 / A440.
  - .1 Types of products:
    - .1 SI- Casement windows (opening to the interior)
  - .2 Main designation
    - .1 Performance Class: AW
    - .2 Performance Class: 25
  - .3 Secondary designation
    - .1 Positive Design Pressure: 1200 Pa.
    - .2 Negative Design Pressure: 1200 Pa.
    - .3 Water infiltration resistance test pressure: 330 Pa.
    - .4 Permissible air infiltration and exfiltration level in Canada: A2.
- .3 Control of condensation

### **2.3 MATERIALS AND HARDWARE PARTS**

- .1 Window frames: the exterior and interior aluminum profiles of the frame must be crimped with a double thermal barrier consisting of two strips of 6/6 reinforced nylon polyamide extruded mechanically inside and outside the frame aluminum extrusion.
- .2 Shutters: opening to the interior 68 mm deep.
- .3 Glazing: self-sealing pressure for square shutter for 25mm sealed unit such as NC5132 or approved equivalent.
- .4 Openable shutter opening mechanism: reversible window-catch with multipoint strike such as Alumico G01024 series or approved equivalent.
- .5 Hinges: aluminum for flaps with adjustment screws such as model MA7679 from Alumico or equivalent.
- .6 Weatherstripping: Three (3) EPDM extruded weatherstrips by extruded grooves forming part of the section.
- .7 All aluminum elements must be assembled with non-corrosive screws and screw caps, if exposed.
- .8 Glazing: as indicated in Section 08 80 50.
- .9 Low pressure / low expansion foam in accordance with AAMA 540 and GreenGuard approved such as Lepage Quad Foam or equivalent approved by the Architect.
- .10 Self-adhesive membrane such as Henry Baker's Blueskin SA or approved equivalent.

## **2.4 WINDOW FINISH**

- .1 Exterior: Powder applied to AAMA 2605 - 20 year warranty (Duranar)
  - .1 Color: At the discretion of the Departmental Representative
- .2 Interior: Natural anodized no. 100, to AAM12C22A31 standard.
  - .1 Color: natural anodized
- .2 Fit the panels as shown in the drawings. The sheet must be in one piece without joints.

## **2.5 CONSTRUCTION**

1. Construct insulated aluminum windows as indicated and in accordance with the requirements of CSA-A440-M00.
2. Build windows precisely and squarely, with a maximum tolerance of 1.5 mm, plus or minus for windows measuring 1800 mm diagonally, and 3 mm, plus or minus, for windows measuring more than 1,800 mm.



3. The arched parts should be turned without any visible stress to the aluminum.
4. Specified frontal dimensions are the maximum permitted dimensions.
5. Brace frames to maintain rigidity and maintain angles during transportation and installation.
6. Clips and steel reinforcements must be coated with a factory-applied primer coat in accordance with CAN / CGSB-1.40.

## **2.6 PROTECTIVE COATING**

- .1 Isolate aluminum elements from the following elements with a protective coating.
  - .1 Elements of different metals, except small elements of stainless steel, zinc or tin bronze.
  - .2 Concrete, mortar and masonry elements.
  - .3 Wood elements.

## **2.7 GLAZING**

- .1 Install window glazing in accordance with CAN/ CSA-A440 and as indicated in Section 08 80 50 - Glazing.

## **2.8 AIR AND VAPOUR BARRIERS**

- .1 Provide window frames with factory installed air and vapour barrier materials and ensure continuous seal with building air and vapour barriers in the following way.
  - .1 Materials: Identical or compatible with the building's air and vapour barrier materials, and designed to provide the building's outer envelope with the necessary degrees of airtightness and vapour diffusion.
  - .2 Material width: sufficient to provide the building's air and vapour barriers with the necessary degrees of airtightness and vapour diffusion, from the building's interior.

## **2.9 REPLACEMENT PARTS**

- .1 Provide ten (10) replacement parts of all types and models of hardware for windows, handles, hinges, glazing beads, weatherstripping.

## **Partie 3 Execution**

### **3.1 INSTALLATION OF WINDOWS**

- .1 Install windows in accordance with CAN / CSA-A440.

- .2 Elements of different colors or shades must be arranged so as not to create a violent contrast.
- .3 Install wooden ground as indicated on drawings.
- .4 Fold and install sill overlays and intermediate structural mullions. Apply 2400 mm seams by bending the end of the sheet metal to 13 mm. Seal with butyl tape.
- .5 Raise the spandrel plate to 100 mm on jambs and nail. At the structural mullions, go up behind the vertical cover plate.
- .6 Install windows and hardware level, square and plumb in accordance with Manufacturer's written instructions.
- .7 Adjust hardware parts so shutters work.

### **3.2 CAULKING**

- .1 Caulk joints between windows and supports with sealant. Weather basr and joint covers for expansion joints must be embedded in a caulking compound. Caulk the joint between the rising part of the support and the frame of the window.
- .2 Apply sealant in accordance with Section 07 92 00 - Joint Sealants. Conceal the sealant inside the window, except where the Architect allows it to be exposed.
- .3 Before installing caulking compounds, lay insulation materials in a continuous manner in all joints.
- .4 Caulk joints between frame members and other dormant parts with sealant to provide outdoor weathertightness and interior air and vapor tightness.
- .5 Caulk joints between windows and window sills with sealant.
- .6 The caulking must be done with great care and in a continuous way so that there is no infiltration at the perimeter of the windows. All necessary corrections, even after the completion of the work, will have to be performed at the expense of the Contractor.
- .7 Fill with mineral wool, the spaces left around the outer window frames after caulking the outer perimeter with a sealer, all in accordance with the requirements of Section 07 92 00.

END OF SECTION

**Part 1 General**

**1.1 RELATED REQUIREMENTS**

- .1 Section 07 92 00 - Joint Sealants.
- .2 Section 08 11 00 - Steel Doors and Frames.
- .3 Section 08 50 00 - Windows

**1.2 REFERENCES**

- .1 Canadian General Standards Board (CGSB)
  - .1 CAN / CGSB-12.1-2017, Safety Glazing.
  - .2 CAN / CGSB-12.2-M91, Flat, Clear Sheet Glass.
  - .3 CAN / CGSB-12.3-M91, Flat, Clear Float Glass.
  - .4 CAN / CGSB 19.18-M87, Sealing Compound, One Component, Silicone Base, Solvent Curing.
- .2 ASTM International
  - .1 ASTM C 542-05, Standard Specification for Lock-Strip Gaskets.
  - .2 ASTM D 1003-07e1, Standard Test Method for Haze and Luminous Transmittance of Plastics.
  - .3 ASTM D 1929-96 (R2001) e1, Standard Test Method for Determination Ignition Temperature of Plastics.
  - .4 ASTM D 2240-05, Standard Test Method for Rubber Property - Durometer Hardness.
  - .5 ASTM E 84-10, Standard Test Method for Surface Burning Characteristics of Building Materials.
  - .6 ASTM E119-15, Standard Test Methods for Building Construction and Materials Testing
  - .7 ASTM E 330-02, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
  - .8 ASTM F 1233-08, Standard Test Method for Safety Glazing Materials and Systems.
- .3 Environmental Choice Program (ECP)
  - .1 DCC-045-95 (R2005), Sealants and Caulking.

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit required documents and samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Data Sheets
  - .1 Submit data sheets and the manufacturer's instructions and documentation for glazing, sealants and glazing accessories. Data sheets must indicate product characteristics, performance criteria, size, limitations and finish.
- .3 Certificates: Submit documents signed by the manufacturer, certifying that the products,

materials and equipment comply with physical properties and performance criteria requirements.

- .4 Test Reports: Submit test reports certifying that products, materials and equipment meet physical properties and performance requirements.

#### **1.4 CLOSEOUT SUBMITTALS**

- .1 Submit required documents / elements in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: provide instructions for the use and maintenance of glazing, to be incorporated into the O & M manual.

#### **1.5 QUALITY ASSURANCE**

- .1 Certificates: submit documents signed by the manufacturer, certifying that the products, materials and equipment comply with the physical properties and performance criteria.

#### **1.6 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and the manufacturer's written instructions.
- .2 Delivery and acceptance: deliver materials and equipment to work site in their original packaging, which must bear the name and address of the manufacturer.
- .3 Storage and handling
  - .1 Store materials, components, and equipment off of ground, in a dry, clean, well ventilated, indoor location, in accordance with the manufacturer's recommendation.
  - .2 Store glazings to protect them from marks and scratches.
  - .3 Replace damaged or defective materials and equipment with new materials and equipment.

#### **1.7 DESIGN REQUIREMENTS**

- .1 Maximum inflection of glazing must not exceed 1/200 of bending strength of the glass, and this deformation must not in any way alter the physical properties of glass materials.
- .2 Dimensions of glazing must be such that they withstand dead loads, live loads due to wind and pressure and suction forces acting perpendicularly to the glazing plane, to a nominal pressure compliant with ASTM E330.
- .3 Comply with the requirements for glazing and glass materials to ensure the continuity of the air and water vapor barrier system of the building envelope.
  - .1 The inner pane of multiple sealed glazings must ensure the continuity of the air and water vapor barrier system.

#### **1.8 WARRANTY**

- .1 Provide a written document, signed and issued to the owner stating that all glazing prescribed in this section are guaranteed against any defect that may impair vision, and

this for a period of 10 (ten) years starting from date of the provisional acceptance inspection.

## **1.9 AMBIANT CONDITIONS**

- .1 Glazing sealants must comply with winter performance requirements.

## **Part 2 PRODUCTS**

### **2.1 MATERIALS AND EQUIPMENT**

- .1 Polycarbonate panel: extruded as a double-walled sheet with honeycomb structure.
  - .1 Thickness: 20mm
  - .2 Dimension: as indicated on the plans.
- .2 Insulating glass (tower): according to the CAN / CGSB-12.8 standard, with two (2) windows, 26.52mm overall thickness:
  - .1 Glass thickness: 2x3mm thick laminated interior glass with a 1.52mm PVB to CAN / CGBC-12.1-M tempered 6mm outer glass. Clear color (transparent)
  - .2 Thickness of the air space: 13 mm with low thermal conductivity interlayer in black color.
  - .3 Inert air space: Argon gas.
- .3 Sealant: sealing compound, one-component, silicone base, solvent curing, to CAN/CGSB-19.18-M87, color similar to frame.

### **2.2 ACCESSORIES**

- .1 Setting blocks: Neoprene, with 80 to 90 Shore A durometer hardness to ASTM D2240, width appropriate for glass thickness, to suit glazing method, weight of glass panel and surface area.
- .2 Spacer shims: Neoprene, 50 to 60 Shore A durometer hardness to ASTM D2240, self-adhesive on one face, 75 mm long x half the height of glazing beads x thickness to suit application.
- .3 Preformed Glazing Adhesive Tapes: Premixed butyl compound with integrated spacer, resilient and tubular, with Shore A hardness of 10 to 15, durometer tested to ASTM D2240, coiled on backing paper, 3mm x 10mm. , black colour.
- .4 Sealer and cleaning products: according to glass manufacturer's specifications.

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Verification of conditions: Ensure that conditions of surfaces / substrates previously implemented under other sections or contracts are acceptable for installation according to the manufacturer's installation instructions, before proceeding with work.
  - .1 Verify that openings for glazing are correctly sized and within tolerance.
  - .2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.
  - .3 Visually inspect surfaces / substrates in the presence of the Departmental Representative.
  - .4 Notify the Departmental Representative of any unacceptable conditions immediately upon discovery.
  - .5 Begin installation work only after unacceptable conditions have been corrected and written approval from the Departmental Representative has been received.

**3.2 PREPARATION**

- .1 Clean contact surfaces with solvent and wipe dry.
- .2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- .3 Prime surfaces scheduled to receive sealant.

**3.3 GENERALITIES**

- .1 Glass must be cut with precision so that appropriate and necessary clearance for installation can be prepared. The glazing beads of the openings to be fitted with glass must be fixed in place with proper alignment and provide a good fit for glazing.
- .2 Clamp marks from tempering must be affixed to concealed surfaces. Exposed marks will not be accepted.
- .3 Installation of glazing must be rigid; it must prevent any contact between glass and metal. Glazing splines must be flush with the face of glazing bead. Glazing beads must be installed to be removable and to allow future glass replacement.
- .4 Each glass sheet must be prominently marked with a removable label, issued by the manufacturer, with the manufacturer's name and the type and quality of the glass. Such labels can be removed only with the written permission of the Departmental Representative.
- .5 Remove protective coatings, clean contact surfaces with solvent and dry.
- .6 Do not cut or grind tempered, fireproof, heat treated or coated glass.

### **3.4 EXTERIOR GLAZING - MIXED ASSEMBLIES (ADHESIVE TAPE / SEALANT)**

- .1 Perform work in accordance with GANA Glazing Manual specifications and GANA Laminated Glazing Reference Manual specifications for glazing assembly methods.
- .2 Cut adhesive strips to the appropriate length and press them against the permanent glazing beads, so that they extend up to 6 mm above sight line. Seal the corners by abutting the strips and covering them with a sealant.
- .3 Shape a bead of sealant at the base of the glazing, at the meeting point of the permanent glazing beads and the frame, so as to seal the air and water vapor between the frame and the glass on the perimeter of the glazing.
- .4 Place setting blocks at intervals corresponding to one third the width of glazing so that the end blocks are at most 150 mm from the corners of the latter.
- .5 Rest glazing on setting blocks and push against tape and shaped sealant bead at the base of the glazing with sufficient pressure for full contact on entire perimeter of unit.
- .6 Install removable glazing beads, with peripheral wedges between them and the glazing, at 6 mm below sight line.
- .7 Fill void between glazing and the glazing beads with sealant to a depth equal to the glazing channel, but no more than 9mm below sight line.
- .8 Shape a bead of uniform sealant at the top of the glazing, along the gap between the glazing and the glazing beads, and flush with sight line. Smooth the surface of the sealing bead with a cloth or a suitable tool.

### **3.5 CLEANING**

- .1 Progress cleaning: carry out cleaning in accordance with Section 01 74 00 - Cleaning.
- .2 Remove traces of primer, caulking. Remove glazing materials from finish surfaces.
- .3 Remove labels after work is complete.
- .4 Clean glass using approved non-abrasive cleaner in accordance with manufacturer's instructions.
- .5 Any glass scratched, broken or damaged in any way whatsoever must be replaced without delay at no additional cost to the Departmental Representative.
- .6 Waste Management: sort waste for recycling in accordance with Section 01 74 21 - Construction / Demolition Waste Management and Disposal.
  - .1 Remove bins and recycling bins from site and dispose of materials at appropriate facilities.

### **3.6 PROTECTION**

- .1 Protect installed equipment and elements from any damage during work.
- .2 Repair damage caused by glazing work to adjacent materials and equipment.

**END OF SECTION**





**Part 1 General**

**1.1 RELATED REQUIREMENTS**

- .1 Section 06 10 00 Carpentry;
- .2 Section 07 92 00 - Joint Sealants;
- .3 Section 09 22 16 – Non-structural metal framing
- .4 Section 09 91 23 - Interior Painting.

**1.2 REFERENCES**

- .1 ASTM International
  - .1 ASTM C473-12, Standard Test Methods for Physical Testing of Gypsum Panel Products.
  - .2 ASTM C 475 / C475M-12, Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
  - .3 ASTM C 840-11, Standard Specification for Application and Finishing of Gypsum Board.
  - .4 ASTM C 1002-07, Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
  - .5 ASTM C 1280-07, Standard Specification for Application of Gypsum Sheathing.
  - .6 ASTM C1396 / C1396M-11, Standard Specification for Gypsum Board.
- .2 Underwriters Laboratories of Canada (ULC)
  - .7 CAN / ULC-S102-10, Standard Test Method - Superficial Burning Characteristics of Construction Materials and Assemblies.
- .3 CSA Group
  - .8 CAN / CSA-A82.27-M91 Gypsum Board.
  - .9 CSA A82.30-M1980 Interior Furring, Lathing, and Gypsum Plastering.

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Data Sheets
  - .1 Submit required data sheets and manufacturer's instructions and documentation for gypsum board assemblies. Data sheets must indicate product characteristics, performance criteria, size, limitations and finish.

.2 Samples

- .2 The samples will be given to the Contractor, and must be incorporated into the work.
- .3 Submit two (2) samples of corner reinforcements and casing beads 300 mm in length.

**1.4 TRANSPORTATION, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with the manufacturer's written instructions.
- .2 Delivery and acceptance: deliver materials and equipment to work site in their original packaging, which must bear the name and address of the manufacturer.
- .3 Storage and Handling
  - .1 Store gypsum board assemblies dry, in a clean, dry, well-ventilated area as recommended by the manufacturer.
  - .2 Store gypsum board assemblies so as to protect them from marks and scratches.
  - .3 Protect gypsum boards against bad weather, other materials and potential damage from other construction work and activities.
  - .4 Handle gypsum boards in a manner that does not damage surface or perimeter.
  - .5 Replace defective or damaged materials and equipment with new materials and equipment.

**1.5 AMBIENT CONDITIONS**

- .1 Maintain an ambient air temperature of least 10 degrees Celsius and no more than 21 degrees Celsius for 48 hours prior to laying and finishing gypsum boards, during laying and finishing, and for at least 48 hours after joint completion.
- .2 Install gypsum boards finish joints on dry, non-frosted surfaces.
- .3 Provide good ventilation in areas of the building lined with gypsum boards so as to remove excessive moisture that could prevent drying of joint products immediately after application.

**Part 2 Products**

**2.1 MATERIALS AND EQUIPMENT**

- .1 Gypsum board: compliant with ASTM C1396 / C1396M, standard, thickness as indicated, 1200 mm wide and maximum useful working length, with squared edges at ends and bevelled edges at sides.
- .2 Screw: compliant with ASTM C1002, Type S for gypsum board installation on steel studs and wall plates. The screws must be long enough to allow a minimum insertion of 10 mm into the support.
- .3 Casing beads, corner reinforcements, control joints and edges: compliant with ASTM C1047, hot-dip galvanized metal, 0.5 mm thick, perforated flanges, one piece.
- .4 Sealant: in accordance with Section 07 92 00 - Joint Sealants.

- .5 Joint compound: to ASTM C475, asbestos free.
- .6 Joint tape: specially treated Kraft paper tape with tiny perforations

### **Part 3 Execution**

#### **3.1 EXAMINATION**

- .1 Verification of conditions: prior to installation of gypsum boards, ensure condition of surfaces / substrates previously installed under other sections or contracts is acceptable and allow work to proceed in accordance with the manufacturer's written instructions.
  - .1 Visually inspect surfaces / substrates in the presence of the Departmental Representative.
  - .2 Notify the Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Start installation work only after correcting unacceptable conditions and receiving the written approval of the Departmental Representative.

#### **3.2 ASSEMBLY**

- .1 Install and finish gypsum board assemblies in accordance with ASTM C840, unless otherwise specified.
- .2 Install assemblies in accordance with ASTM C1280.
- .3 Install elements level, allowable gap 1: 1200.
- .4 Frame openings housing inspection panels, lighting fixtures, diffusers, grilles, etc., with extrusions.
- .5 Install wall furring to secure gypsum board in accordance with ASTM C840, unless otherwise specified.
- .6 Install extrusions around building openings and around built-in equipment, signs, etc. Consult with equipment suppliers regarding the clearances required.

#### **3.3 LAYING**

- .1 Do not install gypsum board until subframes, anchors, shims, acoustic insulation materials and electrical and mechanical installations have been approved.
- .2 Lay boards vertically or horizontally, in the direction that will provide the least amount of joints.
- .3 Fasten gypsum board layer to metal framing with screw anchors.
- .4 Space screws on board edges by 200 mm center-to-center, and 300mm center-to-center on the board faces. Screws must be driven by means of an electric gun, with the head slightly below the surface of the board.
- .5 Install boards with the facing side to the exterior.
- .6 Do not install damaged or damp gypsum boards.
- .7 Place butt joints on support members. Offset vertical joints to different studs on each side of the wall.

### **3.4 INSTALLATION**

- .1 Install accessories square, plumb, level, and fastened securely on the appropriate plane. Use full length pieces where possible. Ensure joints are tight, aligned and securely fastened. Cut the miter corner joints and adjust them perfectly, leaving no rough or irregular edges. Fasten elements at 150 mm center-to-center with contact glue applied over entire length.
- .2 Install casing beads on perimeter of suspended ceilings.
- .3 Install casing beads at junction of gypsum boards and surfaces without joint covers, and at various locations as indicated. Seal joints with a sealant.
- .4 Make control joints square and true to line.
- .5 Install inspection hatches for electrical and mechanical equipment as specified in the appropriate sections.
  - .1 Fasten subframes securely to furrings or structural members.
- .6 Finish joints between boards and in re-entrant corners with: joint compound, tape and tape coating. Apply these products according to the manufacturer's recommendations and smooth by slimming everything to level with surface finish of the boards.
- .7 Degree of finishing 4: bed tape laid on joints and inside corners in joint compound and apply three separate layers of compound over the joints, corners and heads of fasteners and other accessories used. Surfaces must be smooth and free from tool marks and dents.
- .8 Cover corner moldings, control joints and trims if necessary, with two coats of joint compound and one coat of tape coating smoothed and thinned to level with board surface finish.
- .9 Fill depressions left by screw heads with joint compound and tape to obtain a smooth surface flush with adjacent gypsum surfaces, so that these depressions are invisible once finishing is complete.
- .10 Lightly sand irregular ends and other imperfections. Avoid sanding adjacent surfaces.
- .11 Upon completion of installation, the structure must be smooth, level or plumb, free from wrinkling and other defects, and ready to be finished with a finish plaster.

### **3.5 CLEANING**

- .1 Progress cleaning: carry out cleaning in accordance with Section 01 74 00 - Cleaning.
- .2 Leave site clean at the end of each work day.
- .3 Final Cleaning: dispose of surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .4 Waste Management: sort waste for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
- .5 Remove bins and recycling bins from site and dispose of materials at appropriate facilities.

**3.6 PROTECTION**

- .1 Protect installed equipment and elements from any damage during work.
- .2 Repair damage caused by gypsum board installation to adjacent materials and equipment.

**END OF SECTION**



## **1 GENERAL**

### **1.01 RELATED SECTIONS**

- .1 Section 06 10 00 –Carpentry
- .2 Section 07 21 16 – Blanket Insulation
- .3 Section 07 52 00 – Modified bituminous membrane roofing
- .4 Section 07 92 00 – Joint Sealants
- .5 Section 09 21 16 – Gypsum Board Assemblies

### **1.02 REFERENCES**

- .1 American Society for Testing and Materials (ASTM).
  - .1 ASTM C645-08A, Standard Specification for Non-structural Steel Framing Members.
  - .2 ASTM C754-07, Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
  - .3 ASTM A568/A568M-07a - Standard Specification for Steel, Sheet, Carbon, Structural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for.
  - .4 ASTM A525-94, Specification for General Requirements for Steel Sheet, Zinc-coated (Galvanised) by the Hot-Dip Process
- .2 Canadian Standards Association (CSA Group)
  - .1 CSA A123.3-05, Asphalt Saturated Organic Roofing Felt.
  - .2 CAN/CSA S136-07, North American Specification for the Design of Cold-Formed Steel Structural.

### **1.03 QUALITY ASSURANCE**

- .1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

### **1.04 WASTE MANAGEMENT AND DISPOSAL**

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Collect and separate for disposal paper, plastic, polystyrene or corrugated cardboard packaging material for recycling in accordance with Waste Management Plan.
- .3 Divert unused metal materials from landfill to metal recycling facility approved by the ministry representative.

- .4 Divert unused gypsum materials from landfill to recycling reuse composting facility approved by the ministry representative.

## 1.05 CALCULATION CRITERIA

- .1 Although thicknesses are mentioned, all wall elements shall be designed to withstand pressures for a uniform lateral load of 240 Pa with a maximum deflection of L/360.
- .2 The dimensions and thickness of the shapes shall be such as to obtain a maximum deflection of L/720 for brick walls and L/360 for other walls, for a wind load of 1 KPa for once in 30 years .

## 2 PRODUCTS

### 2.01 MATERIALS

- .1 Non-load bearing channel stud framing: stud size to ASTM C 645, hot dipped galvanized steel sheet, for screw attachment of gypsum board and equipped with knock-out service holes at 460 mm centres for the passage of service pipes; dimensions and spacing of posts as indicated.
  - .1 Exterior walls : 20 gauge
  - .2 Interior partitions (ceilings) : 25 gauge
- .2 Floor and ceiling tracks: to ASTM C 645, in widths to suit stud sizes, 32 mm flange height.
  - .1 The tracks will be the same gauge as the studs used
- .3 U shaped metal channel stiffener: 13 mm x 38mm size, 1.2 mm thick cold rolled steel, coated with rust inhibitive coating.
- .4 Sealant: in accordance with Section 07 92 00 - Joint Sealants.
- .5 Insulating strip: polyethylene foam strip with open and closed cells, 3 mm thick for interior partitions x width and length.
- .6 Metal fasteners for insulating or thermal insulation wool mats: galvanized steel plates measuring 64 x 304 mm with precut threaded folding rods.
- .7 Metallic furring (U-profiles, suspension rods, fixing wires, inserts and anchors), galvanized.
- .8 "Ω" type furring: Zinc-coated sheet steel, Z275 compliant with ASTM A526 / A526M, allowing screw fixing of various panels, gauge 26 for gypsum ceilings.

## 3 EXECUTION

### 3.01 ERECTION

- .1 Align partition tracks at floor and ceiling and secure at indicated spacing.
- .2 Install a water repellent membrane under the partition floor tracks resting on floor slabs.
- .3 Place studs vertically, space as indicated on drawings and not more than 50 mm from abutting walls, and at each side of openings and corners. Position and fasten studs in tracks at floor and



ceiling. Cross brace studs as required to provide rigid installation of any partition higher than 2400 mm by means of metal stiffeners every 1200 mm in height according to the manufacturer's instructions.

- .4 Erect metal studding to tolerance of 1:1000.
- .5 Attach studs to bottom and top track using screws.
  1. Vertical posts must be attached to both sides of the top and bottom track.
- .6 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.
- .7 Co-ordinate erection of studs with installation of door/window frames and special supports or anchorage for work specified in other Sections.
- .8 Provide two studs extending from floor to ceiling at each side of openings wider than stud centres specified. Secure studs together, 50 mm apart using column clips or other approved means of fastening placed alongside frame anchor clips.
- .9 Erect track at head of door/window openings and sills of sidelight/window openings to accommodate intermediate studs. Secure track to studs at each end, in accordance with manufacturer's instructions. Install intermediate studs above and below openings in same manner and spacing as wall studs.
- .10 Install frames around all four sides of building openings, built-in hardware, cabinets and access panels. Extend the frames. Check required clearances from equipment suppliers.
- .11 Secure 40 mm studs or furring sections between main posts to allow fixing of sanitary fixtures and accessories such as washbasins, toilets, bathroom accessories and other items, including grab bars and towel rails, to steel post framed partitions.
- .12 Install steel studs or furring channel between studs for attaching electrical and other boxes.
- .13 Extend partitions to ceiling height except where noted otherwise on drawings.
- .14 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs.
  - .1 Use 50 mm leg ceiling tracks. Use double track slip joint as indicated.
- .15 Install continuous insulating strips to isolate studs from uninsulated surfaces.
- .16 Install two continuous beads of sealant for sound insulation below studs and tracks at the perimeter of soundproofing partitions.

### **3.03 CLEANING**

- .1 Upon completion remove surplus materials, rubbish, tools and barriers used to protect the equipment.

END OF SECTION



## **1 GENERAL**

### **1.01 REFERENCES**

- .1 Section 03 45 00.01 – Concrete Repairs
- .2 Section 05 50 00 – Metal fabrications
- .3 Section 06 10 00- Carpentry

### **1.02 REFERENCES**

- .1 American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)
  - .1 ANSI A108.1-99, Specification for the Installation of Ceramic Tile (Includes ANSI A108.1A-C, 108.4-.13, A118.1-.10, ANSI A136.1).
  - .2 CTI A118.3-92, Specification for Chemical Resistant, Water Cleanable Tile Setting and Grouting Epoxy and Water Cleanable Tile Setting Epoxy Adhesive (included in ANSI A108.1).
  - .3 CTI A118.4-92, Specification for Latex Cement Mortar (included in ANSI A108.1).
  - .4 CTI A118.5-92, Specification for Chemical Resistant Furan Resin Mortars and Grouts for Tile Installation (included in ANSI A108.1).
  - .5 CTI A118.6-92, Specification for Ceramic Tile Grouts (included in ANSI A108.1).
- .2 American Society for Testing and Materials International (ASTM)
  - .1 ASTM C 144-04, Specification for Aggregate for Masonry Mortar.
  - .2 ASTM C 207-06, Specification for Hydrated Lime for Masonry Purposes.
  - .3 ASTM C 979-05, Specification for Pigments for Integrally Coloured Concrete.
- .3 Canadian General Standard Board (CGSB)
  - .1 CAN/CGSB-75.1-M88, Tile, Ceramic
  - .2 CAN/CGSB-25.20-95, Surface Sealer fo Floors.

### **1.03 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide product data and samples in accordance with Section 01 33 00 - Submittal Procedures.

#### **1.04 QUALITY ASSURANCE**

- .1 Quality Assurance Submittals
  - .1 Manufacturer's Instructions: manufacturer's installation instructions.
  - .2 Manufacturer's Field Reports: manufacturer's field reports specified.

#### **1.05 DELIVERY, STORAGE AND HANDLING**

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

#### **1.06 AMBIENT CONDITIONS**

- .1 Maintain air temperature and structural base temperature at ceramic tile installation area above 12 degrees C for 48 hours before, during, and 48 hours after, installation.
- .2 Do not install tiles at temperatures less than [12] degrees C or above [38] degrees C.

#### **1.07 REPLACEMENT TILES**

- .1 Provide a quantity of replacement tiles representing at least 2% of the total number of each type and color of tile required for the work to be stored at the indicated location.
- .2 Replacement tiles must come from the same production lot as those used in the work.

### **2 PRODUCTS**

#### **2.01 FLOOR AND PLINTH TILES**

- .1 Ceramic tile: Porcelain, size: 50mm x 50mm, pure white color, matte finish, such as the Quebec Olympia tile collection or approved equivalent.

#### **2.02 WATERPROOFING MEMBRANE**

- .1 Waterproofing and crack bridging membrane such as Mapei's Maplastic AquaDefense waterproofing membrane or equivalent approved by the Departmental Representative, to be install on floor and wall surfaces exposed to water. Use the Mapeband product or equivalent approved by the Departmental Representative for all interior and exterior corners.

### **2.03 MORTAR**

- .1 Universal Adhesive Cement For Floors and Walls: High-quality 2-component adhesive cement, compliant with ANSI A118.4, ANSI A118.11 and ONGC 71-GP-30M, type 2. Reference Product : Kerabond / Keralastic de Mapei or equivalent approved by the Departmental Representative.

### **2.04 GROUT**

- .1 Pre-blended, 100% solids free, non-sag, epoxy grout blended with acrylic latex, to ANSI A118.3. Reference Products: Ker 400 / Kérapoxy Series, from Mapei or equivalent approved by the Departmental Representative. 1 color chosen by the Departmental Representative from the manufacturer's standard range. Color-in-place grouts are not accepted.

### **2.05 FIXTURES**

- .1 Tools: apply adhesive with a spatula with sufficiently deep teeth, to ensure a proper transfer of at least 85% of the back of the tiles; apply grout with a rubberized trowel as recommended by the grout manufacturer.
- .2 Sealant: in accordance with Section 07 92 00 - Sealants, color chosen by the Departmental Representative.
- .3 Floor Sealer and Protective Coating: as recommended by tile and grout manufacturers.

### **2.06 CLEANING COMPOUNDS**

- .1 Specifically designed for cleaning masonry and concrete and which will not prevent bond of subsequent tile setting materials including patching and leveling compounds and elastomeric waterproofing membrane and coat.
- .2 Materials containing acid or caustic material are not acceptable.

## **3 EXECUTION**

### **3.01 MANUFACTURER'S INSTRUCTIONS**

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

### **3.02 WORKMANSHIP**

- .1 Unless otherwise noted, perform tile work in accordance with the manual entitled "2006/2007 Tile Installation Manual", published by the Canadian Terrazzo Tile and Marble Association (TTMAC).

- .2 Remove tile and adhesive to existing substrate, see demolition plans  
Subfloors will be structurally sound, solid, secured, dry, clean and free of dust, oil, grease, tar, paint, wax, curing agents and seals, primers or substances that may prevent or reduce adhesion.
- .3 Fill the holes in the support to obtain a flat surface for laying tiles.  
Follow the patching compound manufacturer's instructions for implementation and wait times.
- .4 Lay tiles on clean, sound surfaces.
- .5 Make uniform joints of the width recommended by the manufacturer so that the tiles are plumb, square, aligned and all on the same plane. Make sure that the different tiles are not apparent in the finished work. Align patterns.
- .6 Peripheral tiles must be at least half their full size.
- .7 After the installation, tap the tiles and replace the ones that sound hollow in order to obtain perfect adhesion.
- .8 Clean joints and stains on tiles with a damp cloth.
- .9 Do not move or grout the tiles and prohibit traffic for at least 48 hours after installation.
- .10 Wait at least 24 hours after laying the tiles before applying the grout.
- .11 Fill the joints with the grout with reinforced latex additive according to the manufacturer's recommendations.
- .12 Once the work has hardened and the grout is well set, clean the tiled surfaces.

### **3.03 WATERPROOFING MEMBRANE (SHOWER)**

- .1 Two (2) layer waterproofing membrane for use in showers:
- .2 Apply the waterproofing membrane according to the manufacturer's recommendations.
- .3 Apply a double layer reinforced with a fiberglass net, where the support may move or if large cracks may appear.
- .4 PVC tape should be applied between two (2) layers at the meeting points between the vertical and horizontal surfaces.
- .5 Complete sealing requires the presence of a continuous membrane of 0.76 mm (030).

**3.04 FLOOR SEALER AND PROTECTIVE COATING**

- .1 Apply in accordance with manufacturer's instructions.

**3.05 CLEANING**

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.

**END OF SECTION**





**PART 1 General**

**1.1 RELATED REQUIREMENTS**

- .1 DIVISION 01 GENERAL REQUIREMENTS

**1.2 WORKS**

- .1 Provide the labor, materials, tools and equipment required for surface preparation and application of the materials specified in this section for the painting of kitchen floors.

**1.3 REFERENCES**

- .1 ASTM: Common standard for determining the moisture acceptability of concrete floor slabs in order to receive a moisture-sensitive coating.
- .2 ASTM D4263 Indication of the presence of moisture in concrete by the polyethylene film method.
- .3 ASTM F1869 Measure the water vapor emission rate for a concrete substrate using anhydrous calcium chloride.
- .4 ASTM C1583 Standard test method for tensile strength of concrete surfaces and bonding resistance or tensile strength of repaired concrete and direct pull tape overlay materials (Flanging Method)
- .5 ICRI Guideline number 03732 Selection and specification of concrete surface preparation for sealants, coatings and polymeric coatings.

**1.4 QUALITY ASSURANCE**

- .1 Work associated with this section should be performed by an company with a minimum of five (5) years experience in the application of such flooring. The installer must be an "authorized applicator" of the Materials Manufacturer.
- .2 Before starting the application, arrange a site meeting with the Contractor, the Materials Manufacturer and the Consultant assigned to the project. Discuss the scope of the project, application methods, details, inspect the substrates, test them and study the ambient conditions.
- .3 Prior to the start of the work, alternative installation procedures and recommendations must be submitted in writing and approved by the Departmental Representative.
- .4 Conduct a random inspection, determined by the Departmental Representative, of the thickness of the flooring system after maturing. Fill the areas that have been checked until they are flush with the rest of the soil.

**1.5 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Send a letter from the Manufacturer certifying that the Installer is still an "authorized applicator" and fully trained in the installation of specified materials.
- .2 Before application, send three copies of the most recent manufacturer's data sheets and installation details of the materials to be used.
- .3 Prior to application, send three 150mm x 150mm specimens of the specified finish and color chosen for approval to the Departmental Representative.

**1.3 CLOSEOUT SUBMITTALS**

- .1 The maintenance specifications must indicate the methods to be adopted, recommendations for materials, equipment and frequency of cleaning, according to the manufacturer's recommendations.

## **1.6 DELIVERY AND STORAGE**

- .1 The materials must be delivered to the site in unopened containers, bear the name of the manufacturer, the product and indicate the color. The applicator should note the lot numbers of all materials used and retain them as needed for reference.
- .2 Store materials indoors, in their original and undamaged packaging, in a dry place and at a temperature ranging from 16°C to 30°C.

## **1.7 ON-SITE CONDITIONS**

- .1 Install appropriate barriers and legible signage at the entrances, to prevent general and trades circulation on-site during application and curing of the floor covering.
- .2 Maintain an ambient temperature of 20°C during installation, 48 hours before and 48 hours after, or until complete curing.
- .3 At the time of application, make sure to keep the minimum substrate temperature above 10°C and always maintain it at 3°C above dew point.

## **1.8 GUARANTEE**

- .1 Provide a written guarantee, issued on behalf of the Owner, certifying that the work associated with this section is free from defects in materials and workmanship for a period of one year from the date of completion of the work.

## **Partie 2 Products**

### **2.1 MATERIALS**

- .1 Smooth, odorless, lustrous, and aesthetically pleasing, two-component, high-solids, silicone-free, self-priming, low-viscosity, epoxy-based binder such as Sikafloor 261<sup>CA</sup> from Sika Canada Inc. or approved equivalent.
- .2 Primer:
  - .1 Apply a coat of Sikafloor 261<sup>CA</sup> (10 mils)
- .3 Finish:
  - .1 Apply a coat of Sikafloor 261<sup>CA</sup> (15 mils)
- .4 Non-Slip Finish:
  - .1 Sprinkle aggregates of 32 mesh size for a medium non-slip finish in the still wet layer. Then pass a dry roll to coat the aggregates in the matrix.  
Minimum thickness of 25 mils.
- .5 Location: Local # S136.

### **2.2 COLOR**

- .1 Allow one (1) color to be chosen by the Departmental Representative using the RAL Color Chart.

### **2.3 ADDITIONAL MATERIALS**

- .1 Fill all joints, recesses, cracks, and other roughness in the surface with additional materials recommended by the Manufacturer of the specified product.

**Partie 3 Execution**

**3.1 INSPECTION**

- .1 Prior to the start of the work, the Applicator must inspect all concrete surfaces, test them and immediately notify the Departmental Representative and the Manufacturer in writing of any unsatisfactory conditions likely to jeopardize the success of floor covering installation.
- .2 After surfaces have been prepared and before applying the coating, do the following tests to ensure that the concrete is adequate.
- .3 Determine if the texture of the concrete surface corresponds to ICRI 3-4 CSP.
- .4 Assess the tensile strength of concrete prior to application in accordance with ASTM C1583. The tensile strength must be at least 1.5 MPa.
- .5 Determine whether there is water vapor transmission in the concrete in accordance with ASTM D4263. There should be no visible trace of moisture on a plastic sheet after 16 to 24 hours. If moisture is present, establish the amount by anhydrous calcium chloride test in accordance with ASTM F1869. The maximum acceptable moisture content is 3lb per 1000 ft<sup>2</sup>.
- .6 Evaluate moisture content at the surface using an impedance moisture meter designed for concrete in accordance with ASTM E1907. Acceptable test results will be 4% or less depending on weight.
- .7 Before application, establish the dew point of the surface to be covered. The Contractor must be careful to follow the dew point during application and initial ripening. The surface should always be kept at least 3°C above the dew point during application and curing.

**3.2 PREPARATION OF THE SURFACE**

- .1 The concrete surface must be dry, clean and solid. Eliminate all traces of dust, laitance, grease, oil, dirt, curing agents or impregnation material, wax, foreign substances, places and materials disintegrated from the surface, by appropriate mechanical means, shot blasting, sandblasting or any other method recommended by the Manufacturer.
- .2 Dispose of any projections or other conditions that may affect installation of the flooring.
- .3 Cover contiguous surfaces, fixtures and equipment with a protective cover or other suitable means to prevent damage caused by spraying, spilling or other damage that may occur during the work.
- .4 Fill the stabilized cracks, control joints, marks, cavities or roughness of the concrete with epoxy according to the Manufacturer's recommendations.
- .5 Unstabilized cracks and expansion joints must be extended into the flooring system and filled with a flexible product as recommended by the Manufacturer.

**3.3 INSTALLATION**

- .1 Apply materials according to Manufacturer's instructions for two coats.
- .2 During application check the material w.f.t. in accordance with ASTM D4414 to measure the thickness of the wet film using notched gauges.
- .3 The work, once completed, should match the approved samples, have a uniform thickness, gloss, color and texture. The finished surface must be free from defects that may affect the appearance and performance of the product.
- .4 Provide adequate protection until complete curing of the floor covering.

**3.4 CLEANING**

- .1 Remove ribbons and overlays used to protect adjacent surfaces.
- .2 Remove surplus materials and construction debris and dispose of them in accordance with local regulations. Leave work site clean.

**3.5 PROTECTION**

- .1 If necessary protect the ground by appropriate means from the damage that may be caused by the passage of trades.
- .2 Avoid any contact with the water during ripening for approximately 24 hours at 20°C.
- .3 Protect the soil when finished chemicals until complete curing, for about 7 days at 20°C.

**END OF SECTION**

**Part 1      General**

**1.1          SCOPE OF WORK**

- .1      Painting of new doors, including the interior steel frame.
- .2      Painting of existing concrete block and / or concrete walls.
- .3      Painting of new walls of concrete and / or concrete blocks.
- .4      Painting existing concrete ceilings.
- .5      Painting of new gypsum ceiling in room S136;
- .6      The painting of the new apparent steel structure of the tower.
- .7      The painting of the new galvanized steel exterior cladding (tower).

**1.2          RELATED REQUIREMENTS**

- .1      All sections requiring painting work.

**1.3          REFERENCES**

- .1      Standards Council of Canada (CGSB)
  - .1      CAN / CGSB-85.100-93, Painting
  - .2      CAN / CGSB 1.100-99, Interior Flat Latex Paint
  - .3      CAN / CGSB-1.119-2000, Interior Latex Primer-Sealer
- .2      Master Painters Institute (MPI)
  - .1      MPI Architectural Painting Specifications Manual, 2004.
  - .2      Master Painters Institute (MPI) Maintenance Repainting Manual 2004, including component identification, substrate evaluation, paint systems, preparatory work and the list of approved products.
- .3      Environmental Protection Agency (EPA)
  - .1      EPA Test Method for Measuring Total Volatile Organic Content Compound of Consumer Products, Method 24, (for Surface Coatings).
- .4      Health Canada / Workplace Hazardous Materials Information System (WHMIS)
  - .1      Material Safety Data Sheets (MSDS).
- .5      Society for Protective Coatings (SSPC)
  - .1      SSPC Manual, Volume Two, 8th Edition, Systems and Specifications Manual
- .6      Department of Justice Canada (Jus)
  - .1      Canadian Environmental Protection Act (CEPA), (1999), c. 33.
- .7      National Fire Code of Canada - 1995.
- .8      Transport Canada (TC)

- .1 Transportation of Dangerous Goods Act, 1992, c. 34.

## 1.4 QUALITY ASSURANCE

- .1 Qualification
  - .1 Painting work must be performed by qualified workers in accordance with the regulations in force in the local jurisdiction.
  - .2 Apprentices may be hired on the condition that they work under the direct supervision of a qualified worker, in accordance with the regulations governing the trade.
- .2 Comply with the latest MPI requirements for interior work to refurbish paint coatings, including those for cleaning and surface preparation and the application of sealers and primers.
- .3 Products used, including primer or sealer products, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents and others, must appear on the latest version of the MPI Approved Products List, and all products forming the chosen paint system must come from the same manufacturer.
- .4 Paint products such as linseed oil, shellac, thinners and turpentine must be of very high quality and, as appropriate, compatible with other coating products used. They must come from an approved manufacturer listed in the MPI Maintenance Repainting Manual.
- .5 Keep purchase slips, invoices and other documents to establish, at the request of the Departmental Representative, the conformity of the work with the specified MPI requirements.
- .6 Quality standard: the surfaces must under final lighting condition meet the following requirements upon examination.
  - .1 Walls: no visible defect at less than 1000 mm, at a 90 degree angle to the surface being examined.
  - .2 Ceilings: no visible defect by an observer on the ground, at a 45 degree angle to the surface being examined.
  - .3 Colour and gloss of the top coat must be uniform over the entire surface being examined.
- .7 Mock-ups: Construct mock-ups of required work in accordance with Section 01 45 00 - Quality Control.
  - .1 Submit mock-ups of required work to Departmental Representative in accordance with Section 01 45 00 - Quality Control.
  - .2 Prepare substrates, parts or interior elements designated as mock-ups of repainting work according to the requirements of this section, apply the paint, the product or the coating prescribed according to the colour, gloss or luster, texture and performance specified in the MPI Maintenance Repainting Manual, and submit them for review and approval.
  - .3 Once accepted, the substrates, interior parts, or interior parts repainted as mock-ups of the work will be the standard for product quality and implementation for similar repainting work.

## **1.5 PERFORMANCE REQUIREMENTS**

- .1 Environmental Performance Requirements
  - .1 Paint products used must comply with the requirements for obtaining the "Environmental Choice" E3 MPI, granted according to the content of volatile organic compounds (VOCs) determined according to method number 24 of the Environmental Protection Agency (EPA).
  - .2 If the air quality of the premises (presence of odor) is a problem, prescribe only products on the MPI list that have obtained at least one E3 mention.

## **1.6 SCHEDULE OF WORK**

- .1 Submit schedule of the various stages of the painting work to Departmental Representative for approval. The schedule must be submitted at least 48 hours before the start of the planned work.
- .2 The approved schedule for painting the occupied facilities must be meticulously adhered to. This schedule must be pre-established to the satisfaction of the Departmental Representative and must provide sufficient drying and curing time before the occupants return.
- .3 Obtain written authorization from the Departmental Representative for any changes to the work schedule.
- .4 Schedule re-painting work so as not to be interrupted by sub trades, or by occupants and persons in or near the building.

## **1.7 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit data sheets and manufacturer's instructions for the application of each paint product and coating in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit the manufacturer's Material Safety Data Sheets (MSDS) for each paint and coating product. The data sheets must include:
  - .1 Product features;
  - .2 Instructions and recommendations for the preparation of the surface;
  - .3 Primer requirements and finish specifications;
  - .4 Requirements and recommendations for storage and handling;
  - .5 Methods of application;
  - .6 Information on cleaning.
- .3 Submit required samples in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Submit samples of all available colours for review and selection, and specify when colour range is limited.
  - .2 Submit Material Safety Data Sheets (MSDS) required by the Workplace Hazardous Materials Information System (WHMIS) for all paint products and coatings used.
- .4 Closeout Submittals

- .1 Provide required maintenance sheets and attach them to the manual referred to in section 01 78 00 - Closeout Submittals.
- .2 Submit a file on all products used. Indicate all the products that make up each system, specifying the following information for each.
  - .1 The name, type and use of the product (ie materials and where they are applied).
  - .2 Manufacturer's product number.
  - .3 Colour code numbers.
  - .4 Product designation according to the MPI Environmental Choice program classification.
  - .5 Material Safety Data Sheets (MSDS) from each product's manufacturer.

## **1.8 ACCEPTABLE MATERIALS AND PRODUCTS**

- .1 Where materials or products are prescribed by their brand, refer to "Instructions to Bidders" for instructions on how to apply for approval of materials or substitutes.

## **1.9 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle paint products in accordance with Section 01 61 00 - Common Product Requirements and the following requirements.
  - .1 Deliver and store paint products in original containers, sealed and with labels intact.
  - .2 Labels must indicate:
    - .1 The name and address of the manufacturer;
    - .2 The type of paint or coating;
    - .3 Compliance with relevant standards or requirements;
    - .4 The colour number, according to the list of colours specified.
  - .3 Remove degraded, open or rejected products from the site.
  - .4 Handle and store products according to the manufacturer's recommendations.
  - .5 Store products in a safe, dry, well-ventilated area at temperatures between 7 and 30 degrees Celsius. Store products away from heat sources, and keep temperature-sensitive products above the minimum temperature recommended by the manufacturer.
  - .6 Keep areas used for storage, cleaning and preparation clean and tidy, to the satisfaction of the Departmental Representative, to prevent contamination or damage to coatings. Once work is completed, return these areas to their original state of cleanliness, to the satisfaction of the Departmental Representative.
  - .7 Remove from the storage area only the quantities of products that will be implemented on any given day.
  - .8 Comply with WHMIS requirements for the use, storage, handling and disposal of hazardous materials.
  - .9 Fire Safety Requirements
    - .1 Provide one (1) 9 kg chemical powder extinguisher and place near storage area.
    - .2 Place oily rags, garbage, empty containers and materials subject to spontaneous combustion in ULC-sealed containers and remove



- .3 containers from site daily.
- .3 Handle, store, use and dispose of flammable and combustible products and materials in accordance with the requirements of the National Fire Code of Canada.
- .2 Waste Management and Disposal
  - .1 Separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
  - .2 Paints, stains, wood preservatives and other related products (thinners and solvents) must be treated as hazardous materials, the disposal of which is subject to various regulations. Information on relevant legislation can be obtained from provincial departments responsible for the environment and government agencies in the region.
  - .3 Products that cannot be reused should be treated as hazardous waste and disposed of properly.
  - .4 Place hazardous or toxic products and materials, including used tubes and containers of adhesive and sealant, in designated areas or containers for hazardous waste.
  - .5 To reduce contamination of soil and watercourses and sanitary and stormwater systems, comply rigorously with the following guidelines.
    - .1 Keep wash water for paints and other water-based products to allow filtration of various deposited materials. Used equipment or tools must never be cleaned without recovering the washing water.
    - .2 Store cleaning products, thinners, solvents and excess paint in designated containers and dispose of them properly.
    - .3 Store rags that have been soaked with oil and solvent during painting work to permit the recovery of contaminants and proper disposal or cleaning, as appropriate.
    - .4 Provide for the removal of contaminants in accordance with the Hazardous Waste Regulations.
    - .5 Allow empty paint containers to dry before disposal or recycling (in areas with appropriate facilities).
    - .6 Properly close and seal containers of partially used paint products, including adhesive and sealant containers, and store at moderate temperature in a well ventilated and fireproof area.
  - .6 Where there is a paint recycling service, collect excess paint, classify by product type and plan for shipment to a collection or recycling facility.

## **1.10 SITE-SPECIFIC CONDITIONS**

- .1 Heating, ventilation and lighting
  - .1 Before starting the painting process, verify that adequate and continuous ventilation can be provided and that appropriate heating systems can be used to raise ambient air temperatures and substrate temperature to more than 10 degrees Celsius 24 hours before the start of work and maintain these temperatures throughout the duration and after completion of the work, until paint has properly cured.
  - .2 Ventilate enclosed areas. If required, provide continuous ventilation for seven (7) days after completion of the work.
  - .3 Coordinate use of existing ventilation system with the Departmental

- Representative and, if required, arrange for operation during and after completion of work.
- .4 Supply and temporarily install necessary heating and ventilation devices if permanent systems can not be used; If the building's permanent systems do not meet the minimum requirements, provide and install the additional equipment required to meet the minimum requirements. Use of gas appliances for this purpose is not permitted.
  - .5 Before the start of the painting work, check that the level of illumination of the surfaces to be painted is at least 323 lux.
- .2 Ambient temperature, relative humidity and moisture content of the substrate
- .1 Unless specifically authorized in advance by the Contracting Authority responsible for the specifications, the paint inspection body and the applied product's manufacturer, do not proceed with paint work under the following conditions:
    - .1 The ambient air temperature and the substrate temperature are less than 10 degrees Celsius;
    - .2 The substrate temperature is greater than 32 degrees Celsius, unless the paint to be applied is specifically formulated for high temperature application;
    - .3 The relative humidity in the work area is greater than 85%.
  - .2 Using a properly calibrated electronic moisture meter, perform tests to determine the moisture content of the substrates, except for already painted concrete floors whose moisture content can be evaluated by simple "control of the hiding power".
  - .3 Do not proceed with re-painting work if the maximum moisture content of the substrate is greater than the following values:
    - .4 12% for gypsum board and plaster.
  - .4 Perform tests on coated, concrete and masonry surfaces to determine alkalinity.
- .3 Surface Conditions
- .1 Perform painting in areas where ambient air is free of suspended dust generated by construction work or particles blown by the ventilation system, which may alter finished surfaces. .
  - .2 Apply paint to properly prepared surfaces with moisture content within the range specified in this section.
  - .3 Apply paint when the previous coat is dry or sufficiently hardened, unless otherwise approved by the paint or coating manufacturer.
  - .4 All painting work in occupied buildings must be performed after closing hours in unused rooms or areas. The schedule of work must be approved by the Departmental Representative and must provide sufficient drying and curing time before occupants return.

## **1.11 MAINTENANCE**

- .1 Provide replacement materials, tools and equipment required in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Submit one (1) container of one (1) of each type and colour of finish. Identify the colour and type of product according to the colour list and specified paint system.

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**Part 2      Products**

**2.1      MATERIALS**

- .1      Paint products listed on the latest edition of the MPI Approved Products List may be used for this work.
- .2      Only approved products that have been awarded the MPI E3 Environmental Choice designation may be used for this work.
- .3      Paints, coatings, adhesives, solvents, cleaning products, lubricants and other products used must have the following characteristics:
  - .1      Products must not contain dichloromethane (methylene chloride), chlorinated hydrocarbons, toxic metallic pigments;
  - .2      Products must not contain any upper atmosphere ozone depleting compounds;
  - .3      Products must not contain any compounds that promote smog formation in the lower atmosphere;
  - .4      Products manufactured such that materials capable of generating a biochemical oxygen demand (BOD) in the undiluted effluent of a production plant, discharged to a natural watercourse or wastewater treatment facility where no secondary treatment is planned, do not exceed a concentration of 15 mg / L;
  - .5      Products manufactured such that total suspended solids (TSS) in the undiluted effluent of a production plant, discharged to a natural watercourse or sewage treatment facility where no secondary treatment is expected, does not exceed a concentration of 15mg / L.
- .4      Paint and coatings must not contain formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium or any of their compounds.
- .5      Primers: When the manufacturer offers the choice of primers for a particular substrate, use the one classified as "best" by the manufacturer.

**2.2      ACCESSORIES**

- .1      Accessories for coating application:
  - .1      Provide all primers, sealers, cleaning agents, cleaning cloths, sanding and cleaning materials required according to the manufacturer's specifications.

**2.3      COLOURS**

- .1      The Departmental Representative will provide a colour list after contract award.
- .2      Provide two (2) colours for walls, one (1) colour for ceilings and one (1) colour for new door and frame assemblies.
- .3      Colors will be chosen from the full range of colours and shades offered by the manufacturers.
- .4      For the re-painting of two (2) coats paint systems, the first coat must be of a slightly lighter shade than the top coat to facilitate the visual identification of each coat.

**2.4      MIXING AND COLOURING**

- .1      The colouring of the products must be completed before product delivery to the work site.

- .2 Add thinner if necessary, without exceeding the manufacturer's recommendation. Kerosene or any other organic solvent of the same type should not be used to dilute water paints.
- .3 Dilute spray paint according to manufacturer's instructions. If the necessary instructions are not on the container, obtain written instructions from the manufacturer and send a copy to the Departmental Representative.
- .4 Before and during application, thoroughly mix the paint in its container to loosen agglutinated materials, to ensure complete dispersion of deposited pigments, and to ensure a uniform colour and gloss of the applied paint.
- .5 Epoxy paint:
  - .1 Thoroughly mix and homogenize each component of the epoxy paint before combining them together. Mix both components according to the manufacturer's written recommendations.
  - .2 Provide factory mixed coatings. Mix coatings to the correct consistency according to the manufacturer's instructions before application, if necessary. Do not reduce or dilute coatings or add materials to coatings unless such a procedure is specifically described in product instructions of the manufacturer.

## **2.5 INTERIOR PAINT SYSTEMS**

- .1 Cleaning of existing concrete block surfaces:
  - .1 Clean and degrease existing concrete block surfaces with a trisodium phosphate solution (PTS).
  - .2 Rinse well with clear water (pressurized).
  - .3 Lightly sand all existing surfaces to be painted by mechanical or manual sanding.
- .2 Cleaning of surfaces to be painted:
  - .1 Unless otherwise noted, use an all-purpose cleaner with active oxygen, and no phosphate or bleach, to clean the dust and dirt on all surfaces to be painted. Ensure the cleaning product is compatible with the materials and finishes of the existing surfaces.
- .3 System N°1: For new sets of steel doors and frames
  - .1 Doors and frames must be clean, dry and free of dirt, dust and other foreign matter; Surface preparation according to the manufacturer's recommendations.
  - .2 Carry out surface preparation to SSPC-SP10 standard.
  - .3 Apply one (1) coat of Epoxy Primer, VOC <100g / L, Macropoxy 646-100, Sherwin-Williams B58-620 Series
  - .4 Apply two (2) coats of polyurethane epoxy, VOC <100g / L, PROIndustrial Acrolon 100, Sherwin-Williams B65-720 Series;
- .4 System N°2: For existing concrete walls or concrete blocks (already painted)
  - .1 The existing concrete or concrete block must be clean, dry and free of dirt, dust and other foreign matter. Surface preparation according to the manufacturer's recommendations.
  - .2 Apply one (1) coat of PrePrite Pro-Block, Sherwin-Williams B51W620, VOC High Yield Indoor / Outdoor Primer <50g / l.

- .3 Apply two (2) coats of PROIndustrial Pre-Catalyzed Acrylic Epoxy Semi-Gloss Finish (55-65 units @ 60°), Sherwin-Williams K46-1150 Series, VOC <50g / l.
- .5 System N°3: For new concrete walls or concrete blocks:
  - .1 The existing concrete or concrete block must be clean, dry and free of dirt, dust and other foreign matter. Surface preparation according to the manufacturer's recommendations.
  - .2 Apply one (1) Pro Industrial Heavy Duty Block Filler Primer, Sherwin-Williams B42W00150.
  - .3 Apply two (2) coats of PROIndustrial Pre-Catalyzed Acrylic Epoxy Semi-Gloss Finish (55-65 units @ 60°), Sherwin-Williams K46-1150 Series, VOC <50g / l.
- .6 System N°4: For existing concrete ceilings (already painted)
  - .1 The existing concrete must be clean, dry and free of dirt, dust and other foreign matter. Surface preparation according to the manufacturer's recommendations.
  - .2 Apply one (1) coat of PrePrite Pro-Block, Sherwin-Williams B51W620, VOC High Yield Indoor / Outdoor Primer <50g / l.
  - .3 Apply two (2) coats of ProMar 400 VOC-Free Latex Interior Latex (0-5 units @ 85°), Sherwin-Williams B30W04651 Series, VOC <50g / l.
- .7 System N°5: For painting the new exposed steel structure.
  - .1 Metals must be clean, dry and free of dirt, dust and other foreign matter; Surface preparation according to the manufacturer's recommendations.
  - .2 Apply one (1) coat of Epoxy Primer, VOC <100g / L, Macropoxy 646-100, Sherwin-Williams B58-620 Series
  - .3 Apply two (2) coats of polyurethane epoxy, VOC <100g / L, PROIndustrial Acrolon 100, Sherwin-Williams B65-720 Series;
- .8 System N°6: For painting the new gypsum ceiling.
  - .1 New gypsum must be clean, dry and free of any dirt, dust and other foreign material; Surface preparation according to manufacturer's recommendations.
  - .2 Apply one (1) coat of acrylic primer-sealer, VOC <50g/L, ProMar 200 Zero VOC, Sherwin-Williams B28W2600;
  - .3 Apply two (2) coats of acrylic latex, VOC <50g/L, ProMar 400 Zero VOC, Sherwin-Williams B30-4600 Series, matt finish;

## 2.6 OUTDOOR PAINTING SYSTEMS

- .1 Galvanized Steel Cleaning:
  - .1 Remove the film of oil or soap with a detergent or emulsion cleaner.
  - .2 Abrasive sandblasting with fine abrasive, according to SSPC SP-16 to obtain a profile of 40-75µm. When sandblasting is not possible, galvanizing can be treated with a suitable zinc phosphate conversion coating.
- .2 System N°7: For the new outer shell of the galvanized steel turret.
  - .1 Metals must be clean, dry and free of dirt, dust and other foreign matter; Surface preparation according to the manufacturer's recommendations.
  - .2 Apply one (1) coat of two component solid polyamine epoxy primer, PPG Amerlock400 or approved equivalent.

- .3 Apply two (2) coats of Glossy Aliphatic Polyurethane 450 Series, Amercoat 450H from PPG or approved equivalent.

### **Part 3 Execution**

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

- .1 Compliance: Comply with manufacturer's written requirements, recommendations, and specifications, including technical bulletins, instructions for handling, storing, and applying products, and data sheets indications.

#### **3.2 EXAMINATION**

- .1 Interior surfaces to be re-painted must be inspected by the painting contractor who will notify the Departmental Representative in writing of any defect or problem prior to the start of re-painting work, or after the preparation surfaces if any deterioration of the substrates is discovered at that stage of the work.
- .2 Proceed with work only after conditions have been corrected and approved in writing by Departmental Representative.
- .3 Previously painted surfaces: Verify that existing painted surfaces do not contain lead-based paint and notify the Departmental Representative of any such paint immediately upon discovery.

#### **3.3 EXAMINATION**

- .1 Prepare interior surfaces and paint in accordance with the requirements of the MPI Maintenance Repainting Manual, unless otherwise specified.
- .2 Prepare surfaces and apply paint products in accordance with the manufacturer's written instructions.
- .3 Clean and prepare interior surfaces to be repainted in accordance with the requirements of the MPI Maintenance Repainting Manual. Refer to this document for specific requirements to be added to the instructions below.
  - .1 Remove dust, dirt and foreign matter by vacuuming and wiping surfaces with clean, dry cloths.
  - .2 Rinse thoroughly brushed surfaces with clean water until no foreign matter remains.
  - .3 Allow surfaces to drain completely and dry thoroughly. Allow sufficient drying time and check the moisture content of the surfaces with an electronic moisture meter before starting work.
  - .4 Use water-based cleaning products rather than organic solvents for surfaces repainted with water-based paints.
  - .5 Once dry, many water paints cannot be removed with water. However, the use of kerosene or other similar organic solvents for the removal of these paints must be minimized.
- .4 Prior to application of primer or sealer and prior to application of each subsequent coat, prevent cleaned surfaces from being contaminated by salts, acids, alkalis, corrosive chemicals, grease, oil and solvents. Spot prime and seal, then apply primer or sealer or other pretreatment product, as soon as possible after cleaning, before surface deteriorates.

- .5 Do not apply paint until prepared surfaces are accepted by Departmental Representative.
- .6 Sand and remove dust from surfaces as needed between coats to ensure proper bonding of the next coat and to eliminate any visible defects within 1000 mm.

### **3.4 EXISTING CONDITIONS**

- .1 Before start of painting work, review existing field conditions and existing interior substrates to be re-painted and report in writing to the Departmental Representative and General Contractor, if applicable, all substrate damage, defects, unsatisfactory or unfavourable conditions that could affect the execution of the work.
- .2 Do not start re-painting work until unsatisfactory conditions or defects have been corrected, and substrates deemed acceptable by the contractor and the painting inspection body.
- .3 Do not apply paint to wet or humid surfaces.
  - .1 Wait at least 30 days before application on new concrete, or follow the manufacturer's procedures to apply appropriate coatings before 30 days.
  - .2 Perform a test on new concrete for moisture content.
- .4 The degree of deterioration of the surface must be evaluated according to the criteria and using the MPI identification elements defined in the MPI Maintenance Repainting Manual.

### **3.5 PROTECTION**

- .1 Protect interior surfaces of building, adjacent fixtures and furniture that are not to be painted from speckles, marks and other damage with non-soiled covers or caches. If the surfaces in question are damaged, clean and restore them as directed by the Departmental Representative.
- .2 Protect permanently attached items, for example, fire rating labels for doors and frames.
- .3 Protect factory-finished equipment and components.
- .4 Provide protection for the general public and building occupants in or near the building.
- .5 Before the start of painting work, remove cover plates from electrical equipment, lighting fixtures, exposed door hardware, bathroom accessories and all other accessories, fasteners and attached equipment. Store these items and put them down once painting is done.
- .6 If necessary, cover or move furniture and transportable items to facilitate painting. Restore these items and materials as work progresses.
- .7 As work progresses, place "FRESH PAINTING" signs in occupied areas, to the satisfaction of the Departmental Representative.

### **3.6 APPLICATION**

- .1 Apply paint in a manner that is best suited for the condition of the substrate to be re-painted by brush, roller or air spray gun. Apply products according to the manufacturer's instructions, unless otherwise specified. The chosen method of application must be approved by the Departmental Representative prior to the start of the work.

- .2 Brush, paintbrush and roller application
  - .1 Apply an even coat of paint with a brush, paintbrush and / or roller of appropriate type.
  - .2 Allow paint to penetrate cracks, crevices and corners of elements.
  - .3 Apply paint to surfaces and corners inaccessible with brush or paintbrush with spray gun, pad or sheepskin. Use a brush or paintbrush, pad or sheepskin when it is impossible to paint certain surfaces or corners with a roller.
  - .4 Remove sags and drips with a brush, paintbrush and / or roller, and smooth over marks left in this way. Roller-painted surfaces must be free from roller marks and excess paint unless approved by the Departmental Representative.
  - .5 Remove sags, drips and brush marks from finished surfaces and redo these surfaces.
- .3 Spray application
  - .1 Provide equipment designed for the desired result, which can properly spray the product and is equipped with appropriate pressure regulators and manometers. Keep this equipment in good condition.
  - .2 During paint application, ensure adequate mixing of ingredients in container by repeated intermittent agitation, as often as necessary.
  - .3 Apply a uniform coat of paint, overlapping the surface covered during the previous pass.
  - .4 Use roller on spray applied paint and immediately remove drips and sags with a paintbrush.
  - .5 Use paintbrushes or brushes to penetrate paint into cracks, crevices and other spots hard-to-reach with spray gun.
- .4 Use pad or sheepskin to paint surfaces difficult to reach, or soaking if necessary and with the express permission of the Departmental Representative.
- .5 Apply coats of paint continuously, and allow surfaces to dry and cure properly between each coat, waiting for the minimum time recommended by the manufacturer. The minimum dry film thickness of each coat must be no less than recommended by the manufacturer. Redo surfaces stripped or covered with a film that is too thin before applying the next coat.
- .6 Regardless of the number of coats specified, apply as many coats as necessary for complete coverage and a uniform appearance.
- .7 Sand and remove dust from surfaces between coats to eliminate visible defects.
- .8 Repaint surfaces above and below sight lines in accordance with requirements for adjacent surfaces, including areas such as cabinet or closet interior and projecting elements.

### **3.7 FIELD QUALITY CONTROL**

- .1 Notify the Departmental Representative when surfaces and coating are ready for inspection. Do not apply the next coat until the previous coats has been approved.



### **3.8 CLEANING**

- .1 Perform cleaning in accordance with Section 01 74 00 - Cleaning and instructions below.
  - .1 Remove dripping, splashes, paint drippings, as well as excess paint as work progresses, using materials and methods that will not damage the finish of the surfaces.
  - .2 Quickly clear work area of surplus materials and debris, as well as tools, materials and equipment that are no longer needed.
  - .3 Remove combustible waste and empty paint containers from site daily and dispose of them safely, in accordance with the requirements of competent authorities.
  - .4 Clean equipment and tools used. Subsequently, dispose of wash water from water-based products, as well as cleaning and protective materials (cloths, screens, tapes and other), paint products, paint removers and other stain removers, in accordance with the requirements of the competent safety authorities and the instructions set out in this section.
  - .5 Clean paint materials and equipment in watertight containers for deposition and subsequent collection of particulate matter. Residues collected at the end of the cleaning process must be recycled or disposed of in a manner acceptable to the competent authorities.
  - .6 Recycle unused paint and coatings during repainting as indicated.

### **3.9 RESTORATION OF THE PREMISES**

- .1 Clean and reinstall hardware removed to facilitate painting.
- .2 Remove guards and warning signs as soon as possible after completion of work.
- .3 Remove splash on exposed refurbished surfaces. Remove drippings and speckles as work progresses with a compatible solvent.
- .4 Protect freshly painted surfaces from drips and dust to the satisfaction of the Departmental Representative and avoid scratching new coatings.
- .5 Restore the premises used for the storage, mixing and handling of paints and the cleaning of tools and equipment used to their original state of cleanliness, to the satisfaction of the Departmental Representative.

**END OF SECTION**



**PART 1        General**

**1.1            REFERENCES**

- .1 American Society for Testing and Materials (ASTM)
  - .1 ASTM A167-99, Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
- .2 Canadian Standards Association (CSA)
  - .1 CAN/CSA-B651-95, Barrier-Free Design.

**1.2            SHOP DRAWINGS**

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate size and description of components, base material, surface finish inside and out, hardware and locks, attachment devices, description of rough-in-frame, building-in details of anchors for grab bars and shower bench.

**1.3            CLOSEOUT SUBMITTALS**

- .1 Provide maintenance data for toilet and bath accessories for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

**1.4            WASTE MANAGEMENT AND DISPOSAL**

- .1 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.

**1.5            EXTRA MATERIALS**

- .1 Provide special tools required for accessing, assembly/disassembly or removal for toilet and bath accessories in accordance with requirements specified in Section 01 78 00 - Closeout Submittals.
- .2 Deliver special tools to Ministerial representative.

**PART 2        Products**

**2.1            MATERIALS**

- .1 Stainless steel sheet metal: to ASTM A167, Type 304, with brushed finish.
- .2 Stainless steel tubing: Type 304, commercial grade, seamless welded, 1.2 mm wall thickness.
- .3 Fasteners: concealed screws and bolts hot dip galvanized, exposed fasteners to match face of unit. Expansion shields fibre, lead or rubber as recommended by accessory manufacturer for component and its intended use. Fasten accessories with tamperproof screws / bolts.

## **2.2 ACCESSORIES**

- .1 Bradley Model 9558 Adjustable Shower Bench in Stainless Steel and Plastic Laminate. Color Gray 347 or equivalent approved by the Departmental Representative.
- .2 Shower grab bar: retractable, satin finished stainless steel, 760mm in length, capable of supporting up to 550lbs. Such as Bradley Model 8370-107 or equivalent approved by the Departmental Representative.

## **2.3 FABRICATION**

- .1 Weld and grind joints of fabricated components flush and smooth. Use mechanical fasteners only where approved.
- .2 Wherever possible form exposed surfaces from one sheet of stock, free of joints.
- .3 Brake form sheet metal work with 1.5 mm radius bends.
- .4 Form surfaces flat without distortion. Maintain flat surfaces without scratches or dents.
- .5 Back paint components where contact is made with building finishes to prevent electrolysis.
- .6 Shop assemble components and package complete with anchors and fittings.
- .7 Deliver inserts and rough-in frames to job site at appropriate time for building-in. Provide templates, details and instructions for building in anchors and inserts.
- .8 Provide steel anchor plates and components for installation on studding and building framing.
- .9 Elements must not bear the name or brand of the manufacturer on an exposed surface.
- .10 Anchors must be tamperproof et compliant with requirements for anchors in a jail setting.

## **PART 3 Execution**

### **3.1 INSTALLATION**

- .1 Install and securely attach accessories as follows: Walls made of hollow masonry elements: Use bolts with adhesive, holes drilled in the cell wall or hollow wall.
  - .1 Masonry walls: bolt with chemical anchoring.
- .2 Secure accessories with tamperproof screws / bolts.

### **3.2 QUANTITY AND LOCATION**

- .1 Install accessories in the locations indicated on the plans.

END OF SECTION