RENOVATIONS TO
GOVERNMENT OF CANADA BUILDING

ULUKHAKTOK, NWT : WBSE #R.023085.001
PSAV Project # 2013-01

Prepared for: Government of Canada

Prepared by: PSAV Architects Ltd.
5016 - 47 Street, PO Box 2353
Yellowknife, NT X1A 2P7

Issued for : Issued for Tender May 08, 2013

PSAV
Architects Ltd.
YELLOWKNIFE, NORTHWEST TERRITORIES

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PROJECT NAME : **Renovations to Government of Canada Building Ulukhaktok, NWT**

OWNER : **GOVERNMENT OF CANADA**

WBSE : **#R.023085.001**
PSAV PROJECT NUMBER : **PROJECT 2013-01**

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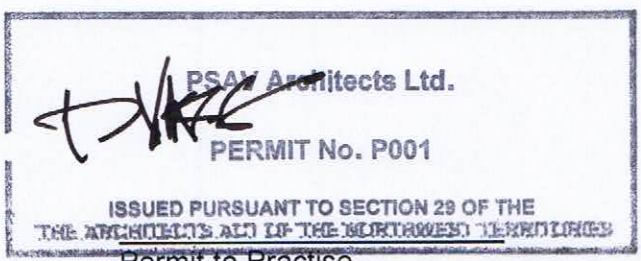

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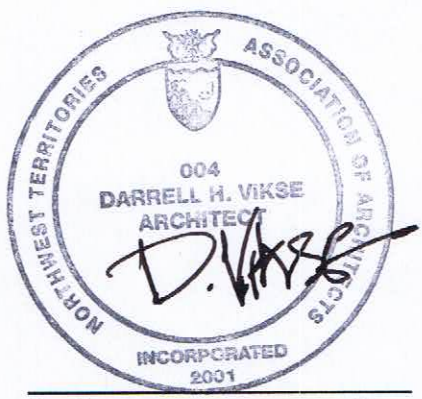

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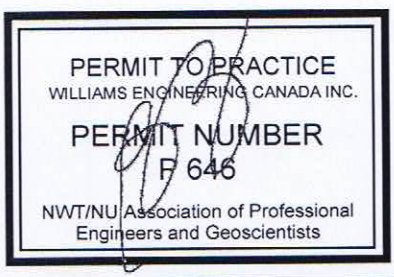

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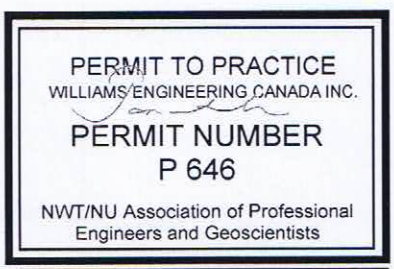

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ARCHITECTURAL

DIVISION 0 PROCUREMENT and CONTRACTING REQUIREMENTS

DIVISION 1 GENERAL REQUIREMENTS

DIVISION 2

DIVISION 3 to 5 NOT USED

DIVISION 6 WOOD, PLASTICS and COMPOSITES

END OF TABLE OF CONTENTS

1 GENERAL

1.1 List of Drawings

.1 Architectural
- .1 A-0 - Cover Sheet
- .2 A-1 - Notes, Demolition Plan, Floor Plan, Reflected Ceiling Plan and Details
- .3 A-2 - Door Schedule, Room Finish Schedule, Interior Elevations, and Details
- .4 A-3 - Millwork Details
- .5 A-4 - Floor Plan, Notes, Schedules and Details

.2 Mechanical
- .1 M101 - Mechanical Existing Plan
- .2 M102 - Mechanical New Plan
- .3 M103 - Mechanical Schematic
- .4 M104 - Mechanical Site Plan

.3 Electrical
- .1 ED01 - Electrical New Plan
- .2 ED02 - Electrical New Plan (Residence)

2 PRODUCTS not applicable

3 EXECUTION not applicable

END OF SECTION

1 GENERAL

1.1 Related Requirements

.1 Comply with Instructions to Tenderers in the Construction Tender Contract.

1.2 Examination

.1 Examine Tender Documents and report any discrepancies, omissions, errors, departure from building by-laws or good practice and points considered to be of dubious intent, so that the Departmental Representative may, if he considers it desirable, issue instructions by Addendum.

.2 Examine ALL drawings and ALL Divisions of the Specifications, including the Mechanical and Electrical Divisions, so that all requirements of the Contract and the effect of ALL project conditions on the Work required to provide a full and complete building are understood.

.3 Examine conditions relating to the Work and determine the nature and location of the Work, local conditions, the equipment and facilities needed, preliminary to and during the prosecution of the Work, the means of access to the community, all necessary information as to limitations, circumstances, contingencies and risks which may affect the Tender, and other matters which may in any way affect the Work.

.4 Claims for additional costs will not be entertained with respect to conditions which could reasonably have been ascertained prior to Tender closing date.

1.3 Inquiries

.1 Drawings and Specification to:

Mr. Gene Drouin
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Yellowknife, NT X1A 2P7

Telephone : (867) 920-2609
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1.4 Project Conditions

.1 Note that site area is very limited and materials may have to make allowance for storage in alternate locations.

1.5 Addenda

.1 The Departmental Representative will endeavour not to issue any addenda or answer any questions or queries later than SEVEN (7) days prior to tender closing date.

.2 All answers to inquiries and questions shall be in writing in the form of an Addenda.

1.6 Requests for Approval of Alternates

.1 Submit requests for alternates minimum TEN (10) days prior to the tender date.

2 PRODUCTS not applicable

3 EXECUTION not applicable

END OF SECTION

1 GENERAL

1.1 Description

.1 Work of this Contract, hereinafter referred to as the Work, comprises the provision of all construction management, superintendent, labour and materials, plant equipment and temporary facilities and all other goods and services required to complete the following:

Renovations to Government of Canada Building in Ulukhaktok, NWT all as described in the Contract Documents.

1.2 Definitions

.1 Unless otherwise described in this Project Specification, the following definitions shall apply :

.1	Contract	The Construction Tender and Contract forming part of this specification document
.2	Owner	Government of Canada
.3	Departmental Representative	The Owner's designated representative for the Work.
.4	Contractor	General Contractor
.5	Indicated	Indicated on the Drawings
.6	Described	Described in the Project Specification
.7	As directed	as directed by the Consultant
.8	Provide	Supply, deliver and install.
.9	Standard of Acceptance	performance standard: material by another supplier or manufacturer which meets or exceeds the performance of the material specified shall be acceptable.

1.3 General Requirements

.1 Examine Construction Documents and report to consultant any discrepancies, omissions, departure from building by-laws or good practices and points considered to be of unclear intent.

1.4 Examination

.1 By submitting a Tender for the Work, the Contractor shall be held to have examined the site and to have satisfied himself as to all of the conditions under which he will be obliged to operate or that will in any manner affect the work under the Contract. No allowance shall be made for any error or negligence in this regard on his part.

.2 Check and verify all dimensions. Report any ambiguity or lack of information immediately to the Consultant. Await Consultant's directions.

.3 Visit site and examine site conditions to ensure complete familiarity with the Work.

1.5 Sequence of Work

.1 The Work shall be completed be completed as set out in Contractors schedule and in sequence with other trades.

.2 Carry out the Work with dispatch and with sufficient forces to achieve completion within the required time.

1.6 Co-ordination

.1 Responsibility as to which trade provides required materials and labour rests solely with the Contractor.

.2 In case of dispute, the Contractor shall decide which subtrade supplies and/or installs required work.

.3 Give all required notices and otherwise comply with all procedures required by regulatory requirements and authorities having jurisdiction.

.4 Access to any occupied area to be coordinated with Owner.

.5 Provide Owner with 48 hours notice of any work which will temporarily disrupt utilities and services to occupied areas of building.

1.7 Codes and Permits

.1 Perform Work in accordance with the National Building Code of Canada (2010) and all other codes, regulations and requirements of authorities having jurisdiction. In case of conflict or contradiction between codes, the more stringent requirements shall apply.

.2 All permits, licenses, fees, certificates and inspections required in connection with the execution of the Work are the Contractor’s responsibility and are at his expense.

1.8 Use of Site

.1 Check means of access and egress, rights and interests which may be interfered with. Do not block roadways, entrances or exits.

.2 Take steps to ensure that no damage is caused to existing structures, finishes, paths, utilities, services and natural environment during the progress of the Work. Make good any damage caused to such at no extra cost to the Contract.

1.9 Fasteners and Supports

.1 Supply, set and secure inserts, hangers, sleeves, fasteners adhesives, fittings, blocking, backing, anchors and supports required for the proper installation of the Work, whether specifically indicated or not.

1.10 Safety and Security

.1 Be responsible for security and safety of all areas affected by work of this Contract until completion of the Work.

.2 Prevent entry to the Work by unauthorized persons and guard against theft, fire and damage by any cause.

.3 Comply with the requirements of the Government of Canada Fire Protection Departmental Representative.

.4 Observe and enforce construction safety measures required by the Workers' Compensation Board.

.5 Carry out all work in accordance with the requirements of the Workplace Hazardous Materials Information System.

.6 Comply with the safety requirements as governed by the Government of Northwest Territories Safety Act and Regulations.

.7 All designated products used on this Work shall be labelled with appropriate symbols, risk phrases, precautionary and first aid measures required by the regulations.

.8 Protect general public and workmen from injury.

.9 Provide adequate scaffolds, properly levelled and stayed as required for proper execution of the Work. No supports, clips, brackets or similar devices shall be fixed to any finished surface without prior approval by the Consultant.

.10 Provide site equipment and medical facilities necessary to supply first aid service to injured personnel in accordance with Government of Northwest Territories Industrial Safety Regulation "First Aid Requirements", Government of Northwest Territories Safety Act and Regulations and regulations of the Workers' Compensation Act.

.11 General Contractor, Project Manager, and all on site personnel shall provide all required Security Clearance documentation and receive Clearance prior to be allowed on site.

1.11 Cleaning

.1 Maintain the site in a safe, tidy and clean condition for the duration of the Work.

.2 Daily remove from site and legally dispose of rubbish, surplus and waste materials. Dispose of materials to WHMIS regulations as described in the Hazardous Products Act.

.3 Upon completion of the Work, and prior to Owner's inspection, thoroughly clean all surfaces and components affected by work of this contract to allow occupancy and use without further cleaning.

1.12 Products and Workmanship

.1 Products supplied for Work shall be new and, as far as possible and unless otherwise specified, of Canadian manufacture.

.2 Provide products as specified. Substitutions may not be made without Departmental Representative's written approval.

.3 Notify Departmental Representative immediately of proposed substitution where specified materials are not available for incorporation in Work.

.4 Suitably pack, crate and protect products during transportation to site to preserve their quality and fitness for the purpose intended.

.5 Carry out all work in accordance with the best trade practice by mechanics skilled in the type of work concerned. Fit work tight to finish surfaces.

.6 Handle and store materials in accordance with manufacturer's and supplier's recommendations so as to ensure preservation of their quality and fitness for Work.

.7 Products, materials, systems and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the applicable manufacturer's printed directions.

.8 Comply with more stringent requirements where specified requirements differ from manufacturer's requirements.

1.13 Existing Services

.1 Where Work involves breaking into or connecting to existing services, carry out work at times directed by authorities having jurisdiction, with minimum of disturbance to occupants and to pedestrian and vehicular traffic.

.2 Before commencing work, establish location and extent of service lines in area of Work and notify Departmental Representarive of findings.

.3 Where unknown services are encountered, immediately advise Departmental Representative, confirm findings in writing and await his instructions.

1.14 Disposal of Wastes

.1 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner on site.

1.15 Project Close-out

.1 Inspect the Work to ensure that it is or will be complete and functional in time for inspection. Allow 15 calendar days notice when requesting a Substantial Completion inspection.

.2 See section 01 77 00.

.3 Submit Contractor's 12 month general warranty following written notice of completion.

2 PRODUCTS not applicable

3 EXECUTION not applicable

END OF SECTION

1 GENERAL

1.1 Work Covered by Contract Documents

.1 The work of this Contract comprises the provision of all construction management, labour and materials, plant, equipment and temporary facilities and all other goods and services required to complete the Renovations to Government of Canada Building in Ulukhaktok, NWT in conformance with the Contract Documents.

.2 The Work is not limited to work within the limits of the site but includes all work required by the Contract Documents both within and outside the property lines.

1.2 Contract Method

.1 Construct Work under single, stipulated price construction contract.

1.3 General

.1 Drawings and Specifications are complimentary each to the other and what is call for by one shall be binding as if called for by both.

1.4 Responsibility

.1 The Owner will not be responsible for construction means, methods, techniques, sequences or procedures or for safety precautions or programs in connection with the Work.

.2 The undertaking of periodic inspections by the Departmental Representative shall not be construed as supervision of actual construction nor make him responsible for providing a safe place for work, visit, use, access, travel or occupancy by the Contractor, any Subcontractor, supplier or their employees or agents.

.3 For convenience of reference only, work specified in the Specification has been divided into Work Sections identified by title and a six digit numbering system. Division of work among subcontractors and suppliers is solely the responsibility of the Contractor. The Owner assumes no responsibility to act as arbiter to establish subcontract limits between Sections or Divisions of work. Claims on the grounds of differences of interpretation of the specification as to which trades do the work will not be entertained.

.4 It is the responsibility of the Contractor to ensure that work is carried out in accordance with the Contract Documents. The Owner will not entertain claims resulting from information or direction given by anyone other than the Departmental Representative.

1.5 Departmental Representative's Inspection

.1 The Departmental Representative or his representative may make periodic visits to the site to familiarize themselves generally with its progress and the quality of the Work and to determine, in general, if it is progressing according to the Contract Documents.

.2 Inspections by the Departmental Representative or his representatives do not in any way relieve the Contractor or his sub-contractors of their responsibility to carry out the Work in accordance with the Contract Documents.

1.6 Contractor's Use of the Site

.1 From the commencement of the Contract until acceptance of the Work, the Contractor will have restricted use of the site for the sole purpose of the carrying out of the Work. The building will remain in use throughout the course of construction.

.2 Check means of access to and egress from the site and any rights and interests which may be interfered with in the course of the Work. Do not block roadways, regular accesses, entrances or exits. Coordinate vehicle and material access to site with Owner.

.3 Use areas for work and storage as directed by the Owner.

.4 The boundaries of the site are shown on the Drawings. Should additional areas be required for the storage of materials and/or equipment, the Contractor shall arrange with local authorities for such accommodation and pay all costs involved. Where encroachment beyond the limits of the site is necessary, make all necessary arrangements with the appropriate departments of local authorities.

.5 Before commencement of the work, the Contractor shall agree with the Owner on mutually satisfactory locations for such items as material storage.

.6 Take necessary steps to ensure that no damage is caused to existing structures, buildings, foundations, roads, property, utilities and services during the progress of the Work. If, however, any damage is caused, repair and make good such damage at no cost to the Owner.

1.7 Additional Drawings

.1 Departmental Representative may furnish additional drawings for clarification. These additional drawings have the same meaning and intent as if they were included with plans referred to in the Contract documents.

1.8 Site Cleanliness

.1 General:
- .1 Maintain the site in a safe, tidy and generally clean condition for the duration of the Work to the satisfaction of the Owner.
- .2 Regularly remove from the site and legally dispose of rubbish, waste materials and packaging.
- .3 Use cleaning material only on surfaces recommended by cleaning material manufacturer.
- .4 Take necessary precautions to keep dirt and dust to an acceptable level, as directed by Departmental Representative.
- .5 Remove oily rags and waste from the premises at close of each day, or more often as may be required.

2 PRODUCTS not applicable

3 EXECUTION not applicable

END OF SECTION

1 GENERAL

1.1 Preconstruction Meeting

.1 Prior to construction, upon notification, a representative of the Contractor and the Contractor's site superintendent, along with representatives of key subcontractors shall attend a preconstruction meeting. The meeting shall be held in Yellowknife, NWT., at a time determined by the Departmental Representative and as specifically indicated in the meeting notice.

.2 Purposes of the meeting and meeting agenda will be as follows:
- .1 Appointment of official representatives of Contract parties.
- .2 Safety issues and requirements.
- .3 General Conditions of the Contract.
- .4 Project communication procedures.
- .5 Contract administration procedures including initial and regular submittals (01 33 00) payment (01 29 00), change order procedures (01 11 10) and take-over procedures (01 77 00).
- .6 Construction schedule, schedule review and adjustment procedures (01 33 05) and critical points of the schedule for positive action.
- .7 Schedule of shop drawing, product data and sample submissions and any product availability problems and substitution requests (01 33 00).
- .8 Review fire watch requirements (01 35 30).
- .9 Review site security.
- .10 Insurance.
- .11 Requirements for inspection and for witnessing of tests (01 45 00).
- .12 Requirements for temporary facilities, and utilities (01 51 00).
- .13 Review Contractor’s liaison with staff and associated safety planning and emergency exiting.
- .14 Record drawings (01 78 05).
- .15 Review any further points which, in the Contractor's, Owner's or Departmental Representative's opinion, require clarification.

.3 The Departmental Representative or his agent shall record discussion and decisions. Minutes shall be circulated to all parties present.

1.2 Site Meetings

.1 Prior to commencement of work, Contractor shall agree with the Departmental Representative an approximate schedule of site progress meetings.

.2 The Departmental Representative shall record minutes of each site progress meeting and distribute them to Contractor and Owner.

.3 Representative of Contractor, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the party each represents.

.4 The Contractor shall organize and call all other necessary site meetings, including progress meetings and site coordination meetings. Ensure the presence or representation of all required persons and the distribution to all concerned of agenda and all material necessary for the effective conduct of the meeting. If the Departmental Representative is not present at such meetings, the Contractor shall be responsible for recording and distribution of full minutes of the meeting.

.5 Agenda to include the following :
- .1 Review and approval of minutes of previous meeting.
- .2 Review progress since previous meeting.
- .3 Field observations, problems, conflicts.
- .4 Problems which affect construction schedule.
- .5 Review of off-site fabrication delivery schedules.
- .6 Corrective measures to regain the project schedule.
- .7 Revision of construction schedule.
- .8 Review schedule of work during succeeding work period.
- .9 Review submittal schedules : expedite as required.
- .10 Maintenance of quality standards.
- .11 Review proposed changes for effect on construction schedule and on completion date.
- .12 Other business.

1.3 Progress Reports

.1 Progress reports shall be a permanent and sequential, monthly written record of the on- and off-site progress of the Work.

.2 These reports shall show :
- .1 site weather conditions.
- .2 number of operatives present by trades.
- .3 types and quantities of equipment employed.
- .4 dates of commencement and completion of the various trades and items of the Work.
- .5 actual progress by work divisions.
- .6 numbers of local operatives and description of locally obtained equipment employed.

.3 Reports shall be open to inspection at all times and a copy shall be submitted on request.

1.4 Changes in the Work

.1 Perform all work in strict accordance with the Contract Documents. Work which is contrary to the requirements of the Contract Documents and is undertaken without written authority shall not be recognized under the Contract.

.2 Only written instructions shall be recognized. The Owner will not entertain claims resulting from information or directions given by anyone other than the Departmental Representative.

.3 Notice of proposed changes in the work will be given by CONTEMPLATED CHANGE NOTICE. These DO NOT constitute orders to perform any changes but rather give notice only of proposed changes.

.4 Within 14 days after receipt of any 'Contemplated Change Notice' the Contractor shall submit a detailed statement of any cost adjustments and of any effect upon the construction schedule that the Contractor considers is required by the proposed change. Itemize all items in the statement separately, indicating labour, material and equipment costs.

.5 After receipt of the statement of adjustment of the cost or time of the Contract and the Owner's approval of the same, the Owner will issue a CHANGE ORDER which will authorize the Contractor to proceed with the change to the Work, or alternatively, will notify the Contractor that the proposed change is cancelled.

.6 Site Instructions may be issued to provide clarification of the intent of the Contract Documents or to allow the Contractor to proceed with changes in the Work which will not affect either the Contract Price or the Contract Schedule.

1.5 Record Drawings

.1 After Award of Contract the Contractor will be supplied, free of charge, with two (2) sets of blueline white prints of the Contract Drawings for the purpose of maintaining Record Drawings.

.2 Keep record drawings separately on site at all times during construction. Drawings shall be edge bound.

.3 Record drawings shall be kept strictly separate from day to day working sets of drawings.

.4 Accurately and promptly as the work progresses, note clearly and neatly in red, all revisions and additions to the Work and deviations from the Contract Documents.

.5 Note changes with references to appropriate Site Instructions or Change Orders.

.6 Accurate location, depth, position, size and type of concealed and underground services shall be included as part of these record drawings.

.7 Record drawings, clearly marked shall be submitted as directed in Section 01 78 00.

1.6 Record Photographs

.1 Where work concealed by subsequent work cannot be inspected, record the work photographically.

.2 Views shall be unobstructed; provide sufficient views to verify that the Contract requirements have been met.

.3 Identify each photograph with project name and location, date photograph was taken, viewpoint and description of view shown. Pictures shall be sharply focussed; digital photographs shall be minimum 1000 x 800 dpi resolution.

1.7 Documents On Site

.1 At all times during the Contract, the Contractor shall maintain at his field office both sets of Record Drawings and one clear copy of each of the following :
- .1 Permits required by Authorities having jurisdiction.
- .2 Complete set of Contract Documents, including drawings, specifications and addenda.
- .3 Change Orders and Site Instructions.
- .4 Other modifications to the Contract.
- .5 Reviewed shop drawings and samples.
- .6 Manufacturer's installation and application procedures.
- .7 Field test reports.
- .8 Copy of the approved work schedule.
- .9 Progress reports.
- .10 Minutes of meetings
- .11 Applicable Codes including :
  - .1 National Building Code, 2010 and Supplements
  - .2 National Fire Code, 2010
  - .3 U.L.C. S 524 M91
  - .4 U.L.C. S 537 M87

2 PRODUCTS not applicable

3 EXECUTION not applicable

END OF SECTION

1 GENERAL

1.1 Existing Services

.1 Notify Departmental Representative of intended interruption of services and obtain required permission.

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

.3 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.2 Special Requirements

.1 Notify Departmental Representative of proposed work to occupied areas 48 hours prior to executing work.

.2 Security checks will be required for all Workers. General Contractor to submit required personal information for each Worker for clearances.

.3 No smoking will be permitted in the building.

2 PRODUCTS not applicable

3 EXECUTION not applicable

END OF SECTION

GENERAL

1.1 References

.1 Procurement Contracting Services
  .1 Construction Contract.

1.2 Application for Progress Payments

.1 Make applications for payment on account monthly as Work progresses.

.2 Date applications for payment last day of agreed monthly payment period and ensure amount claimed is for value, proportionate to amount of Contract, of Work performed and Products delivered to Place of Work at that date.

.3 Submit to Departmental Representative, at least 14 days before first application for payment, Schedule of Values for parts of Work, aggregating total amount of Contract Price, so as to facilitate evaluation of applications for payment.

1.3 Schedule of Values

.1 Make schedule of values out in such form and supported by such evidence as Departmental Representative may reasonably direct and when accepted by Departmental Representative, used as basis for applications for payment.

.2 Include statement based on schedule of values with each application for payment.

.3 Support claims for products delivered to Place of Work but not yet incorporated into Work by such evidence as Departmental Representative may reasonably require to establish value and delivery of products.

.4 Itemize the following general costs:
  .1 bonds, permits and insurance
  .2 temporary facilities
  .3 accommodation
  .4 travel
  .5 project administration\management
  .6 freight

.5 Itemize materials, labour and equipment costs for each section of the Work in divisions which at the least reflect specification sections.

.6 No claim will be processed by the Owner until the Schedule of Values has been submitted.

1.4 Progress Payment

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

1.5 Substantial Performance of Work

.1 Prepare and submit to Departmental Representative comprehensive list of items to be completed or corrected and apply for a review by Departmental Representative to establish Substantial Performance of Work. Failure to include an item on list does not alter responsibility to complete Contract.

.2 No later than 10 days after receipt of list and application, Departmental Representative will review Work to verify validity of application, and no later than 7 days after completing review, will notify Contractor if Work, or designated portion of Work, is substantially performed.

.3 Departmental Representative shall state date of Substantial Performance of Work or designated portion of Work in certificate.

.4 Immediately following issuance of Certificate of Substantial Performance of Work, in consultation with Departmental Representative, establish reasonable date for finishing Work.

1.6 Final Payment

.1 Submit an application for final payment when Work is completed.

.2 Departmental Representative will, no later than 10 days after receipt of an application for final payment, review Work to verify validity of application. Departmental Representative will give notification that application is valid or give reasons why it is not valid, no later than 7 days after reviewing Work.

.3 Departmental Representative will issue final certificate for payment when application for final payment is found valid.

2 PRODUCTS not applicable

3 EXECUTION not applicable

END OF SECTION

1 GENERAL

1.1 Section Includes

.1 Inspecting and testing by inspecting firms or testing laboratories designated by Owner or Departmental Representative.

1.2 Related Requirements Specified Elsewhere

.1 Particular requirements for inspection and testing to be carried out by testing laboratory designated by Owner or Departmental Representative are specified under various sections.

1.3 Appointment and Payment

.1 Owner will appoint and pay for services of testing laboratory except follows:
- .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
- .2 Inspection and testing performed exclusively for Contractor's convenience.
- .3 Mill tests and certificates of compliance.
- .4 Tests specified to be carried out by Contractor under the supervision of Departmental Representative.
- .5 Additional tests specified in the following paragraph.

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

1.4 Contractor’s Responsibilities

.1 Provide labour, equipment and facilities to:
- .1 Provide access to Work to be inspected and tested.
- .2 Facilitate inspections and tests.
- .3 Make good Work disturbed by inspection and test.
- .4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.

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

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

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

2 PRODUCTS not applicable

3 EXECUTION not applicable

END OF SECTION

1 GENERAL

1.1 General

.1 Make all submissions required by Contract Documents by prepaid transmission to the Departmental Representative with reasonable promptness and in sequence so as to cause no delay in Work.

.2 See Section 01 33 05 - Submittal Procedures.

1.2 Construction Schedule

.1 Within seven (7) days of award of Contract, prepare a draft construction schedule for the work of the entire Contract for review by the Departmental Representative.

1.3 Schedule of Values

.1 At least fourteen (14) days prior to submitting first Progress Claim, submit Schedule of Values for review by Departmental Representative. Itemize materials, labour and equipment costs for each section of the Work in divisions which at the least reflect specification sections.

.2 No claim will be processed by the Owner until the Schedule of Values has been submitted.

1.4 Contract Progress Claim

.1 See Section 01 29 00 - Payment Procedures.

.2 Submit progress claims in the form of an invoice.

.3 Submit breakdown of Contract costs based on the agreed Schedule of Values with progress claim.

1.5 Record Drawings

.1 See Section 01 78 05 - Project Record Documents.

1.6 Shop Drawings and Product Data

.1 Submit 1 electronic copy of shop drawings and product data sheets. Allow 5 working days for processing of same.

.2 Submit shop drawings and product data sheets in SI Metric units.

.1 Where items or information is not produced in SI Metric units converted values are acceptable.

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

.4 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.5 Samples and shop drawings will be reviewed for the sole purpose of ascertaining conformance with general design concept of the project and with information given in Contract Documents. Review of separate items shall not indicate acceptance of an assembly in which the item functions. Review shall not mean that the detail design inherent in the shop drawings is approved. Responsibility for the detail design shall remain with the contractor submitting same, and such review shall not relieve the Contractor of any of his responsibility for errors or omissions in the shop drawings or his responsibility for meeting all requirements of the Contract Documents.

1.7 Project Manual

.1 Assemble project information (shop drawings, product data, etc into green 3 ring binder marked.
  .1 Include the following items:
    .1 Name and addresses of Contractor and all Sub-contractors
    .2 Warranties and Guarantees showing duration of guarantee
    .3 Shop drawings and product data.
  .2 Submit 1 binder for each:
    .1 architectural
    .2 mechanical
    .3 electrical
  .3 Submit 2 unprotected PDF copies on disc. Format to match O & M manual.

2 PRODUCTS not applicable

3 EXECUTION not applicable

END OF SECTION

1 GENERAL

1.1 Administrative

.1 Submit to Departmental Representative submittals listed for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

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

.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.4 Where items or information is not produced in SI Metric units converted values are acceptable.

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

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

.7 Verify field measurements and affected adjacent Work are coordinated.

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

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

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

.11 Unless otherwise directed, make submissions by prepaid transmission to :

PSAV Architects Ltd.
P.O. Box 2353, 5016 - 47 Street
Yellowknife, NT X1A 2P7
Attention : Mr. Gene Drouin
Email : gene@psav.ca

1.3 Construction Schedule

.1 Within seven (7) days of award of Contract, prepare a draft construction schedule for the work of the entire Contract.

.2 Schedule format:
.1 Provide horizontal bar chart for each trade or operation.
.2 Provide horizontal time scale identifying the 1st work day each week.
.3 Indicate progress of each activity to date of schedule submission.

.3 Show in schedule, start and completion times of each item of the Work including mobilization and erection and dismantling and demobilization of temporary facilities.

.4 Distribute draft schedule to subcontractors. Recipients shall respond to the draft schedule to the Contractor in time to allow submission of the schedule by the specified time.

.5 Incorporate commentaries from subcontractors as appropriate and submit three (3) copies for review no later than 14 days after the award of Contract.

.6 Review Departmental Representative's commentary with subDepartmental Representatives and incorporate comments as appropriate and resubmit within 7 days and until accepted.

.7 Include with schedule, cash flow chart broken down on a monthly basis. Cash flow chart shall indicate the Contractor's anticipated monthly progress billings from commencement of the Work until completion.

.8 At least once per progress claim period, review construction schedule and notify Departmental Representative of any actual or anticipated delays and recommend actions to recover lost time.

.9 In a manner and at times satisfactory to Owner, update schedule and cash flow chart whenever changes occur.

1.4 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 coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.3 Allow 5 working days for Departmental Representative's review of each submission.

.4 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.

.5 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of any revisions other than those requested.

.6 Accompany submissions with transmittal letter, containing:
- .1 Date.
- .2 Project title and number.
- .3 Contractor's name and address.
- .4 Identification and quantity of each shop drawing, product data and sample.
- .5 Other pertinent data.

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

.8 After Departmental Representative's review, distribute copies.

.9 Submit 1 electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.

.10 Submit 1 electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.

.11 Delete information not applicable to project.

.12 Supplement standard information to provide details applicable to project.

.13 If upon review by Departmental 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.

1.5 Samples

.1 Submit for review samples in triplicate as requested in respective specification Sections. Label samples with origin and intended use.

.2 Deliver samples prepaid to Departmental Representative's business address.

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

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

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

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

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

1.6 Mock-ups

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

2 PRODUCTS not applicable

3 EXECUTION not applicable

END OF SECTION

1 GENERAL

1.1 References

.1 Northwest Territories
.1 Safety Act, R.S.N.W.T. 1988.

1.2 Regulatory Requirements

.1 Do Work in accordance with Section 01 41 00 - Regulatory Requirements.

.2 Comply with regulatory safety requirements as governed by the Northwest Territories Safety Act and Regulations. For information contact NWT Safety and Public Services, Workers' Compensation Board, (867) 873-7468.

1.3 Submittals

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

.2 Submit copies of incident and accident reports.

1.4 Construction Safety Measures

.1 At all times for the duration of the Contract until such time as a Certificate of Final Completion is issued, take all necessary precautions to ensure the safety of operatives and visitors.

.2 Immediately rectify any circumstance considered unsafe, as directed.

.3 Any direction or lack of direction to rectify any unsafe situation shall not relieve the Contractor of his responsibility for site safety.

.4 Observe and enforce construction safety measures required by Canadian Construction Safety Code and Worker's Safety and Compensation Commission.

1.5 Fire Safety Requirements

.1 Maintain fire protection for work of all trades. Comply with any requirements issued by the Office of the Fire Marshal of the Northwest Territories.

.2 Supply and maintain portable fire extinguishers at the site until Work is taken over by the Owner. The extinguishers shall remain the property of the Contractor and shall be removed from the site at the time of acceptance.

.3 Keep storage of gasoline, propane gas or diesel fuel to a minimum. Do not store inside any building but in a secure area secured by a padlock.

.4 Inspect temporary wiring, extension cables and drop cords for defective insulation or connections at frequent intervals.

.5 Where electric or gas welding or cutting is to be done within 3 metres of or above combustible material, or above space that may be occupied by people, provide adequate protection in the form of shields of non-combustible material. Tanks supplying gas for welding or cutting shall be placed no further from the work than is absolutely necessary and shall be securely fastened in the upright position. Do not expose such tanks to extreme temperature.

.6 Maintain fire exits for occupied building. Provide fire protection plan for review by Departmental Representative.

1.6 First Aid

.1 Provide site equipment and medical facilities necessary to supply first aid service to injured personnel in accordance with the N.W.T. Industrial Safety Regulations - First Aid Requirements and the Regulations of the Workers' Compensation Act. Maintain facilities for the duration of the Contract.

1.7 Propane Safety Requirements

.1 Comply with Part 8 - Safety Measures At Construction and Demolition Sites of the current edition of the National Building Code of Canada.

.2 The use of propane on the project shall be in accordance with the following:

.1 Before commencing work confirm with the Safety Division of the Department of Justice in Yellowknife, N.W.T. any requirement for permits and regulations governing the use of propane on construction projects.

Mailing Address :
Boiler/Gas Safety
Department of Public Works & Services
Government of the N.W.T.
Box 1320
Yellowknife, N.W.T., X1A 2L9
Phone: (867) 873-7474
Fax: (867) 873-0117

.2 Comply with all the applicable requirements of the Safety Division and the Propane Installation Code CAN/CGA-B149.2-M86 as prepared by Canadian Gas Association.

.3 Transport and store propane in compliance with all rules and regulations of governing authorities. Ensure that portable containers are in good safe condition. Provide adequate protection to containers and controls and provide appropriate placards denoting contents and warning (Dangerous and Flammable).

.4 All propane containers (full and empty) stored, and in use on the site are to be secured in a manner to prevent unauthorized access and vandalism. Unattended containers are to be stored in a secure, locked, well ventilated enclosure. Consult the Safety Division as to a propane Installation Code acceptable to enclosure, and comply with their advice.

.5 Do not store propane bottles (including empty bottles) on the roof, inside or within 6m from the building.

.6 Obtain pamphlet titled "Safety Tips for Using Propane at Construction Sites" prepared by the Propane Gas Association of Canada, available through propane dealers. Provide a copy to each workman handling propane on the project.

.7 All propane containers (full or empty) shall be removed from the site upon completion of this work.

1.8 Workplace Hazardous Materials Information System (W.H.M.I.S.)

.1 All products designated under the Workplace Hazardous Materials Information System used on this Work shall be labelled with appropriate symbols, risk phrases, precautionary and first aid measures required by the regulations.

.2 Each manufacturer shall supply a Material Safety Data Sheet (MSDS) to the job site and these sheets shall be prominently posted at the work site.

.3 All personnel shall be made aware of these data and recommended precautions shall be observed.

1.9 Accident Prevention Program

.1 The Safety Act requires Contractors to provide a safe work environment for workers.

.2 The Contractor shall organize and record the proceedings of Work Site Joint Safety Committee meetings, and submit copies of the minutes to the Departmental Representative as required by the Safety Act and Regulations.

.3 Employers in the NWT with 10 or more workers, are required by law to set up and maintain an Accident Prevention Program at the workplace. The Safety Division of the Department of Safety and Public Services has the information needed to set up an Accident Prevention. They may be contacted at :

(867) 669-4417 in Yellowknife, or :

Safety Division,
Department of Safety and Public Services
Government of the NWT
P.O. Box 1320
Yellowknife, NT X1A 2L9

1.10 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, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.11 Unforeseen Hazards

.1 Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Authority having Jurisdiction. Advise Departmental Representative verbally and in writing.

1.12 Posting of Documents

.1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Authority having Jurisdiction.

1.13 Correction of Non-Compliance

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

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

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

2 PRODUCTS not applicable

3 EXECUTION not applicable

END OF SECTION

1 GENERAL

1.1 Fires

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

1.2 Pollution Control

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

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

2 PRODUCTS not applicable

3 EXECUTION not applicable

END OF SECTION

1 GENERAL

1.1 References and Codes

.1 Perform Work in accordance with National Building Code of Canada (NBC) 2010 including all amendments up to tender closing date and other codes of territorial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.

.2 Meet or exceed requirements of:
- .1 Contract documents.
- .2 Specified standards, codes and referenced documents.

.3 Comply with all laws, ordinances, codes, orders, regulations, rules and other requirements of territorial, local and other authorities having jurisdiction which are in force during the performance of the Work and which govern the Work, public health and safety, construction safety or any other aspect of the Work. In any case of conflict or discrepancy, the more stringent requirements shall apply.

.4 Where it is necessary to carry out work outside property lines, comply with applicable requirements of local Authorities having jurisdiction.

.5 Promptly submit written notice to the Departmental Representative of observed variance of Contract Documents from requirements of the Building Code and authorities having jurisdiction. Assume responsibility for work known to be contrary to such requirements and performed without notifying the Departmental Representative.

.6 Comply with safety requirements as governed by the Northwest Territories Safety Act and Regulations. For information contact NWT Safety and Public Services, 867-873-7996.

1.2 Permits and Fees

.1 Obtain and pay all fees for all permits, licenses and certificates required by Authorities having jurisdiction, for the performance of the Work.

1.3 Notices

.1 Give all required notices and otherwise comply with all procedures required by the regulatory requirements.

1.4 Workplace Hazardous Materials Information System (W.H.M.I.S.)

.1 Carry out all work in accordance with the requirements of the Workplace Hazardous Materials Information System.

.2 See Section 01 35 30 - Health and Safety.

2 PRODUCTS not applicable

3 EXECUTION not applicable

END OF SECTION

1 GENERAL

1.1 Inspection

.1 Allow access to the Work by Owner and Departmental Representative. If part of the Work is in preparation at locations other than the Place of the Work, access shall be given 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 instructions, or the law of the Place of the Work.

.3 If the 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 the inspections or tests satisfactorily completed and make good such Work.

.4 The Departmental Representative may order any part of the Work to be examined if the work is suspected to be not in accordance with the Contract Documents. If, upon examination, such work is found not in accordance with the Contract Documents, correct such work and pay the cost of examination and correction. If such work is found in accordance with the Contract Documents, the Owner shall pay the cost of examination and replacement.

.5 The Contractor shall, where specified, test and, if necessary, retest the Work and record the results of the tests in an acceptable form. Submit test results as described in Section 01 33 00.

.6 Arrange for inspections by Authorities Having Jurisdiction.

1.2 Rejected Work

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

.2 Make good other Contractor's work damaged by such removals or replacements promptly.

.3 If in the opinion of the Departmental Representative it is not expedient to correct defective work or work not performed in accordance with the Contract Documents, the Owner may deduct from the Contract Price the difference in value between the Work performed and that called for by the Contract Documents, the amount of which shall be determined by the Departmental Representative.

1.3 Independent Inspection Agencies

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

.2 Provide equipment required for executing inspection and testing by appointed agencies.

.3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

.4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative no cost to Owner. Pay costs for retesting and reinspection.

1.4 Access to Work

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

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

1.5 Procedures

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

.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence so as not to cause delay 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.

1.6 Tests and Mix Designs

.1 Furnish test results and mix designs as may be requested.

.2 The cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work shall be appraised by Departmental Representative and may be authorized as recoverable.

1.7 Mill Tests

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

1.8 Reports

.1 Submit 3 copies of inspection and test reports to Departmental Representative.

.2 Provide copies to Subcontractor of work being inspected or tested.

2 PRODUCTS not applicable

3 EXECUTION not applicable

END OF SECTION

1 GENERAL

1.1 Related Sections

.1 Section 01 52 00 - Construction Facilities.

.2 Section 01 56 00 - Temporary Barriers and Enclosures.

1.2 Installation and Removal

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

.2 Remove from site all such work after use.

1.3 Water Supply

.1 Owner will supply at no charge a continuous supply of potable water for construction use.

1.4 Temporary Heating and Ventilation

.1 Provide ventilation in enclosed areas as required to:
- .1 Facilitate progress of Work.
- .2 Prevent moisture condensation on surfaces.
- .3 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
- .4 Provide adequate ventilation to meet health regulations for safe working environment.

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

.3 Ventilating:
- .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
- .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
- .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
- .4 Ventilate storage spaces containing hazardous or volatile materials.
- .5 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.

.4 Maintain strict supervision of operation of ventilating equipment to:
- .1 Conform with applicable codes and standards.
- .2 Enforce safe practices.
- .3 Prevent abuse of services.
- .4 Prevent damage to finishes.

.5 Vent direct-fired combustion units to outside.

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

1.5 Temporary Power and Light

.1 Owner will pay for power requirements for the course of construction.

.2 Provide and maintain temporary lighting as required in areas of construction throughout project. Ensure level of illumination is not less than 162 lx.

1.6 Temporary Communication Facilities

.1 Contractor to provide contact information for site.

1.7 Fire Protection

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

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

2 PRODUCTS not applicable

3 EXECUTION not applicable

END OF SECTION

1 GENERAL

1.1 References

.1 Canadian Standards Association (CSA International)
.1 CAN/CSA-Z321-96, Signs and Symbols for the Occupational Environment.

1.2 Installation and Removal

.1 Provide construction facilities in order to execute work expeditiously.

.2 Remove from site all such facilities after completion of Work.

1.3 Scaffolding

.1 Provide and maintain scaffolding, ramps and ladders.

1.4 Site Storage and Loading

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

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

1.5 Construction Parking

.1 Contractor has access to parking as directed by Staff.

1.6 Equipment, Tool and Materials Storage

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

.2 No tools to be left exposed at the end of the working day.

1.7 Sanitary Facilities

.1 Detachment washroom facilities may be used by workers. Washroom to be left clean.

1.8 Construction Signage

.1 Contractor to approach Owner for approval to erect signage and to follow direction on location proposed.

.2 Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project.

1.9 Workmen's Accommodation

.1 Local commercial accommodation is to be used.

2 PRODUCTS not applicable

3 EXECUTION not applicable

END OF SECTION

1 GENERAL

1.1 Installation and Removal

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

.2 Remove from site all such work after use.

1.2 Fire Routes

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

1.3 Protection for Off-Site and Public Property

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

.2 Be responsible for and repair damage incurred.

1.4 Protection of Building Finishes

.1 Provide protection for adjacent building finishes and equipment during performance of Work.

.2 Provide necessary screens, covers, and hoardings.

.3 Be responsible for and repair damage incurred due to lack of or improper protection.

2 PRODUCTS not applicable

3 EXECUTION not applicable

END OF SECTION

1 GENERAL

1.1 Reference Standards

.1 If there is question as to whether any product or system is in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.

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

.3 Conform to latest date of issue of referenced standards in effect on date of submission of Tenders, except where specific date or issue is specifically noted.

1.2 Quality

.1 Products, materials, equipment and articles (referred to as products throughout specifications) incorporated in Work shall be new, not damaged or defective, and of best quality (compatible with specifications) 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 any dispute arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.

.4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

.5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

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

.5 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.

.6 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.

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

1.4 Transportation

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

1.5 Manufacturer's Instructions

.1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.

.2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative may establish course of action.

.3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

1.6 Quality of Work

.1 Enure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.

.3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

1.7 Co-Ordination

.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.

1.8 Concealment

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

.2 Before installation, inform Departmental Representative if there is interference. Install as directed by Departmental Representative.

1.9 Remedial Work

.1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate 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.

1.10 Location of Fixtures

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

.2 Inform Departmental Representative of conflicting installation. Install as directed.

1.11 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.

1.12 Fastenings - Equipment

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

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

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

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

1.13 Protection of Work in Progress

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

1.14 Existing Utilities

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

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

2 PRODUCTS

2.1 Acceptable Products/Materials

.1 Acceptable Products/Materials means, those items named and specified by manufacturer's reference, meet the specification in all respects and are acceptable to the Departmental Representative.

2.2 No Substitution

.1 All products listed as No Substitution in various sections are to be supplied as specified.

3 EXECUTION not applicable

END OF SECTION

1 GENERAL

1.1 Definitions

.1 Recyclable: Ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse by others.

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

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

.4 Reuse: Repeated use of product in same form but not necessarily for same purpose. Reuse includes:
- .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
- .2 Returning reusable items including pallets or unused products to vendors.

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

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

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

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

1.3 Disposal of Wastes

.1 Do not bury rubbish or waste materials.

.2 Do not dispose of volatile materials, mineral spirits, paint thinner on site.

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

1.4 Use of Site and Facilities

.1 Execute work with least possible interference or disturbance to normal use of premises.

.2 Maintain security measures established by existing facility. Provide temporary security measures approved by Departmental Representative.

1.5 Scheduling

.1 Coordinate Work with other activities at site to ensure timely and orderly progress of Work.

2 PRODUCTS not applicable

3 EXECUTION

3.1 Application

.1 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

3.2 Cleaning

.1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.

.2 Clean-up work area as work progresses.

.3 Source separate materials to be reused/recycled into specified sort areas.

END OF SECTION

1 GENERAL

1.1 Related Sections

.1 Section 01 78 00 - Closeout Submittals.

1.2 Operation and Maintenance Manuals

.1 Submit Operation and Maintenance information as described in Section 01 78 00 - Closeout Submittals.

1.3 Inspection and Declaration

.1 Contractor's Inspection: Contractor and all Subcontractors shall conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents. Upon completion of inspection, submit report as follows:
Project Name: Renovations to Government of Canada Building
Pre-Substantial Deficiency List
Date:

Item #	Room #	Description	Value	Correction Date	Consultants Verification Date

Upon completion of repairs;

.1 Notify Consultant in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
.2 Make all specified document submissions.
.3 Request Owner's Inspection.

Omission of any such item does not relieve the Contractor of his responsibility to complete all work in accordance with the Contract Documents.

Allow a minimum of 10 days notice for Owner’s inspection.

.2 Owner's Inspection: Upon receipt of notification of completion and upon satisfactory review of the specified submissions, the Consultant will arrange to conduct an inspection to determine if the building is complete and fit for its intended use and that the Contract Requirements have been met. Contractor shall correct noted deficiencies accordingly.

.3 Completion Report: Submit written certificate that following have been performed:
.1 Work has been completed and inspected for compliance with Contract Documents.
.2 Defects identified in contractor and sub-contractor deficiency reports have been corrected and deficiencies have been completed.
.3 All safety routes and safety related closures and operating styles are complete, tested and operational.
.4 Painting is complete the building is fit for the intended occupancy;
.5 All requirements of the Contract have been met.

.4 Final Inspection: when items noted above are completed, request final inspection of Work by the Departmental Representative and the Consultant. If the Departmental Representative considers the Work is complete and all requirements of the Contracts have been met, the Departmental Representative will issue a Certificate of Final Completion If Work is deemed incomplete by the Departmental Representative, complete outstanding items and request reinspection.

.5 Declaration of Substantial Performance: If, on inspection, the Departmental Representative considers the Work is substantially complete and the building is safe for occupancy and use and that the remaining in-completed work and deficiencies are minor and my be completed or rectified without UNDUE disturbances to building users and that the building users/operators have been instructed so that they are able to occupy, operate and maintain the work safely, efficiency and cost-effective. The Departmental Representative will issue a Certificate of Substantial Completion.

.6 Commencement of Warranty Period: date of Owner's acceptance of submitted declaration of Substantial Performance shall be date for commencement for warranty period.

.7 Final Payment: When Departmental Representative consider final deficiencies and defects have been corrected and it appears requirements of Contract have been totally performed, make application for final payment. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request reinspection.

.8 Contractor will be responsible for all costs of inspections in excess of one (1) Substantial Performance, one (1) Final Completion and one (1) Warranty.

1.4 Final Cleaning

.1 Upon completion of Work and immediately prior to any Completion Inspection, remove surplus material, tools, construction machinery and equipment not required for performance of remaining work and thoroughly clean all surfaces and components to allow occupancy without further cleaning.

.2 Leave site free of all foreign and surplus materials, cleaning equipment, obstructions and hindrances.

2 PRODUCTS not applicable

3 EXECUTION not applicable

END OF SECTION

1 GENERAL

1.1 Recording Actual Site Conditions

.1 Record information on set of blue line opaque drawings.

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

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

.4 Contract Drawings: legibly mark each item to record actual construction, including:
- .1 Changes made by change orders.
- .2 Details not on original Contract Drawings.

.5 Other Documents: maintain inspection certifications and field test records, required by individual specifications sections.

1.2 Record As-built Documents

.1 Submit legible set of record documents including contract drawings incorporating all change orders, site instructions, all changes required by inspection authorities and/or authorities having jurisdiction and all test records.

.2 Other Documents: submit inspection certifications and field test records, required by individual specifications sections.

1.3 Warranty 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 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work.

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

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

.6 Co-execute submittals when required.

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

1.4 Project Manual

.1 Assemble project information (shop drawings, product data, etc) into a green 3-ring binder.
- .1 Include the following items:
  - .1 Name and addresses of Contractor and all Sub-contractors
  - .2 Warranties and Guarantees showing duration of guarantee
  - .3 Shop drawings, product data and colour schedule.
- .2 Submit 3 copies of project manual.
- .3 General Requirements:
  - .1 Assemble, coordinate and index required data to provide a manual which is readable and useable by local operators and maintenance staff.
  - .2 Drawings must be clear and readable. Where graphic symbols are used, a legend must be provided on each drawing.
  - .3 Provide tabbed section dividers corresponding to specification sections of hard paper
- .4 Format
  - .1 Organize data in the form of an instructional manual.
- .5 Text: Manufacturer's printed data, or typewritten data.
- .6 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

1.5 Project Record Drawings

.1 Maintain project record drawings and accurately record deviations from Contract documents.

.2 Record changes in red. Mark on one set of prints and at completion of project and prior to Substantial Completion Inspection, neatly transfer notations to second set and submit both sets to Departmental Representative.

.3 Record following information:
- .1 Location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure.
- .2 Field changes of dimension and detail.
- .3 Changes made by Change Order or Site Instruction.

.4 Record drawings shall be kept strictly separate from day to day working sets of drawings.

.5 Record drawings are required to receive a certificate of Substantial Completion.

1.6 Documentation Submission

.1 A minimum of two weeks prior to submitting notice of completion and in accordance with Section 01 33 00 or with any other instructions, submit for review:
- .1 Draft Project Manual.

.1 To be considered acceptable, material must be sufficiently complete to allow safe, effective and efficient operation of the facility.
.2 Include written confirmation that maintenance materials specified have been delivered to site and are securely stored.

.2 Incorporate review comments and resubmit revised information until accepted by the Departmental Representative.

.2 At the latest, one week prior to submitting notice of application for Final Completion Certificate, submit :
.1 required copies of the approved Project Manual information.

.3 Final documentation :
.1 Execute transition of performance and Labour and Materials Payment Bond to contract warranty period requirements.
.2 Submit a final statement of accounting giving total adjusted Contract Price, previous payments and monies remaining due.

2 PRODUCTS not applicable

3 EXECUTION not applicable

END OF SECTION

1 GENERAL

1.1 Record Drawings

.1 Departmental Representative will provide two sets of white prints of contract drawings and project specifications for record drawing purposes.

.2 Maintain project record documents and accurately record deviations from Contract documents.

.3 Record changes in red. Mark on one set of prints and at completion of project and prior to Substantial Completion Inspection, neatly transfer notations to second set and submit both sets to Departmental Representative. Annotate all changes with reference to the derivate change order or site instruction.

.4 Record following information:
- .1 Field changes of dimension and detail.
- .2 Changes made by Change Order or Site Instruction.

.5 Record drawings shall be kept strictly separate from day to day working sets of drawings. Protect drawings with edge binding.

.6 Record drawing are required to receive a certificate of Substantial Completion.

.7 Submit Record Drawings to Departmental Representative as required in Section 01 78 00.

.8 Contractor to revise whiteprints of record drawings to incorporate Departmental Representatives remarks prior to Final Completion.

2 PRODUCTS not applicable

3 EXECUTION not applicable

END OF SECTION

1 GENERAL

1.1 References

.1 Federal Legislation.
- .1 Canadian Environmental Assessment Act (CEAA), 1992, c. 37.
- .2 Canadian Environmental Protection Act (CEPA), 1999, c. 33.
- .3 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.

1.2 Definitions

.1 Demolition: removal of cell doors, benches, security screens, carpet, doors, millwork, windows.

1.3 Submittals

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

1.4 Quality Assurance

.1 Ensure Work is performed in compliance with CEPA, CEAA, TDGA

1.5 Environmental Requirements

.1 Do Work in accordance with Section 01 35 43 - Environmental Protection.

1.6 Site Conditions

.1 Protection.
- .1 Prevent movement, settlement or damage of adjacent structures, and services. Provide bracing as required. Repair damage caused by deconstruction as directed by Departmental Representative.
- .2 Support affected structures and, if safety of structure being deconstructed or adjacent structures appears to be endangered, take preventative measures. Cease operations and immediately notify Departmental Representative.
- .3 Prevent debris from blocking mechanical and electrical systems.

2 PRODUCTS

2.1 Equipment

.1 Leave equipment and machinery running only while in use.

.2 Demonstrate that tools are being used in manner which allows for salvage of materials in best condition possible.

3 EXECUTION

3.1 Preparation

.1 Do Work in accordance with Section 01 35 30 - Health and Safety Requirements.

3.2 Disassembly

.1 Materials removed from designated areas are property of Contractor.

.2 Throughout course of deconstruction pay close attention to connections and material assemblies. Employ workmanship procedures which minimize damage to materials and equipment.

.3 Ensure workers and subcontractors are briefed to carry out work in accordance with appropriate deconstruction techniques.

.4 Project supervisor with previous deconstruction experience must be present on site throughout project.

.5 Deconstruct in accordance with CSA S350 and applicable safety standards.

.6 Systematically remove finishes as indicated by Departmental Representative.

.7 Remove materials that cannot be salvaged for reuse or recycling and dispose of in accordance with applicable codes at licensed facilities.

3.3 Processing

.1 Designate location for processing of materials which eliminates double handling and provides adequate space to maintain efficient material flow.

.2 Keep processing area clean and free of excess debris.

.3 Supply separate, marked disposal bins for categories of waste material.

3.4 Stockpiling

.1 Label stockpiles, indicating material type and quantity.

.2 Designate appropriate security resources/measures to prevent vandalism, damage and theft.

.3 Stockpile materials designated for alternate disposal in location which facilitates removal from site and examination by potential end markets, and which does not impede disassembly, processing, or hauling procedures.

3.5 Removal from Site

.1 Transport material designated for alternate disposal by approved haulers and in accordance with applicable regulations.

.2 Dispose of materials not designated for alternate disposal in accordance with applicable regulations.

3.6 Cleaning & Restoration

.1 Keep site clean and organized throughout deconstruction.

.2 Upon completion of Work, remove debris, trim surfaces and leave work site clean.

END OF SECTION

1 GENERAL

1.1 General Requirements

.1 All requirements of the Contract apply to and govern all work of this Section.

.2 Comply with the requirements of Division 1.

1.2 Related Work in Other Sections

.1	Joint Sealers	Section 07 92 10
.2	Gypsum Board Assemblies	Section 09 21 16

1.3 References

.1 American National Standards Institute (ANSI)
- .1 ANSI A208.1-1999, Particleboard, Mat Formed Wood.

.2 American Society for Testing and Materials (ASTM)
- .1 ASTM A 123/A 123M-09, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
- .2 ASTM C 36/C36M-01, Specification for Gypsum Wallboard.

.3 Canadian Standards Association (CSA)
- .1 CSA 35.4-1972, Zinc, Cadmium, Chrome Plated
- .2 CAN/CSA-A82.27-M91, Gypsum Board.
- .3 CSA B111-1974 (R2003), Wire Nails, Spikes and Staples
- .4 CSA G40.21-M1976
- .5 CSA O121-08, Douglas Fir Plywood
- .7 CSA O141-05(R2009), Softwood Lumber
- .9 CSA O151-09, Canadian Softwood Plywood
- .10 CSA O153-M1980(R2008), Poplar Plywood.

.4 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-71.26-M88, Adhesive for Field-Gluing Plywood to Lumber Framing for Floor Systems.

.5 National Building Code of Canada, 2010

.6 National Lumber Grades Authority (NLGA)
- .1 Standard Grading Rules for Canadian Lumber 2000.

1.4 Quality Assurance and Extended Guarantees

.1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

.2 Plywood identification: by grade mark in accordance with applicable CSA standards.

.3 Plywood, OSB and wood based composite panel construction sheathing identification: by grademark in accordance with applicable CSA standards.

1.5 Special Handling and Transportation Requirements

.1 Store materials on site in such a way as to prevent distortion, deterioration or loss of their structural or other essential properties.

.2 Store materials on site in such a way as to prevent excessive moisture gain of materials.

1.6 Submittals

.1 Shop drawings : Not required

.2 Samples : Not required

1.7 Closeout Submittals

.1 No specific requirements.

1.8 Special Environmental Requirements

.1 Use caution when working with particle board. Use dust collectors and high quality respirator masks.

1.9 Special Protection Requirements

.1 Maintain rough carpentry materials protected from wetting due to rain or snow, including driven rain or snow.

2 PRODUCTS

2.1 Framing and Structural Materials

.1 Lumber: unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with following standards:
- .1 CAN/CSA-O141
- .2 NLGA Standard Grading Rules for Canadian Lumber, latest edition.

.2 Machine stress-rated lumber is acceptable for all purposes.

.3 Glued end-jointed (finger-jointed) lumber is not acceptable.

.4 Framing and board lumber: in accordance with NBC 2010 Subsection 9.3.2, except as follows:
.1 Non structural framing : S.P.F. No. 2 Grade NGA 124 c.

.5 Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers:
.1 S2S is acceptable for members not receiving finishes, S4S is acceptable for members receiving finishes.
.2 Board sizes: "Standard" or better grade.
.3 Dimension sizes: "Standard" light framing or better grade.
.4 Post and timbers sizes: "Standard" or better grade.

2.2 Panel Materials

.1 Plywood, OSB and wood based composite panels: to CAN/CSA-O325.0.

.2 Douglas fir plywood (DFP): to CSA O121, standard construction, G.1.S.

.3 Canadian softwood plywood (CSP): to CSA O151, standard construction.

.4 Poplar plywood (PP): to CSA O153, standard construction, G.1.S..

.5 Gypsum sheathing: to ASTM C 36/C36M.

2.3 Air / Vapour Barrier Membrane

.1 Self adhesive MBM membrane. Sopraseal Stick 1100T by Soprema Inc.

2.4 Fasteners

.1 Nails, spikes and staples: to CSA B111-1974. Common spiral, flathead hot dip galvanized for exterior work, electro galvanized elsewhere.

.2 Bolts, nuts, washers: ASTM A307, hot dip galvanized structural quality steel.

.3 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, recommended for purpose by manufacturer.

.4 Screws : to CSA 35.4-1972, zinc, cadium or chrome plated.

.5 Galvanizing: to ASTM A 123/A 123M use galvanized fasteners for exposed exterior work interior highly humid areas or fire-retardant treated lumber.

3 EXECUTION

3.1 Preparation

.1 Store wood products as recommended by manufacturer.

3.2 Installation

.1 Comply with requirements of NBC 2010 Part 9.23 "Wood Frame Construction" except where specifically shown otherwise on drawings.

.2 Provide solid lumber or certified proprietary firestops in accordance with NBC requirements and suitable for non-combustible construction.

.3 Where work remains exposed to view, fasteners shall be uniformly and evenly spaced and neatly installed.

.4 Install wall sheathing in accordance with manufacturer's printed instructions.

.5 Install lumber and panel materials so that grade-marks and other defacing marks are not visible or are removed by sanding when in exposed locations.

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

.7 Construct continuous members from pieces of longest practical length.

.8 Install spanning members with "crown-edge" up.

.9 Rout edges of plywood in Cell and Patrol floor, partition and ceiling installations as indiceted.

3.2 Erection

.1 Furring and Blocking
- .1 Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling mounted fixtures, equipment and fitments, wall and ceiling finishes, facings, and other work as required.
- .2 Install furring to support siding applied vertically where there is no blocking and where sheathing is not suitable for direct nailing.
- .3 Align and plumb faces of furring and blocking to tolerance of 1:600.

.3 Nailing Strips, Grounds and Rough Bucks
- .1 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.
- .2 Unless otherwise indicated, attach wood members at maximum 600 mm o/c as follows :
  - .1 To heavy gauge metal with bolts
  - .2 To light gauge metal with screws or bolts

.3 To wood with nails, screws or bolts as required to ensure stability.

.4 Fasteners
.1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
.2 Countersink bolts where necessary to provide clearance for other work.

.5 Caulking
.1 Fill routed edges of plywood as indicated.

END OF SECTION

1 GENERAL

1.1 General Requirements

.1 All requirements of the Contract apply to and govern all work of this Section.

.2 Comply with the requirements of Division 1.

1.2 Related Work Specified in Other Sections

.1	Rough Carpentry	Section 06 10 10
.2	Architectural Woodwork	Section 06 40 00
.3	Joint Sealers	Section 07 92 10
.4	Cabinet and Miscellaneous Hardware	Section 08 71 73
.5	Interior Painting	Section 09 91 23

1.3 References

.1 Architectural Woodwork Manufacturers Association of Canada (AWMAC)
- .1 Architectural Woodwork Standards, 2009.

.2 American Society for Testing and Materials (ASTM)
- .1 ASTM A 123/A 123M-09, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

.3 Canadian Standards Association (CSA)
- .1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
- .2 CSA O115-M82(R2001), Hardwood and Decorative Plywood.
- .3 CSA O121-08, Douglas Fir Plywood.
- .4 CSA O141-05(R2009), Softwood Lumber.
- .5 CSA O151-09, Canadian Softwood Plywood.
- .6 CSA O153-M1980 (R2008), Poplar Plywood.
- .7 CSA Z760-94, Life Cycle Assessment.

.3 National Lumber Grades Authority (NLGA)
- .1 Standard Grading Rules for Canadian Lumber 2010.

1.4 Quality Assurance and Extended Guarantees

.1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

.2 Plywood identification: by grade mark in accordance with applicable CSA standards.

.3 Plywood, OSB and wood based composite panel construction sheathing identification: by grademark in accordance with applicable CSA standards.

1.5 Specific Handling and Transportation Requirements

.1 Delivery, Storage, and Handling
- .1 Deliver, handle, store and protect materials in accordance with manufacturer's instructions.
- .2 Protect materials against dampness during and after delivery.
- .3 Store materials in ventilated areas, protected from extreme changes of temperature or humidity.

1.6 Submittals

.1 Shop Drawings
- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate details of construction, profiles, jointing, fastening and other related details.
- .3 Indicate materials, thicknesses, finishes and hardware.

.2 Samples: Not required.

1.7 Closeout Submittals

.1 No special requirements.

1.8 Specific Environmental Requirements

.1 None

1.9 Specific Protection Requirements

.1 None

2 PRODUCTS

2.1 Lumber Material

.1 Softwood lumber: unless specified otherwise, S4S, moisture content 19% or less in accordance with following standards:
- .1 CAN/CSA-O141.
- .2 NLGA Standard Grading Rules for Canadian Lumber.
- .3 AWMAC premium grade, moisture content as specified.

.2 Machine stress-rated lumber is acceptable.

.3 Hardwood lumber: moisture content 6 % or less in accordance with following standards:
.1 National Hardwood Lumber Association (NHLA).
.2 AWMAC premium grade, moisture content as specified.

.4 Manufacturing process must adhere to Lifecycle Assessment (LCA) Standards as per, CSA Z760-94 LCA Standards.

.5 Interior exposed locations unless indicated otherwise : Architectural grade Birch species.

2.2 Panel Material

.1 Douglas fir plywood (DFP): to CSA O121, standard construction. G.1.S in exposed locations for painted finish.

.2 Canadian softwood plywood (CSP): to CSA O151, standard construction.

.3 Poplar plywood (PP): to CSA O153, standard construction.

.4 Hardwood plywood : to CSA O115.

.5 Manufacturing process must adhere to Lifecycle Assessment Standards as CSA Z760 LCA-94 Standards.

2.3 Accessories

.1 Nails and staples: to CSA B111; galvanized to ASTM A123/ASTM A123M for exterior work, interior humid areas and for treated lumber; plain finish elsewhere.

.2 Wood screws: plain steel, type and size to suit application.

.3 Splines: wood.

.4 Adhesive: recommended by manufacturer.

.5 Use least toxic sealants, adhesives, sealers, and finishes necessary to comply with requirements of this section.

3 EXECUTION

3.1 Installation

.1 Do finish carpentry to premium Quality Standards of the Architectural Woodwork Manufacturers Association of Canada (AWMAC), except where specified otherwise.

.2 Scribe and cut as required, fit to abutting walls, and surfaces, fit properly into recesses and to accommodate piping, columns, fixtures, outlets, or other projecting, intersecting or penetrating objects.

.3 Form joints to conceal shrinkage.

3.2 Construction

.1 Fastening
- .1 Position items of finished carpentry work accurately, level, plumb, true and fasten or anchor securely.
- .2 Design and select fasteners to suit size and nature of components being joined. Use proprietary devices as recommended by manufacturer.
- .3 Set finishing nails to receive filler. Where screws are used to secure members, countersink screw in round, cleanly cut hole and plug with wood plug to match material being secured.
- .4 Replace items of finish carpentry with damage to wood surfaces including hammer and other bruises.

.2 Standing and running trim
- .1 Butt and cope internal joints of wood trim to make snug, tight, joint. Cut right angle joints of casing with mitred joints.
- .2 Make joints in wood trim, where necessary using a 45° scarf type joint.
- .3 Install door and window trim in single lengths without splicing.

3.3 Schedules

.1 Standing and running trim and frames
- .1 Interior:
  - .1 Grade: premium.
  - .2 Solid stock: Birch species.

END OF SECTION

1 GENERAL

1.1 General Requirements

.1 All requirements of the Contract apply to and govern all work of this Section.

.2 Comply with the requirements of Division 1.

1.2 Related Work Specified in Other Sections

.1	Rough Carpentry	Section 06 10 10
.2	Finish Carpentry	Section 06 20 00
.3	Joint Sealers	Section 07 92 10
.4	Cabinet and Miscellaneous Hardware	Section 08 71 73

1.3 References

.1 American Society for Testing and Materials (ASTM)
- .1 ASTM D 2369-10e1, Standard Test Method for Volatile Content of Coatings.
- .2 ASTM D 2832-92(R1999), Standard Guide for Determining Volatile and Nonvolatile Content of Paint and Related Coatings.

.2 Architectural Woodwork Manufacturers Association of Canada (AWMAC)
- .1 Architectural Woodwork Standards, 2009.

.3 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-71.20-M88, Adhesive, Contact, Brushable

.4 Canadian Standards Association (CSA)
- .1 CSA 35.4-1972, Zinc, Cadmium, Chrome Plated
- .2 CSA B111-74(R2003), Wire Nails, Spikes and Staples.
- .3 CSA O115-M1982(R2001), Hardwood and Decorative Plywood.
- .4 CSA O121-08, Douglas Fir Plywood.
- .5 CAN/CSA O141-05(R2009), Softwood Lumber.
- .6 CSA O151-09, Softwood Plywood.
- .7 CAN/CSA-O325.0-92(R1998), Construction Sheathing.

.5 Environmental Choice Program (ECP)
- .1 ECP-44-92, Adhesives.

.6 National Electrical Manufacturers Association (NEMA)
- .1 NEMA LD-3-2005.

.7 National Hardwood Lumber Association (NHLA)
- .1 Rules for the Measurement and Inspection of Hardwood and Cypress 2011.

.8 National Lumber Grades Authority (NLGA)
.1 Standard Grading Rules for Canadian Lumber, 2010.

.9 Underwriters' Laboratories of Canada (ULC).
.1 CAN4 S104M-80(R1985), Fire Tests of Door Assemblies.
.2 CAN4 S105M-85(R1992), Fire Door Frames Meeting the Performance Required by CAN4-S104.

1.4 Quality Assurance and Extended Guarantees

.1 Do architectural woodwork to millwork standards of the Architectural Woodwork Manufacturers Association of Canada (AWMAC), except where specified otherwise.

.2 Wood fire rated doors: listed and labelled by an organization accredited by Standards Council of Canada in conformance with CAN4 S104M-80 revised 1985 and CAN4 S105M-1985 for ratings specified or indicated.

.3 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

.4 Plywood identification: by grade mark in accordance with applicable CSA standards.

.5 Plywood, OSB and wood based composite panel construction sheathing identification: by grademark in accordance with applicable CSA standards.

1.5 Special Handling and Transportation Requirements

.1 Protect materials against dampness during and after delivery.

.2 Deliver, handle and store components so as to prevent damage and distortion. Protect material against scratches and soiling.

.3 Deliver, handle, store and protect materials in accordance with manufacturer’s instructions.

.4 Store materials in ventilated areas, protected from extreme changes of temperature or humidity.

.5 Identify surface and components only with tape for writing. DO NOT write on exposed surfaces.

1.6 Submittals

.1 Shop Drawings
.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
.2 Indicate details of construction, profiles, jointing, fastening and other related details.

.3 Scales: profiles full size, details, ½ full size.
.4 Indicate materials, thicknesses, finishes and hardware.
.5 Indicate locations of service outlets in casework, and connections, attachments, anchorage and location of exposed fastenings.

.2 Samples: Not required.

.3 Mock-ups: Not required.

1.7 Closeout Submittals

.1 Maintenance Data and Materials
.1 Provide maintenance data for hardwood plywood for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.8 Special Environmental Requirements

.1 Use caution when working with particle board. Use dust collectors and high quality respirator masks.

1.9 Special Protection Requirements

.1 Protect millwork against dampness during and after delivery.

.2 Store millwork in ventilated areas, protected from extreme changes of temperature or humidity.

2 PRODUCTS

2.1 Lumber Material

.1 Softwood lumber: unless specified otherwise, S4S, moisture content 15% or less in accordance with following standards:
.1 CSA O141.
.2 NLGA Standard Grading Rules for Canadian Lumber.
.3 AWMAC custom grade, moisture content as specified.

.2 Machine stress-rated lumber is acceptable for all purposes.

.3 Hardwood lumber: moisture content 6% or less in accordance with following standards:
.1 National Hardwood Lumber Association (NHLA).

2.2 Panel Materials

.1 Douglas fir plywood (DFP): to CSA O121, standard construction, exposed locations.

.2 Canadian softwood plywood (CSP): to CSA O151, standard construction, unexposed locations.

.3 Hardwood plywood: to CSA O115.

.4 Plywood, OSB and wood based composite panels: to CAN/CSA-O325.

2.3 Laminated Plastic

.1 Laminated plastic for flatwork: to NEMA LD3, Grade VGL, Type S 1.27 mm thick; based on solid and printed pattern colour range with finish selected by Departmental Representative.

.2 Laminated plastic adhesive: contact adhesive to CAN/CGSB-71.20
- .1 Test for acceptable VOC emissions in accordance with ASTM D 2369 and ASTM D 2832.
- .2 Acceptable materials: ECP-44.

2.4 Fasteners

.1 Nails and staples: to CSA B111. Galvanized for exterior work, interior humid areas and for treated lumber, plain finish elsewhere.

.2 Wood screws: to CSA B35.4. Electroplated

2.5 Sealants

.1 Sealant: to the requirements of Section 07 92 10.

2.6 Casework

.1 Fabricate casework to AWMAC custom quality grade.

.2 Furring, blocking, nailing strips, grounds and rough bucks and sleepers.
- .1 S2S is acceptable for cabinetry.
- .2 Board sizes: "Standard" or better grade.
- .3 Dimension sizes: "Standard" light framing or better grade.

.3 Framing SPF species, NLGA, custom grade.

.4 Case bodies (ends, divisions and bottoms).
- .1 Hardwood plywood:
  - .1 Thickness: as indicated
  - .2 Face veneer: select white birch species, custom grade, rotary cut, book matched.
  - .3 Back veneer: select white birch species, custom grade, rotary cut.
  - .4 Core: veneer.
  - .5 Bond: Type II.

.6 Sanding: touch sanding.
.7 Grain direction vertical.

.2 Solid wood: select white birch species, architectural grade, thickness as indicated.

.5 Backs.
.1 Softwood DFP or CSP custom grade, square edge, thickness as indicated.

.6 Shelving.
.1 Hardwood plywood:
.1 Thickness: as indicated.
.2 Face veneer: select white birch species, custom grade, rotary cut, book matched.
.3 Back veneer: select white birch species, custom grade, rotary cut, book matched.
.4 Core: veneer.
.5 Bond: Type II.
.6 Sanding: touch sanding.
.7 Grain direction horizontal.

2.7 Drawers

.1 Fabricate drawers to AWMAC custom grade supplemented as follows:
.1 Sides and Backs.
.1 Softwood DFP or CSP custom grade, square edge, thickness as indicated.
.2 Hardwood plywood:
.1 Thickness: as indicated.
.2 Face veneer: select white birch species, custom grade, rotary cut, book matched.
.3 Back veneer: select white birch species, custom grade, rotary cut.
.4 Core: veneer.
.5 Bond: Type II.
.6 Sanding: touch sanding.
.7 Grain direction horizontal.

.2 Fronts.
.1 Softwood DFP or CSP custom grade, square edge, thickness as indicated.
.2 Hardwood plywood:
.1 Thickness: as indicated.
.2 Face veneer: select white birch species, custom grade, rotary cut, book matched.
.3 Back veneer: select ash species, custom grade, rotary cut.
.4 Core: veneer.
.5 Bond: Type II.
.6 Sanding: touch sanding .
.7 Grain direction horizontal

.3 Bottoms.
.1 Softwood DFP or CSP custom grade, square edge, thickness as indicated.

.2 Hardwood plywood:
.1 Thickness: as indicated
.2 Face veneer: select white birch species, custom grade, rotary cut, book matched.
.3 Back veneer: select white birch species, custom grade, rotary cut.
.4 Core: veneer.
.5 Bond: Type II.
.6 Sanding: touch sanding.
.7 Grain direction horizontal.

2.8 Casework Doors and Drawer Fronts

.1 Fabricate doors to AWMAC custom grade supplemented as follows:
.1 Hardwood plywood:
.1 Thickness: as indicated.
.2 Face veneer: select white birch species, custom grade, rotary cut, book matched.
.3 Back veneer: select white birch species, custom grade, rotary cut.
.4 Core: veneer.
.5 Bond: Type II.
.6 Sanding: touch sanding.
.7 Grain direction vertical.

2.9 Laminated Plastic Fronts, Counter Tops and Backsplashes

.1 Integral countertops and splashbacks: factory laminated, self-edge type on OSB core for site installation.

2.10 Edge Banding

.1 Provide 6 mm thick solid matching wood strip on plywood edges 12 mm or thicker, exposed in final assembly. Strips same width as plywood.

2.11 Standing and Running Trim

.1 See Section 06 20 00, Finish Carpentry.

2.12 Stainless Steel Counter top

.1 18 ga brushed finish stainless steel sheet. Profile as indicated.

2.13 Fabrication

.1 Set nails and countersink screws, apply stained plain wood filler to indentations, sand smooth and leave ready to receive finish.

.2 Shop install cabinet hardware for doors, shelves and drawers. Recess shelf standards unless noted otherwise.

.3 Provide adjustable shelving to cabinetwork unless otherwise noted.

.4 Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures.

.5 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.

.6 Shop assemble work for delivery to site in size easily handled and to ensure passage through building openings.

.7 Factory seal and varnish casework and cabinet work on all surfaces. On site finishing limited to touch up only.

2.14 Finishing

.1 Factory Finishing materials: use only products included in Manufacturer's Product List of Canadian Painting Architectural Specification manual, latest edition.

.2 Backprimers: white alkyd enamel primer or gloss varnish thinned 25 %, compatible with exposed finish.

.3 Comply with applicable requirements and recommendations for factory finishing in AWMAC Manual.

.4 Backprime all cutout concealed surfaces, surfaces in contact with carpet, or concrete, sink cutouts, drain cutouts, any surfaces which may be subjected to moisture. Provide two coats.

3 EXECUTION

3.1 Installation

.1 Do architectural woodwork to Quality Standards of the Architectural Woodwork Manufacturers Association of Canada (AWMAC), custom grade, except where specified otherwise.

.2 Install prefinished millwork at locations shown on drawings. Position accurately, level, plumb straight.

.3 Fasten and anchor millwork securely.

.4 Use bolts in stainless steel counter top folded joint.

.5 Scribe and cut as required to fit abutting walls and to fit properly into recesses and to accommodate piping, columns, fixtures, outlets or other projecting, intersecting or penetrating objects.

.6 At junction of plastic laminate counter backsplash and adjacent wall finish, apply small bead of sealant.

.7 Fit hardware accurately and securely in accordance with manufacturer's directions.

.8 Provide door stop or bumper for protection where operation of architectural woodwork door would otherwise damage adjacent surface.

3.2 Cleaning

.1 Clean millwork and cabinet work both inside cupboards and drawers and outside surfaces.

.2 Remove excess glue from surfaces.

3.3 Protection

.1 Protect millwork and cabinet work from damage until final inspection.

END OF SECTION

1 GENERAL

1.1 General Requirements

.1 All requirements of the Contract apply to and govern all work of this Section.

.2 Comply with the requirements of Division 1.

1.2 Related Work Specified in Other Sections

.1	Sealants	Section 07 92 10
.2	Metal Doors and Frames	Section 08 11 14
.3	PVC Windows	Section 08 50 50

1.3 References

.1 American Society for Testing and Materials (ASTM)
- .1 ASTM A 653/A 653 M-95, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 ASTM D 523-89(1994), Test Method for Specular Gloss.

.2 Canadian Roofing Contractors Association (CRCA).
- .1 Roofing Specifications Manual.

.3 Canadian Standards Association (CSA)
- .1 CSA B111-1974, Wire Nails, Spikes and Staples.

.4 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-51.32-M77, Sheathing, Membrane, Breather Type.

1.4 Quality Assurance and Extended Guarantees

.1 No specific requirements.

1.5 Specific Handling and Transportation Requirements

.1 No specific requirements.

1.6 Submittals

.1 Shop drawings : Not required.

.2 Samples : Not required.

1.7 Maintenance Data and Materials

.1 No specific requirements.

1.8 Specific Environmental Requirements

.1 No specific requirements.

1.9 Specific Protection Requirements

.1 No specific requirements.

2.0 PRODUCTS

2.1 Prefinished Steel Sheet

.1 Prefinished steel with factory applied polyvinylidene fluoride.
- .1 Class F2S.
- .2 Colour: see Section 09 96 60 - Colour Schedule
- .3 Specular gloss: 30 units +/- in accordance with ASTM D523.
- .4 Coating thickness: not less than 22 micrometers.
- .5 Resistance to accelerated weathering for chalk rating of 8, colour fade 5 units or less and erosion rate less than 20 % to ASTM D822 as follows:
  - .1 Outdoor exposure period 2500 hours.
  - .2 Humidity resistance exposure period 5000 hours.
- .6 Standard of Acceptance: Dofasco 10,000 Series

2.2 Accessories

.1 Isolation coating: alkali resistant bituminous paint.

.2 Sealants: as indicated in Section 07 92 10 - Joint Sealers.

.3 Cleats and locking strips: of same material and temper as sheet metal, minimum 50 mm wide. Thickness same as sheet metal being secured. S-lock to join ends at continuous strip.

.4 Fasteners: of same material as sheet metal, to CSA B111, hot dipped galvanized, flat head roofing nails of length and thickness suitable for metal flashing application. Exposed locations hexagonal head screw, prefinished to match flashings or with rubber head cap, colour to match flashing.

.5 Washers: of same material as sheet metal, 1 mm thick with rubber packings.

.6 Touch-up paint: as recommended by prefinished material manufacturer.

2.4 Fabrication

.1 Fabricate metal flashings and other sheet metal work in accordance with applicable CRCA 'FL' series details as indicated.

.2 Make allowance for expansion at joints for flashings.

.3 Hem exposed edges on underside 12 mm. Miter and seal corners with sealant.

.4 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

.5 Apply isolation coating to metal surfaces in contact with dissimilar metals.

2.5 Metal Flashings

.1 Form flashings and trims to profiles indicated of 0.61 mm (24 ga) thick prefinished metal.

3 EXECUTION

3.1 Installation

.1 Install sheet metal work in accordance with CRCA specifications and as detailed.

.2 Use concealed fastenings except where approved before installation. Provide continuous flashing clips, 50 mm high for flashings.

.3 Provide underlay under sheet metal. Secure in place and lap joints 150 mm.

.4 Flash joints using S-lock forming tight fit over hook strips, and as detailed. Flashing cleat to be installed at 2 per 2.5 m.

.5 S-Lock end joints and caulk with sealant.

.6 Install metal flashings at window heads, jambs and sills, and where shown on Drawings.

.7 Where flashings are exposed, provide cleats or locking strips to secure them. Do not use exposed fasteners, unless approved by the Departmental Representative.

.8 Fill and seal seams with sealant in accordance with Section 07 92 10.

END OF SECTION

1 GENERAL

1.1 General Requirements

.1 All requirements of the Contract apply to and govern all work of this Section.

.2 Comply with requirements of Division 01.

1.2 Related Work Specified in Other Sections

.1 Fire stopping and smoke seals within mechanical assemblies (i.e inside ducts, dampers) and electrical assemblies are specified in Division 21, 22, 23 and 26 respectively.

1.3 References

.1 Underwriter's Laboratories of Canada (ULC)
  .1 ULC-S115-1995, Fire Tests of Firestop Systems.

1.4 Quality Assurance and Extended Guarantees

.1 When requested, provide manufacturers' testing certification for each component of fire stopping installation.

1.5 Special Handling and Transportation Requirements

.1 Deliver, handle and store components in accordance with manufacturers' instructions.

1.6 Submittals

.1 Samples : Not required

.2 Shop Drawings
  .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
  .2 Submit shop drawings to show proposed material, reinforcement, anchorage, fastenings and method of installation. Construction details should accurately reflect actual job conditions.

.3 Product Data
  .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
  .2 Submit manufacturer's product data for materials and prefabricated devices, providing descriptions are sufficient for identification at job site. Include manufacturer's printed instructions for installation.

1.7 Closeout Submittals

.1 No specific requirements.

1.8 Special Environmental Requirements

.1 No specific requirements.

1.9 Special Protection Requirements

.1 No specific requirements.

2.0 PRODUCTS

2.1 Materials

.1 Fire stopping and smoke seal systems: in accordance with ULC-S115.
  .1 Asbestos-free materials and systems capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of ULC-S115 and not to exceed opening sizes for which they are intended and conforming to special requirements specified in 3.5.
  .2 Firestop system rating: match rating of system passing through.

.2 Service penetration assemblies: certified by ULC in accordance with ULC-S115 and listed in ULC Guide No.40 U19.

.3 Service penetration firestop components: certified by ULC in accordance with ULC-S115 and listed in ULC Guide No.40 U19.13 and ULC Guide No.40 U19.15 under the Label Service of ULC.

.4 Fire-resistance rating of installed fire stopping assembly in accordance with NBC.

.5 Fire stopping and smoke seals at openings intended for ease of re-entry such as cables: elastomeric seal.

.6 Fire stopping and smoke seals at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control: elastomeric seal.

.7 Primers: to manufacturer's recommendation for specific material, substrate, and end use.

.8 Water (if applicable): potable, clean and free from injurious amounts of deleterious substances.

.9 Damming and backup materials, supports and anchoring devices: to manufacturer's recommendations, and in accordance with tested assembly being installed as acceptable to authorities having jurisdiction.

.10 Sealants for vertical joints: non-sagging.

3.0 EXECUTION

3.1 Preparation

.1 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials. Ensure that substrates and surfaces are clean, dry and frost free.

.2 Prepare surfaces in contact with fire stopping materials and smoke seals to manufacturer's instructions.

.3 Maintain insulation around pipes and ducts penetrating fire separation.

.4 Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.

3.2 Installation

.1 Install fire stopping and smoke seal material and components in accordance with ULC certification and manufacturer's instructions.

.2 Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated openings or joints to ensure continuity and integrity of fire separation are maintained.

.3 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.

.4 Tool or trowel exposed surfaces to a neat finish.

.5 Remove excess compound promptly as work progresses and upon completion.

3.3 Inspection

.1 Notify Departmental Representative when ready for inspection and prior to concealing or enclosing firestopping materials and service penetration assemblies.

3.4 Schedule

.1 Firestop and smoke seal at:
- .1 Penetrations through fire-resistance rated gypsum board partitions and ceilings.
- .2 Intersection of fire-resistance rated gypsum board partitions.
- .3 At floor and structural ceiling junction of rated partitions.
- .4 Around mechanical and electrical assemblies penetrating fire separations.

.5 Rigid ducts: greater than 129 cm²: fire stopping to consist of bead of fire stopping material between retaining angle and fire separation and between retaining angle and duct, on each side of fire separation.

3.5 Clean Up

.1 Remove excess materials and debris and clean adjacent surfaces immediately after application.

.2 Remove temporary dams after initial set of fire stopping and smoke seal materials.

END OF SECTION

1 GENERAL

1.1 General Requirements

.1 All requirements of the Contract apply to and govern all work of this Section.

.2 Comply with the requirements of Division 1.

1.2 Related Work Specified in Other Sections

.1	Finish Carpentry	Section 06 20 00
.2	Architectural Woodwork	Section 06 40 00
.3	Metal Doors and Frames	Section 08 11 14
.4	PVC Windows	Section 08 50 50
.5	Resilient Sheet Flooring	Section 09 65 16

1.3 References

.1 American Society for Testing and Materials International, (ASTM)
- .1 ASTM C 919-02, Standard Practice for Use of Sealants in Acoustical Applications.

.2 Canadian General Standards Board (CGSB)
- .1 CGSB 19-GP-5M-1984, Sealing Compound, One Component, Acrylic Base, Solvent Curing (Issue of 1976 reaffirmed, incorporating Amendment No. 1).
- .2 CAN/CGSB-19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.
- .3 CGSB 19-GP-14M-1984, Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing (Reaffirmation of April 1976).
- .4 CAN/CGSB-19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.
- .5 CAN/CGSB-19.24-M90, Multi-component, Chemical Curing Sealing Compound.

.3 Department of Justice Canada (Jus)
- .1 Canadian Environmental Protection Act, 1999 (CEPA).

.4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
- .1 Material Safety Data Sheets (MSDS).

.5 Transport Canada (TC)
- .1 Transportation of Dangerous Goods Act, 1992 (TDGA).

1.4 Quality Assurance and Extended Guarantees

.1 Joint-Width Conditions:
- .1 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

.2 Joint-Substrate Conditions:
- .1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

1.5 Specific Handling and Transportation Requirements

.1 Delivery, Storage, and Handling
- .1 Deliver, handle, store and protect materials in accordance with manufacturers instructions.
- .2 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

.2 Project Conditions
- .1 Environmental Limitations:
  - .1 Do not proceed with installation of joint sealants under following conditions:
    - .1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4 degrees C.
    - .2 When joint substrates are wet.

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

1.6 Submittals

.1 Product Data
- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Manufacturer's product to describe.
  - .1 Caulking compound.
  - .2 Primers.
  - .3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.
- .3 Submit manufacturer's instructions in accordance with Section 01 33 00 - Submittal Procedures.

.1 Instructions to include installation instructions for each product used.

1.7 Closeout Submittals

.1 Maintenance Data and Materials
.1 Provide operation and maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.8 Specific Environmental Requirements

.1 None

1.9 Specific Protection Requirements

.1 None

2 PRODUCTS

2.1 Sealant Materials

.1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.

.2 When low toxicity caulks are not possible, confine usage to areas which offgas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize offgas time.

.3 Where sealants are qualified with primers use only these primers.

2.2 Sealant Material Designations

.1 Colours of sealant are to be selected by the Departmental Representative from manufacturer’s standard range.

.2 Polysulfide One Part.
.1 Self-Leveling to CAN/CGSB-19.13.

.3 Polysulfide One Part.
.1 Non-Sag to CAN/CGSB-19.13.

.4 Urethanes One Part.
.1 Self-Leveling to CAN/CGSB-19.13, Type 1.

.5 Urethanes One Part.
.1 Non-Sag to CAN/CGSB-19.13, Type 2.

.6 Silicones One Part.
.1 To CAN/CGSB-19.13.

.2 To CAN/CGSB-19.22 - Mildew resistant.

.7 Acoustical Sealant.
.1 To CAN/CGSB-19.21.

.8 Security Caulking
.1 To ASTM C881/C881-M02 - 2 component, solid epoxy resin
.2 Acceptable Material: Sika Power Flex 4, or Sonnocrete Epogel.

.9 Preformed Compressible and Non-Compressible back-up materials.
.1 Polyethylene, Urethane, Neoprene or Vinyl Foam.
.1 Extruded closed cell foam backer rod.
.2 Size: oversize 30 to 50 %.
.2 Neoprene or Butyl Rubber.
.1 Round solid rod, Shore A hardness 70.
.3 High Density Foam.
.1 Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m^3 density, or neoprene foam backer, size as recommended by manufacturer.
.4 Bond Breaker Tape.
.1 Polyethylene bond breaker tape which will not bond to sealant.

2.3 Sealant Selection

.1 Perimeters of exterior openings where frames meet exterior facade of building: Sealant type: Polysulfide One Part, Non-Sag.

.2 Seal interior perimeters of exterior openings as detailed on drawings: Sealant type: Silicone One Part. (non-Cell/Patrol areas)

.3 Perimeters of interior frames, as detailed and itemized: Sealant type: Urethane One Part, Self levelling . (non-Cell/Patrol areas)

.4 Perimeter of bath fixtures (e.g. sinks, waterclosets, vanities): Sealant type: Silicone One Part Mildew Resistant. (non-Cell/Patrol areas)

.5 Exposed interior control joints in drywall: Sealant type: Silicone One Part.

.6 Security Caulking: As required in Cell / Patrol rooms, at combo water closets base, as required by polymer coating.

3 EXECUTION

3.1 Protection

.1 Protect installed Work of other trades from staining or contamination.

3.2 Surface Preparation

.1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

.2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.

.3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.4 Ensure joint surfaces are dry and frost free.

.5 Prepare surfaces in accordance with manufacturer's directions.

3.3 Priming

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

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

3.4 Backup Material

.1 Apply bond breaker tape where required to manufacturer's instructions.

.2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.5 Mixing

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

3.6 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.
  - .1 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
  - .2 Tool exposed surfaces before skinning begins to give slightly concave shape.

.6 Remove excess compound promptly as work progresses and upon completion.

3.7 Curing

.1 Cure sealants in accordance with sealant manufacturer's instructions.
.1 Do not cover up sealants until proper curing has taken place.

3.8 Cleanup

.1 Clean adjacent surfaces immediately and leave Work neat and clean.
.1 Remove excess and droppings, using recommended cleaners as work progresses.
.2 Remove masking tape after initial set of sealant.

END OF SECTION

1 GENERAL

1.1 General Requirements

.1 All requirements of the Contract apply to and govern all work of this Section.

.2 Comply with the requirements of Division 1.

1.2 Related Work Specified in Other Sections

.1	Submittal Procedures	Section 01 33 00
.2	Rough Carpentry	Section 06 10 10
.3	Metal Flashing and Trim	Section 07 62 00
.4	Sealants	Section 07 92 10
.5	Wood Doors	Section 08 14 10
.6	Door Hardware	Section 08 71 10
.7	Glazing	Section 08 80 50
.8	Interior Painting	Section 09 91 23

1.3 References

.1 American Society for Testing and Materials (ASTM).
- .1 ASTM A653/A653M-01a, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 Canadian General Standards Board (CGSB).
- .1 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.
- .2 CGSB 51-GP-21M-78, Thermal Insulation, Urethane and Isocyanurate, Unfaced.

.3 Canadian Standards Association (CSA International).
- .1 G40.20/G40.21-M92, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steels.
- .2 CSA W59-M1989(R2001), Welded Steel Construction (Metal Arc Welding) (Metric Version).

.4 Canadian Steel Door Manufacturers' Association, (CSDMA).
- .1 CSDMA, Specifications for Commercial Steel Doors and Frames, 1990.
- .2 CSDMA, Recommended Selection and Usage Guide for Commercial Steel Doors, 1990.

.5 National Fire Protection Association (NFPA).
- .1 NFPA 80-99, Standard for Fire Doors and Fire Windows.

.2 NFPA 252-99, Standard Methods of Fire Tests of Door Assemblies.

.6 Underwriters' Laboratories of Canada (ULC).
.1 CAN4-S104-80(R1985), Fire Tests of Door Assemblies.
.2 CAN4-S105-85(R1992), Fire Door Frames Meeting the Performance Required by CAN4-S104.
.3 CAN/ULC-S704

1.4 Quality Assurance and Extended Guarantees

.1 No specific requirements.

1.5 Specific Handling and Transportation Requirements

.1 No specific requirements.

1.6 Submittals

.1 Shop drawings :
.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
.2 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings (glazed and louvered), arrangement of hardware and fire rating.
.3 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and finishes.
.4 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

.2 Samples : Not required

1.7 Closeout Submittals

.1 No specific requirements.

1.8 Specific Environmental Requirements

.1 No specific requirements.

1.9 Specific Requirements

.1 Steel fire rated doors and frames: labeled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4 S104M and CAN4 S105M for ratings specified or indicated.

.2 Provide fire labelled frame products for those openings requiring fire protection ratings, as scheduled. Test products in strict conformance with CAN4-S104, and list by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

.3 Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.

2 PRODUCTS

2.1 Materials

.1 Standard of Acceptance:
- .1 Frames
  - .1 Interior: F-16 series stock steel frames by SW Fleming Ltd.
- .2 Doors
  - .1 D-series steel door by SW Fleming Ltd.

.2 Hot dipped galvanized steel sheet: to ASTM A 653M, minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.

.3 Reinforcement channel: to CAN/CSA-G40.20/G40.21, Type 44W, coating designation to ASTM A 653M.

.4 Doors:
- .1 Face sheets to interior and exterior doors 1.52 mm base thickness.
- .2 Face sheets to butt and non-butt side of door 0.76 mm base thickness.

.5 Door Core:
- .1 Polyurethane: to CAN/ULC-S704, rigid, modified poly/isocyanurate, closed cell board. Density 32 kg/m^3.

.6 Frames:
- .1 Steel frames to interior openings - 1.52 mm (16 ga) base thickness.
- .2 Surround openings in flush doors with minimum 1.5 mm thick steel channel welded to face sheets to CSA G40.20/G40.21.

2.2 Fabrication - General

.1 Fabricate doors and frames as detailed, to Canadian Steel Door Manufacturers' Association, (CSDMA) Canadian Manufacturing Specifications for Steel Doors and Frames, 1990; except where specified otherwise. Reinforce door and frames to suit hardware requirements specified Section 08710 - Finish Hardware.

.2 Blank, reinforce, drill and tap doors and frames for mortised hardware. Reinforce doors and frames for surface mounted and electronic hardware.

.3 Apply, at factory, touch up primer to doors and frames manufactured from galvanized steel where coating has been removed during fabrication.

2.3 Fabrication - Doors

.1 Doors: swing type, flush, with provision for glass and/or louvre openings as indicated.

.2 Make provision for louvers and glazing as indicated and provide necessary glazing stops.

.3 Fabricate doors with longitudinal edges seamless, welded, filled and sanded flush. Apply metal filler, two part epoxy type for seamless flush finish.

.4 Fabricate doors with top and bottom channels flush and filled solid, extending full width of door and welded to both faces. Provide closure at top edge of exterior doors.

.5 Fabricate doors square and free of distortion and twists. Accurately form and fit components and sections to close fitting tolerances.

.6 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.

.7 Provide flush steel top caps to exterior doors. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.

.8 Provide fire labelled doors for those openings requiring fire protection ratings. Test such products in strict conformance with CAN4-S104.

.9 Manufacturer's nameplates on doors are not permitted.

2.4 Fabrication - Frames

.1 Fabricate frames using welded type construction. Weld in accordance with CSA W59.

.2 Cut miters and joints accurately and weld continuously on inside of frame profile.

.3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and stiles.

.4 Grind welded corners and joints to flat plane, fill with metallic paste filler and sand to uniform smooth finish.

.5 Install 3 bumpers on strike jamb for each single door and 2 bumpers at head for pairs of doors.

.6 Fabricate thermally broken frames for exterior doors using steel core, separating exterior portion of frame from interior portion with polyvinyl chloride thermal breaks.

.7 Make provision for glazing as indicated and provide necessary glazing stops.

.8 Tack weld two removable steel spreader channels (minimum 1.2 mm thick) to inside of door frames at base to maintain proper alignment during shipment.

.9 Provide fire labelled frames for those openings requiring fire protection ratings. Test such products in strict conformance with CAN4-S104.

2.5 Frame Anchorage

.1 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.

.2 Provide standard jamb anchors for fixing at floor. Ensure thermally broken frames do not have anchors in direct contact with both sections of door frame.

.3 Provide appropriate anchorage to floor and wall construction. Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb. For rebate opening heights up to and including 1520mm provide 2 anchors, and an additional anchor for each additional 760mm of height or fraction thereof.

2.6 Primers

.1 Touch-up prime CAN/CGSB-1.181.

2.7 Finishes

.1 Paint steel doors and frames in accordance with Section 09 91 13 - Exterior Painting and Section 09 91 23 - Interior Painting. Protect weatherstrips from paint. Finish shall be free of scratches or other blemishes.

2.8 Accessories

.1 Door bumpers : black neoprene double stud. Provide 3 bumpers at each jamb of single doors, 2 at head of double doors.

.2 Fabricate glazing stops as formed channel, minimum 16 mm height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.

.3 Provide other door and frame components in accordance with CSDMA requirements.

.4 Fire labels: metal rivited.

.5 Finishing materials :
  .1 For galvanized steel sheet : CAN/CGSB-1.181.
  .2 Metal filler : two component epoxy type.

.6 Provide adequate reinforcement to doors for hardware ; minimum thickness of steel :
  .1 Butts - 3.5 mm

.2 Flush bolts - 1.6 mm
.3 Door closers- 2.5 mm
.4 Door holders - 2.5 mm
.5 Strikes - 1.6 mm

3 EXECUTION

3.1 Installation General

.1 Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.

.2 Install doors and frames to CSDMA Installation Guide.

3.2 Frame Installation

.1 Set frames plumb, square, level and at correct elevation. Limit of distortion 2 mm out of plumb measured on face of frame, maximum twist 3 mm measured from corner to diagonally opposite corner.

.2 Secure anchorages and connections to adjacent construction.

.3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.

.4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

.5 Remove spreader channels only after frames are securely anchored in place.

.6 Install anchors for thermally broken frames so as not to create direct contact between inside and outside frame sections.

.7 Caulk perimeter of frames between frame and adjacent material.

.8 Maintain continuity of air/vapour barrier.

3.3 Door Installation

.1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 10 - Door Hardware.

.2 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows.
.1 Hinge side: 1.0 mm.
.2 Latch side and head: 1.5 mm.
.3 Finished floor, top of carpet and thresholds: 13 mm.

.3 Adjust operable parts for correct function.

3.4 Finish Repairs

.1 Touch up with primer galvanized finish damaged during installation.

.2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

END OF SECTION

1 GENERAL

1.1 General Requirements

.1 All requirements of the Contract apply to and govern all work of this Section.

.2 Comply with the requirements of Division 1.

1.2 Related Work in Other Sections

.1	Submittal Procedures	Section 01 33 00
.2	Door Hardware	Section 08 71 10
.3	Glazing	Section 08 80 50
.4	Interior Painting	Section 09 91 23

1.3 Standards Referred to in this Section

.1 Architectural Woodwork Manufacturers Association of Canada (AWMAC) 2003.
- .1 Quality Standards for Architectural Woodwork 1998.

.2 Canadian Standards Association (CSA International).
- .1 CAN/CSA O132.2 Series-90(R1998), Wood Flush Doors.

.3 National Fire Protection Association (NFPA).
- .1 NFPA 80-1999, Standard for Fire Doors and Fire Windows.

.4 Underwriters' Laboratories of Canada (ULC).
- .1 CAN4 S104M-80(R1985), Fire Tests of Door Assemblies.
- .2 CAN4 S105M-85(R1992), Fire Door Frames Meeting the Performance Required by CAN4-S104.

1.4 Quality Assurance and Extended Guarantees

.1 Wood fire rated doors and frames: labeled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4 S104M and CAN4 S105M for ratings specified or indicated.

.2 Install labelled fire rated doors and frames to NFPA 80 except where specified otherwise.

.3 At no cost to the Owner, remedy any defects in the Work, including work of this and other sections, due to defects in doors provided under this section appearing within a period of three (3) years from the date of final inspection. Provide a written warranty to this effect.
- .1 maximum warp or twist: 3mm measured diagonally

.2 telegraphing of stile or rails

1.5 Specific Handling and Transportation Requirements

.1 No specific requirements.

1.6 Submittals

.1 Shop drawings :
.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures

.2 Indicate door types and cutouts for lights and louvres, sizes, core construction, transom panel construction and cutouts.

.2 Samples : Not required.

1.7 Closeout Submittals

.1 Maintenance Data and Materials
.1 Provide maintenance data for cleaning wood doors for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.8 Specific Environmental Requirements

.1 No specific requirements

1.9 Specific Protection Requirements

.1 Protect doors from dampness. Arrange for delivery after work causing abnormal humidity has been completed.

.2 Store doors in well ventilated room, off floor, flat, with 19 mm blocking between each door and in accordance with manufacturer's recommendations.

.3 Protect doors from scratches, handling marks and other damage. Crate doors to withstand handling stresses in transportation without glass breakage.

2 PRODUCTS

2.1 Wood Flush Doors
.1 Construction:
.1 To CAN/CSA-O132.2.1 modified as indicated.
.2 Particleboard core: solid wood stile and rail frame bonded to solid particleboard core with wood lock blocks. Stile and rail minimum 115mm wide. 5-ply construction. Solid wood frame at glazed openings bonded to solid particleboard core or solid wood frame. Frame minimum 50mm wide.
.3 Particleboard core of wood chips bonded with resin. Density 448 kg/m^3 minimum with AWMAC type 2 wood edge.

.2 Face Panels: Natural Birch species, AWMAC custom grade (no heartwood), rotary cut, book matched for stain finish.

.3 Adhesive: Type II (water resistant) for interior doors.

.4 Core Sealer: Clear, water resistant synthetic resin sealer.

.5 Door thickness : 45 mm.

2.2 Fabrication

.1 Vertical edge strips to match face veneer.

.2 Bevel vertical edges of single acting doors 3 mm in 50 mm on lock side and 1.5 mm in 50 mm on hinge side.

.3 Seal core at openings and cutouts.

2.3 Frames

.1 Solid wood head and jamb sections complete with rebate. AWMAC custom grade.

3 EXECUTION

3.1 Installation

.1 Install labelled fire rated doors to NFPA 80.

.2 Unwrap doors and seal faces of doors and all edges in accordance with CAN/CSA-O132.2 Series, Appendix A.

.3 Install doors and hardware in accordance with manufacturer's printed instructions, and templates supplied by Section 08 71 10 - Door Hardware.

.4 Adjust hardware for correct function.

3.2 Adjustment

.1 Re-adjust doors and hardware just prior to completion of building to function freely and properly.

3.3 Cleaning

.1 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.

.2 Remove traces of primer, caulking; clean doors and frames.

.3 On completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

1 GENERAL

1.1 References

.1 American Society for Testing and Materials
- .1 ASTM A653/A653M-04a Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 ASTM F1450-98 Security door performance criteria.

.2 Canadian Standards Association (CSA)
- .1 CAN/CSA-G40.20/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
- .2 CSA W59-M1989, Welded Steel Constructtion (Metal Arc Welding).

.3 National Association of Architectural Metal Manufacturers (NAAMM)
- .1 NAAMM 863-90, Guide Specifications For Detention Security Hollow Metal Doors & Frames.

1.2 Quality Assurance and Extended Guarantees

.1 Fabricate, assemble, and install sliding cell doors and track utilizing an approved installation firm.

.2 Submit details of proposed installation firm for approval prior to assigning Work of this Section. Provide:
- .1 name
- .2 address
- .3 list of completed installations
- .4 name and relevant experience of designated site installer representative.

.3 Submit list of completed installations of installation firm covering previous five years.

.4 Fabricate security doors and frames to requirements of NAAMM 863.

1.3 Specific Handling and Transportation Requirements

.1 Crate and pallet doors and frames as required to transport doors and frames to site without damage.

1.4 Submittals

.1 Shop Drawings
- .1 Submit shop drawings in accordance with Section - 01 33 00 - Submittal Procedures.
- .2 Show door and frame elevations and sections. Show location and details of all openings.
- .3 Show listing of opening descriptions including locations, material thicknesses, anchors, and hardware sets.
- .4 Show fabrication and installation drawings where applicable.

1.5 Maintenance Data and Materials

.1 Provide shop drawings for O & M manual called out in Section 01 78 00.

1.6 Specific Environmental Requirements

.1 No specific requirements.

1.7 Specific Protection Requirements

.1 No specific requirements.

2 PRODUCTS

2.1 Materials

.1 Sheet steel: commercial grade Class 1 with ZF075 galvanized coating to ASTM A653; free of coil breaks, buckles, waves, or other defects or blemishes.

.2 Steel shapes, plates and bars: structural quality to CAN/CSA G40.20/G40.21, Type 300W, free of scale, pitting and other surface blemishes.

.3 Primers: rust inhibitive type.

.4 Exposed fasteners: security type screws and security nuts. All security screws to be of one type. Select from the following list of acceptable security screw types:
.1 Torx Pin-Head
.2 Socket Pin-Head
.3 Phillips Pin-Head

.5 Glazing: Lexguard, type 1974, with 6 mm Lexan to cell side (no substitution).

.6 Tube frame minimum 25.4 mm x 50.8 mm, minimum 2 intermediate vertical frames with trimming frames where head to sill continuity is broken. Space intermediate members to accommodate openings, hinges and lock elements. Space horizontal members at 305 mm and to suit openings.

2.2 General Fabrication

.1 Perform welding to CSA W59.

2.3 Fabrication - Doors

.1 Fabricate doors as swing type, with flush faces and provisions for view ports and food-pass unit.

.2 Fabricate doors square and free of distortion and twists, Accurately form and fit components and sections, to close fitting tolerances. Form edge bends true and straight, and of minimum radius for gauge of sheet steel used.

.3 Fabricate doors using minimum 2.0 mm thick sheet steel for face sheets.

.4 Continuously weld door edge seams and finish smooth so that there are no visible seams.

.5 Epoxy prime all exposed parts at factory using two-part epoxy primer. Provide matching touch-up primer on site for touch-up of areas damaged during installation.

.6 Mortise, reinforce, drill and tap doors for template hardware, in accordance with templates provided by hardware supplier.

.7 Reinforce doors for surface mounted hardware. Drilling and tapping for surface mounted hardware will be performed by others.

.8 Fill core with non-combustible mineral insulation.

2.4 Fabrication - Frames

.1 Fabricate frames as welded units with minimum 2.0mm thick sheet steel.

.2 Fabricate frames square and free of distortion and twists. Accurately form and fit components and sections, to close fitting tolerances. Form edge bends true and straight, and of minimum radius for gauge of sheet steel used.

.3 Form frames with corner joints having all contact edges closed tight with faces mitred, and stops either butted or mitred.

.4 Continuous weld all corner joints. Grind welded joints smooth to a uniform finish, flush with adjacent surfaces.

.5 Mortise, reinforce, drill and tap frames for templated hardware, in accordance with templates provided by hardware supplier.

.6 Reinforce frames for surface mounted hardware. Drilling and tapping for surface mounted hardware will be performed by others on site.

.7 Install 3 bumpers on strike jamb for each door.

2.5 Clearances and Tolerances

.1 Maintain edge clearances as follows:
- .1 between doors and frames, at head and jambs: 3.0mm
- .2 at door sills where no threshold is used: 10.0mm
- .3 at door sills where threshold is used: 20.0mm maximum above finished floor

.2 Maintain fabrication tolerances within following limits:
- .1 doors:
  - .1 width: + or - 1.2mm
  - .2 height: + or - 1.2mm

.3 thickness: + or - 1.6mm
.4 hardware cutout dimensions: template dimensions + 0.4mm, -0mm
.5 hardware location: + or - 0.8mm

2.6 Finishing

.1 After fabrication, fill and sand all tool marks and surface imperfections, and dress smooth exposed faces of all welded joints.

.2 Prior to prime painting, chemically treat all surfaces to ensure maximum paint adhesion, including frame portions underneath glass stops and inside glass stops.

.3 Prime paint doors and frames prior to delivery to site. Allow paint to fully cure prior to shipment.

2.7 Hardware:

.1 Security door lockset : deadlock, keyed one side with escutcheon, deadlock shall have maleable iron case, corrosion resistant working parts, HD tumblers, large hookbolt - 12.5 mm thick, USP primed paint finish. See Section 08 71 10.

.2 Food pass latch : thumbturn operation, maleable iron case, corrosion resistant working parts, latch bolt throw 12 mm - flush when retracted, USP primed paint finish.

.3 Provide each lockset complete with mounting plate, mortise keeper and security fasteners.

2.8 View Port

.1 Stainless steel, type 304, satin finish, eased edges, size as indicated, 12 gauge thick, spacers as indicated, turned, cast or breakshape handles as indicated, provide birch hardwood guides as indicated, clear finish.

2.9 Acceptable manufacturer's

.1 Based on RCMP Hollow Metal Door & Pressed Steel Frame Shop Drawings dated September 26, 2007.

3 EXECUTION

3.1 Installation

.1 Set frames plumb, square, level and at correct elevation, Set in place with maximum diagonal distortion of 2.0mm.

.2 Secure anchorages and connections to adjacent construction.

.3 Brace frames rigidly in position while building in. Remove temporary steel shipping jamb spreaders. Install wood spreaders at third points of frame rebate height to

maintain frame width. Remove wood spreaders after frames have been built in.

.4 Make allowances for deflection to ensure structural loads are not transmitted to frame.

.5 Install doors and hardware in accordance with hardware templates and manufacturer's instructions.

.6 Apply security sealant to exposed frame edges on cell side of door frame. Strike sealant smooth at 45°. See section 07 92 10 for security sealant.

3.2 Schedule

.1 Refer to schedule as indicated.

END OF SECTION

1 GENERAL

1.1 General Requirements

.1 All requirements of the Contract apply to and govern all work of this Section.

.2 Comply with the requirements of Division 1.

1.2 Related Work Specified in Other Sections

.1	Rough Carpentry	Section 06 10 10
.2	Finish Carpentry	Section 06 20 00
.3	Metal Flashing and Trim - Flashings	Section 07 62 00
.4	Sealants - Caulking	Section 07 92 10
.5	Glazing	Section 08 80 50

1.3 Standards Referred to in this Section

.1 CAN/CSA-A440-M90 Windows.

.2 CGSB/CAN1-12.1-M90

.3 CAN/CGSB -12.3-M76 Glass, Polished Plate or Float, Flat, Clear,

.4 CAN/CGSB 12.8-M76 Insulating Glass Units

.5 CGSB 0132-1M77 Fabrication

.6 CSA A 274 1980 PVC Manufacturer

.7 CGSB 79-GP-1M Insect Screens

1.4 Quality Assurance and Extended Guarantees

.1 Submit test reports from approved independent testinglaboratories, certifying compliance with specifications, for:
- .1 Windows classifications : CSA/CAN 3-A440-M90, weathering characteristics
  - .1 White finish.
  - .2 Insect screens.
  - .3 Air tightness.A3
  - .4 Water tightness. B3
  - .5 Wind load resistance. C3
  - .6 Condensation resistance.
  - .7 Sash strength and stiffness - Projecting.

.8 Ease of operation - windows with operable lights.
.9 Sash pull-off - vinyl windows.
.10 Forced entry resistance.
.11 Mullion deflection - combination and composite windows.

.2 At no cost to the Owner, willful damage excepted, make good all consequential damage and replace PVC windows which are defective due to malfunction, defectsor leakage for a period of 5 years from interim acceptance of building.

1.5 Specific Handling and Transportation Requirements

.1 No specific requirements.

1.6 Submittals

.1 Shop drawings :
.1 Submit shop drawings in accordance with Section 01 33 00 - Submittals.

.2 Indicate materials and details in scale full size for head, jamb and sill, profiles of components, interior and exterior trim junction between combination units elevations of unit, anchorage details, location of isolation coating, description of related components and exposed finishes fasteners, and caulking. Indicate location of manufacturer's nameplates.

.2 Samples : Not required.

1.7 Maintenance Data and materials

.1 Provide operation and maintenance data for windows for incorporation into manual specified in Section 01 78 00 -Closeout Submittals.

.2 Provide instructions on reglazing procedures.

1.8 Specific Environmental Requirements

.1 None

1.9 Specific Protection Requirements

.1 None

2 PRODUCTS

2.1 Materials

.1 Materials: to CAN/CSA-A440 supplemented as follows:

.2 Sash: PVC high impact, hollow chamber, extruded, rigid to manufacturer's profiles.

.3 Main frame: PVC, hollow chamber, extruded, rigid to manufacturer's profiles.

.4 Glass: See Section 08 80 50 - Glazing.

.5 Screens: to CAN/CGSB-79.1.
- .1 Type: anodized aluminum frame.
- .2 Style: 2.
- .3 Insect screening mesh: count 18 x 16, plastic coated fibreglass.
- .4 Fasteners: tamper proof.
- .5 Screen frames: colour white.
- .6 Mount screen frames for interior replacement with spring loaded plunger.

.6 Exterior metal sills : brake formed aluminum sheet metal of type and size as detailed minimum 3 mm thick, complete with joint covers, jamb drip deflectors, chairs, anchors anchoring devices.

.7 Isolation coating: alkali resistant bituminous paint.

.8 Provide extreme low temperature weather-stripping.

2.2 Window Type and Classification

.1 Types:
- .1 Projected: top projected with removable triple glazing insulating glass.
- .2 Fixed: with removable double glazing insulating glass.
- .3 Screens: on ventilating portion of windows.

.2 Classification rating: to CAN/CSA-A440:
- .1 Air tightness: A3
- .2 Water tightness: B3
- .3 Wind load resistance: C3
- .4 Condensation resistance: Temperature Index, I
- .5 Forced Entry: F2
- .6 Insect Screens: S2
- .7 Glazing: G2

2.3 Fabrication

.1 Fabricate in accordance with CAN/CSA-A440 supplemented as follows: All corners to be fully welded. install "extreme " cold weather-stripping.

.2 Fabricate units square and true with maximum tolerance of plus or minus 1.5 mm for units with a diagonal measurement of 1800 mm or less and plus or minus 3 mm for units with a diagonal measurement over 1800 mm.

.3 Face dimensions detailed are maximum permissible sizes.

.4 Brace frames to maintain squareness and rigidity during shipment and installation.

.5 Finish steel clips and reinforcement with shop coat primer to CAN/CGSB-1.40 380 g/m2 zinc coating to CAN/CSA-G164.

2.4 Aluminum Finishes

.1 Finish exposed surfaces of aluminum components in accordance with Aluminum Association Designation System for Aluminum Finishes - 1980.
.1 Clear anodic finish: insect screen.

2.5 Vinyl Finishes

.1 Vinyl finishes: in accordance with CAN/CSA-A440, including appendices.
.1 White colour.

2.6 Glazing

.1 Factory glaze windows in accordance with CAN/CSA-A440.

2.7 Hardware

.1 Hardware: Heavy duty, roto-crank type, scissors operation with heavy duty cam locks. Exposed surfaces of metal parts to be baked enamel. Colour to be white.

3 EXECUTION

3.1 Window Installation

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

.2 Fasten window frames to exterior sheathing by window nailing flange. Shim window frames as required.

.3 Adjust opening insulated ventilation panel and hardware to operate smoothly.

.4 Set windows plumb, square and level, free from warp, twist to superimposed loads.

3.2 Sill Installation

.1 Install metal sills with uniform wash to exterior, level in length, straight in alignment with plumb up stands and faces. Use one piece lengths at each location.

.2 Cut sills to fit window opening.

.3 Secure sills in place with anchoring devices located at ends and evenly spaced 600 mm o/c in between.

.4 Fasten with self tapping stainless steel screws.

.5 Maintain 6 to 9 mm space between butt ends of continuous sills. For sills over 1200 mm in length, maintain 3 to 6 mm space at each end.

3.3 Caulking

.1 Seal joints between windows and window sills with sealant. Bed sill expansion joint cover plates and drip deflectors in bedding compound. Caulk between sill upstaged and window-frame. Caulk butt joints in continuous sills.

.2 Apply sealant in accordance with Section 07 92 10 - Sealants. Conceal sealant within window units except where exposed use is permitted by Departmental Representative.

.3 Seal joints to structure with foamed in place polyurethane insulation.

END OF SECTION

1 GENERAL

1.1 General Requirements

.1 All requirements of the Contract apply to and govern all work of this Section.

.2 Comply with the requirements of Division 1.

1.2 Related Work Specified in Other Sections

.1	Metal Doors and Frames	Section 08 11 14
.2	Wood Doors	Section 08 14 10
.3	Cabinet and Miscellaneous Hardware	Section 08 71 73
.4	Electrical	Sections 26 - 28

1.3 References

.1 Canadian General Standards Board (CGSB).
- .1 CAN/CGSB-69.18-M90/ANSI/BHMA A156.1-1981, Butts and Hinges.
- .2 CAN/CGSB-69.20-M90/ANSI/BHMA A156.4-1986, Door Controls (Closers).
- .3 CAN/CGSB-69.21-M90/ANSI/BHMA A156.5-1984, Auxiliary Locks and Associated Products.
- .4 CAN/CGSB-69.29-M86(R1993)ANSI/BHMA A156.1-1987, Mortise Locks and Latches.
- .5 CAN/CGSB-69.34-93/ANSI/BHMA A156.18-1987, Materials and Finishes.

1.4 Quality Assurance and Extended Guarantees

.1 Hardware for doors in fire separations and exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada.

.2 Supplier shall be responsible for the administration and servicing of the hardware contract by personnel with suitable qualifications and experience related to this type of work.

.3 Requirements of Regulatory Agencies : meet applicable requirements of the National Building Code.

.4 Hardware locations and mounting heights : confirm locations and mounting heights prior to preparation of doors and frames.

.5 Confirm review of submitted hardware schedule prior to purchase.

.6 The hardware supplier shall fully guarantee all hardware for a period of one (1) year from the date of acceptance of the installation. The guarantee shall state expressly that all moving parts of locks, closers, panic sets, etc., will be replaced in part or in whole at no cost to the Owner in the event of breakage or other defect occurring, willful damage excluded. Submit a written guarantee to this effect.

1.5 Special Handling and Transportation Requirements

.1 Store finishing hardware in locked, clean and dry area.

.2 Deliver, store, handle and protect materials in accordance with manufacturers' instructions.

.3 Package each item of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.

1.6 Submittals

.1 Product Data:
- .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Samples: Not required.

.3 Hardware List:
- .1 Submit contract hardware list in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.

.4 Manufacturer's Instructions:
- .1 Submit manufacturer's installation instructions.

.5 Test Reports:
- .1 When requested, submit certified test reports showing compliance with specified performance characteristics and physical properties.

.6 Certificates:
- .1 When requested, submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.7 Closeout Submittals

.1 Provide operation and maintenance data for door closers, locksets, door holders for incorporation into manual specified in Section 01 78 00 - Closeout Submittal.

.2 Extra Materials
.1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
.2 Supply two sets of wrenches for door closers, locksets and fire exit hardware.

1.8 Special Environmental Requirements

.1 No specific requirements.

1.9 Special Protection Requirements

.1 No specific requirements.

2 PRODUCTS

2.1 Hardware Items

.1 Use one manufacturer's products only for similar items. All hardware items are to be as per hardware list.

2.2 Door Hardware

.1 Provide finish hardware manufacturers as indicated in Clause 3.5.:
.

2.3 Fastening

.1 Use only fasteners provided by manufacturer. Failure to comply may void warranties and applicable licensed labels.

.2 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.

.3 Exposed fastening devices to match finish of hardware.

.4 Use fasteners compatible with material through which they pass.

3 EXECUTION

3.1 Installation

.1 Install hardware to standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame Manufacturers' Association.

.2 Use only manufacturer's supplied fasteners. Failure to comply may void manufacturer's warranties and applicable licensed labels. Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.

3.2 Adjusting

.1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.

.2 Lubricate hardware, operating equipment and other moving parts.

.3 Adjust door hardware to provide tight fit at contact points with frames.

3.3 Cleaning

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacture's instructions.

.3 Remove protective material from hardware items where present.

.4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.5 Schedule

All Abloy cylinders in G Division keyway

.1 Heading #1 1 single door 101 Exterior from - exisitng door and frame
LHR

1-Weatherstrip	W-18 1/DW x 2DH	AL
1-Sweep	W-24S x DW	AL
1-Threshold	CT-46 x DW	AL
1- Abloy cylinder	CV415T	26D
1-Balance	Existing	

.2 Heading #2 1 single door 105a 103 to 105 914mm x 2032mm x 45mm SCWD x PSF
LH

3-Hinges	CB179 114 x 101 x NRP	652
1-Lockset (F15)	L9485P-03B	630 (no occupied indicator)
1-Abloy cylinder	CY415T	26D
1-Closer	4041 reg x del	689
1-Kickplate	K10A 400 x 874	630
1-Floor Stop	S110	26D

.3 Heading #3 1 single door 105b 103 from 113 914mm x 2032mm x 45mm HMD x PSF
LHR 60 min

3-Hinges	CB168 114 x 101 x NRP	652
1-Lockset (F14K)	L9466P-42B	626
2-Abloy cylinders	CY415T & CY402T	26D

1-Closer	4040XP reg	689
1-Armourplate	K10F 900mm x 874mm	32D
2-Viewers	DS238	26D
1-Stop	S110	26D

.4 Heading #4 1 single door 113a exterior from 113 new IHMD to fit existing on site RHR

3-Hinges	STSCB199114 x 101 x SYSNRP	652	
1-Lockset (F14K)	L9466P-42B	626	
2-Abloy cylinders	CY415T & CY402T	26D	
1-Closer	4040XP EDA	689	
1-Overhead Stop	100S	630	
1-Arourplate	K10F 900mm x 40mm less DW	32D	
2-Viewers	DS238	26D	
1-Weatherstrip	CT-46 1/914 x 2/2134	AL	
1-Sweep	W-24S x 914		AL
1-Threshold	CT46 x 914	AL	

.5 Heading #5 and #6 1 pair door 113b 113 from 113b, 1 pair door 113b 113 from 113c, 2 380mm x 2032mm x 45mm SCWD x WDF
RHRA/LHR and RHR/LHR

12-Hinges	CB179114 x 101 x NRP	652
4-Flushbolts	F65 x 300mm	66D
2-Deadlocks (F18)	L9464P	630
2-Abloy cylinders	CY415T	26D
4-Pulls	H405	26D

.7 Heading #7 1 single door 114 113 from 114 914mm x 2032mm x 45mm HMD x PSF RHR 60 min

3-Hinges	CB179114 x 101 x NRP	652
1-Lockset (F07K)	L9080P-42B	626
1-Abloy cylinder	CY415T	26D
1-Closer	4040XP SCUSH	689
1-Armourplate	K10F 400mm x 874mm	34D
1-Viewer	DS238	26D
1-Door Bottom	CT-52 x 914mm	AL
1-Set Seals	W-16N 1/914mm x 2/2032mm	AL

.8 Heading #8 1 single door 118 113 from 118 914mm x 2032mm x 45mm security door RHR
Heading #9 1 single door 119 113 from 119 914mm x 2032mm x 45mm security door LHR
Complete hardware from door supplier

.10 Header #10 1 single door 120, 113 from 120 813mm x 2032mm x 45mm HMD x PSF LHR

3-hinges	CB179 114 x 101 x NRP	652
1-Lockset (F07K)	L9080P-42B	626

1-Abloy cylinder	CY415T	26d
1-Closer	4040XP SCUSH	689
1-Armourplate	K10F 400mm x 774mm	32D
1-Viewer	DS238	26D
1-Door Bottom	CT-52 x 914	AL
1-Set Seal	W-16N 1/813mm x 2/2031mm	AL

.11 Heading #11 1 single door 121, 114 to 121, 700mm x 900mm 60 min rated coiling door

Hardware Complete by the door manufacturer

.12 Heading #12 1 single door 110, 109 to 110, 914mm x 2032mm LH (residence)

3-Hinges	CB179 114 x 101	652
1-Passage set	JAZ 619	Brushed
1-Stop	S110	26D

END OF SECTION

1 GENERAL

1.1 General Requirements

.1 All requirements of the Contract apply to and govern all work of this Section.

.2 Comply with the requirements of Division 1.

1.2 Related Work Specified in Other Sections

.1 Architectural Woodwork Section 06 40 00

1.3 References

.1 Canadian General Standards Board (CGSB).
- .1 CAN/CGSB-69.25-M90/ANSI/BHMA A156.9-1982, Cabinet Hardware.
- .2 CAN/CGSB-69.27-93/ANSI/BHMA A156.11-1991, Cabinet Locks.

1.4 Quality Assurance and Extended Guarantees

.1 No specific requirements.

1.5 Specific Handling and Transportation Requirements

.1 Packing, Shipping, Handling and Unloading:
- .1 Package items of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.
- .2 Storage and Protection:
  - .1 Store cabinet hardware in locked, clean and dry area.

1.6 Submittals

.1 None required.

1.7 Closeout Submittals

.1 Maintenance Data and Material
- .1 Provide parts list and manufacturer's instructions for incorporation into maintenance manual specified in Section 01 78 00 - Closeout Submittals.

1.8 Specific Environmental Requirements

.1 No specific requirements.

1.9 Specific Protection Requirements

.1 No specific requirements.

2 PRODUCTS

2.1 Hardware Items

.1 Use one manufacturer's product for all similar items.

2.2 Cabinet Hardware

.1 Cabinet hardware: to CAN/CGSB-69.25, designated by letter B and numeral identifiers as listed below.
- .1 Hinges-Fingerprint: heavy duty pivot, satin chrome. Based on Stanley 35-0043. Hinges-millwork: concealed self closing 180 degree hinge, satin plated steel
- .2 Latches: thumb latch, inactive door
- .3 Catches: magnetic catch, self aligning. Based on K & V V916, aluminum.
- .4 Drawer slides: side mounted drawer slides, full extended rated for 60 kg. Based on Blum BS430E.
- .5 Pulls: recessed door pull, stainless steel, brushed 102 x 50. Based on 152.51,002 by Hafele.
- .6 Shelf Stay: heavy duty soft-down stay, black colour, pair. Based on HDS-10HL by Sugatsune.
- .7 Cabinet locks: to CAN/CGSB-69.27
  - .1 Fingerprint shelf, provide lock arm bucket on strike side.
  - .2 Finish to be satin or brushed aluminum.
- .8 Curtain rod: Type 304 stainless steel, 38 mm dia., length as required,
  - .1 Quantity: two (02) units.

2.3 Fastening

.1 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.

.2 Exposed fastening devices to match finish of hardware.

.3 Use fasteners compatible with material through which they pass.

3 EXECUTION

3.1 Manufacturer’s Instructions

.1 Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 Installation

.1 Install hardware to standard hardware location dimensions in accordance with manufacturer's recommendations and to project design requirements.

3.3 Adjusting

.1 Adjust cabinet hardware for optimum, smooth operating condition.

.2 Lubricate hardware and other moving parts.

3.4 Cleaning

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacture's instructions.

.3 Remove protective material from hardware items where present.

.4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.5 Schedule

.1 Patrol millwork; (per mattress enclosure)
- .1 1 pr hinges per door
- .2 1 recessed pull per door
- .3 lockset, mattress hooks
- .4 pair flush bolts per door

.2 Fingerprint shelf
- .1 pivot hinges
- .2 1 recessed pull
- .3 lockset, metal stays.

.4 Matrons millwork
- .1 drawer sliders
- .2 latches, catches, recessed pulls
- .3 hinges

.5 Bedroom Closet millwork
- .1 2 closet rods and holders

END OF SECTION

1 GENERAL

1.1 General Requirements

.1 All requirements of the Contract apply to and govern all work of this Section.

.2 Comply with the requirements of Division 1.

1.2 Related Work in Other Sections

.1	Finish Carpentry	Section 06 20 00
.2	Metal Doors and Frames	Section 08 10 14
.3	Wood Doors	Section 08 14 10
.4	PVC Windows	Section 08 50 50

1.3 References

.1 American Society for Testing and Materials International, (ASTM).
- .1 ASTM C 542-94(1999), Specification for Lock-Strip Gaskets.
- .2 ASTM D 2240-02b, Test Method for Rubber Property - Durometer Hardness.

.2 Canadian General Standards Board (CGSB).
- .1 CAN/CGSB-12.1-M90, Tempered or Laminated Safety Glass.
  CAN/CGSB-12.3-M91, Flat, Clear Float Glass.
- .2 CAN/CGSB-12.8-97 Insulating Glass Units.

.3 Flat Glass Manufacturers Association (FGMA).
- .1 FGMA Glazing Manual - 1997.

1.4 Quality Assurance and Extended Guarantees

.1 At no cost to the Owner, replace factory insulating glass units showing obstructions of vision due to dust or moisture forming on inner glass surfaces within a period of five (5) years from date of Substantial Completion. Provide Owner with written warranty to this effect.

.2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.5 Specific Handling and Transportation Requirements

.1 No specific requirements.

1.6 Submittals

.1 Product Data:
.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Shop Drawings:
.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.3 Manufacturer's Instructions
.1 Submit manufacturer's installation instructions.

1.7 Closeout Submittals

.1 Maintenance Data and Materials
.1 Provide maintenance data including cleaning instructions for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.
.2 Provide schedule of glazing sizes for replacement for incorporation into the manual specified in Section 01 78 00 - closeout Submittals.

1.8 Specific Environmental Requirements

.1 No specific requirements.

1.9 Specific Protection Requirements

.1 No specific requirements.

2 PRODUCTS

2.1 Materials: Flat Glass

.1 Float glass: to CAN/CGSB-12.3, glazing quality.

.2 Insulating glass units: all exterior windows:
.1 Factory sealed, triple glazed, with Low 'E' heat reflective film (exterior glazing).
.1 Float glass: 6 mm thick flat glass to the following requirements;
.2 Low emissivity coating to insulated glass: metallic coating, soft sputtered, applied on surface #3. Complete with Low ‘E’ label.
.1 Standard of Acceptance: Comfort Low E by AFG

.3 Tempered safety glass: to CAN/CGSB-12.1, Type 1, Class A of thickness indicated. exterior panes of windows, all glazing in interior non-secure doors.

.4 Plastic Glazing to CAN/CGSB-12.12, 13 mm thick and as indicated, polycarbonate, clear, scratch resistant both sides. Based on Margard.

2.2 Materials

.1 Sealant: Refer to Section 07 92 10.

2.3 Accessories

.1 Setting blocks: Neoprene, 70-90 Shore A durometer hardness to ASTM D 2240, length to suit glazing method, glass light weight and area.

.2 Spacer shims: Neoprene 50-60 Shore A durometer hardness to ASTM D 2240, 75 mm long x one half height of glazing stop x thickness to suit application. Self adhesive on one face.

.3 Glazing tape:
.1 Preformed butyl compound with integral resilient tube spacing device, 10-15 Shore A durometer hardness to ASTM D 2240; coiled on release paper; size to suit application; black colour.

.4 Glazing splines: resilient silicone, extruded shape to suit glazing channel retaining slot, black colour.

.5 Glazing clips: manufacturer's standard type.

.6 Lock-strip gaskets: to ASTM C 542.

.7 Breather tubes: to manufacturers standards.

.8 Primer-sealer and cleaners: to glass manufacturer’s standard.

3.0 EXECUTION

3.1 Manufacturer’s Instructions

.1 Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 Examination

.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.

3.3 Installation: Exterior - Wet/Dry Method (Tape and Sealant)

.1 Perform work in accordance with FGMA Glazing Manual for glazing installation methods.

.2 Cut glazing tape to length and set against permanent stops, 6 mm below sight line. Seal corners by butting tape and dabbing with sealant.

.3 Apply heel bead of sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete continuity of air and vapour seal.

.4 Place setting blocks at 1/4 points, with edge block maximum 150 mm from corners.

.5 Rest glazing on setting blocks and push against tape and heel bead of sealant with sufficient pressure to attain full contact at perimeter of light or glass unit.

.6 Install removable stops with spacer strips inserted between glazing and applied stops 6 mm below sight line. Place glazing tape on glazing light or unit with tape flush with sight line.

.7 Fill gap between glazing and stop with sealant to depth equal to bite of frame on glazing, maximum 9 mm below sight line.

.8 Apply cap bead of sealant along between stop and glazing, to uniform line, flush with site line. Tool or wipe sealant surface smooth.

3.4 Installation: Interior - Dry Method (Tape and Tape)

.1 Perform work in accordance with FGMA Glazing Manual for glazing installation methods.

.2 Cut glazing tape to length and set against permanent stops, projecting 1.6 mm above sight line.

.3 Place setting blocks at 1/4 points, with edge block maximum 150 mm from corners.

.4 Rest glazing on setting blocks and push against tape for full contact at perimeter of light or unit.

.5 Place glazing tape on free perimeter of glazing in same manner described.

.6 Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.

.7 Knife trim protruding tape.

3.4 Cleaning

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Remove traces of primer, caulking.

.3 Remove glazing materials from finish surfaces.

.4 Remove labels after work is complete.

.5 Clean glass using approved non-abrasive cleaner in accordance with manufacture's instructions.

.6 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.5 Protection of Finished Work

.1 After installation, mark light with an "X" by using removable plastic tape or paste.

END OF SECTION

1 GENERAL

1.1 General Requirements

.1 All requirements of the Contract apply to and govern all work of this Section.

.2 Comply with the requirements of Division 1.

1.2 Related Work Specified in Other Sections

.1	Rough Carpentry	Section 06 10 10
.2	Finish Carpentry	Section 06 20 00
.3	Joint Sealers	Section 07 92 10
.4	Wood Doors	Section 08 14 10
.5	Interior Painting	Section 09 91 23
.6	Grilles	see mechanical

1.3 References

.1 American Society for Testing and Materials International, (ASTM)
- .1 ASTM C 36/C36M-01, Specification for Gypsum Wallboard.
- .2 ASTM C79/C79M-04a, Standard Specification for Gypsum Sheathing.
- .3 ASTM C 475-01, Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
- .4 ASTM C 514-01, Specification for Nails for the Application of Gypsum Board.
- .5 ASTM C 840-01, Specification for Application and Finishing of Gypsum Board.
- .6 ASTM C 954-00, Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
- .7 ASTM C 1047-99, Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
- .8 ASTM C1177 / C1177M - 08 Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.

.2 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-71.25-M88, Adhesive, for Bonding Drywall to Wood Framing and Metal Studs.

.3 Canadian Standards Association (CSA International)
- .1 CSA A82.30-M1980, Interior Furring, Lathing and Gypsum Plastering.

1.4 Quality Assurance and Extended Guarantees

.1 No specific requirements.

1.5 Specific Handling and Transportation Requirements

.1 Store materials inside, level, under cover. Keep dry. Protect from weather, other elements and damage from construction operations and other causes.

.2 Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trim from being bent or damaged.

.3 Ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

1.6 Submittals

.1 Shop drawings : Not required.

.2 Samples : Not required.

1.7 Maintenance Data and Materials

.1 No specific requirements.

1.8 Specific Environmental Requirements

.1 Install and finish gypsum board when ambient temperature is between 14 and 33 degrees C. Maintain temperature range in areas to receive gypsum board for 24 hours before and during application and until joint cement and adhesives are fully cured.

.2 Apply gypsum board after building has been completely enclosed. Ensure that work to be concealed by gypsum board has been installed, tested, inspected and approved before starting work.

2 PRODUCTS

2.1 Gypsum Board

.1 Standard board : to ASTM C 36/C36M; 1220 mm wide x maximum practical length, bevelled edges.
- .1 regular, 12.7 mm,
- .2 fire resistant 'type X', 15.9 mm thick.

2.2 Fastenings and Adhesives

.1 To light gauge steel or wood studs:
- .1 Nails and screws to ASTM C 514.

.2 To heavy gauge steel studs:
- .1 Steel drill screws to ASTM C 954.

.3 Stud adhesive: to CAN/CGSB-71.25.

2.4 Accessories

.1 Casing beads, corner beads, bullnose corner beads, and edge trim: to ASTM C 1047, metal, zinc-coated by hot-dip process, 0.5 mm base thickness, perforated flanges.
.2 Acoustic sealant: see Section 07 92 10 - Sealants.
.3 Joint compound: to ASTM C 475, asbestos-free.

3 EXECUTION

3.1 Wall Furring

.1 Install wall furring for gypsum board wall finishes in accordance with ASTM C 840, except where specified otherwise.

.2 Furr openings and around built-in equipment, cabinets, access panels, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.

.3 Furr at existing fasteners where indicated.

3.2 Gypsum Board Application

.1 Do not apply gypsum board until bucks, anchors, blocking, electrical and mechanical work are approved.

.2 Apply gypsum board to furring or framing using screw fasteners. Maximum spacing of screws 300 mm o/c.
  .1 Single-Layer Application:
    .1 Apply gypsum board on ceilings prior to application of walls in accordance with ASTM C 840.
    .2 Apply gypsum board vertically or horizontally, providing sheet lengths that will minimize end joints.

.3 Install gypsum board on walls vertically to avoid end-butt joints. At high walls, install boards horizontally with end joints staggered over studs, except where local codes or fire-rated assemblies require vertical application.

.4 Install gypsum board with face side out.

.5 Do not install damaged or damp boards.

.6 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

3.3 Accessories

.1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 150 mm o/c.

.2 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated.

.3 Install corner beads at exterior corners.

3.4 Taping and Filling

.1 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.

.2 Finish corner beads, and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.

.3 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after surface finish is completed.

.4 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.

.5 Apply a thin coat of joint compound over the board on each side of joints and embed the reinforcing tape and roll firmly into place. Cover all edges of tape with a thin coat of joint compound. Neatly crease tape at all internal corners. Allow to dry 24 hours. Retouch all defects in taping and filling and all other depressions or imperfections in gypsum board applications after the first prime application under illumination of not less than 540 lumens per square meter.

.6 Apply joint compound over the flanges of all corner beads and casing beads flush with nose of the bead and extending at least 75 mm onto the surface of the board.

.7 After bedding coat has set, apply a second coat of joint compound feathered at least 150 mm on each side of butt joints and 100 mm past the flanges of all beads.

.8 After the second coat has set apply a third coat of joint compound feathered to 200 mm on each side of butt joints and 125 mm past the flanges of all beads.

.9 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

3.5 Cleaning

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

1 GENERAL

1.1 General Requirements

.1 All requirements of the Contract apply to and govern all work of this Section.

.2 Comply with the requirements of Division 1.

1.2 Related Work in Other Sections

.1 Submittal Procedures — Section 01 33 00

1.3 Standards Referred to in this Section

.1 American Society for Testing and Materials (ASTM International)
  .1 ASTM F 1303-99, Specification for Sheet Vinyl Floor Covering with Backing.

1.4 Quality Assurance and Extended Guarantees

.1 Submit manufacturer's standard 5 year warranty document executed by authorized company official in accordance with Section 01 78 00 - Closeout Submittals commencing on date of Substantial Completion.

1.5 Specific Handling and Transportation Requirements

.1 No specific requirements.

1.6 Submittals

.1 Shop drawings : Not required.

.2 Samples : Not required.

1.7 Maintenance Data and Materials

.1 Provide maintenance data for resilient flooring for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

.2 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

.3 Deliver 1 box of tiles of pattern and type flooring material required for project for maintenance use. Identify box. Store where directed.

1.8 Specific Environmental Requirements

.1 Maintain air temperature and structural base temperature at flooring installation area above 20°C for 48 hours before, during and 48 hours after installation.

1.9 Specific Protection Requirements

.1 Protect installed flooring against damage with heavy paper
Requirements or plastic covering. Do not place static loads on newly installed flooring until minimum 7 days after installation.

2.0 PRODUCTS

2.1 Materials

.1 Residence - Vinyl flooring - tiles, groutless.
- .1 Wear layer: Urethane
- .2 Thickness: 3.1 mm
- .3 Size: 406 x 406
- .4 Colour: See Section 09 99 60.
  - .1 Acceptable material: Permastone Travertine by Tarket

.2 Government of Canada Building - Homogenous Vinyl flooring.
- .1 Wear layer:2.0 mm
- .2 Thickness: 2.0 mm
- .3 Size: 2.0 M roll
- .4 Colour: See Section 09 99 60.
  - .1 Acceptable material: IQ Optima by Johnsonite

.3 Primers and adhesives: types recommended by resilient flooring manufacturer for specific material on applicable substrate, above grade (residence). Epoxy base adhesive (Government of Canada Building).

.4 Sub-floor filler and leveler: as recommended by flooring manufacturer for use with their product.

.5 Sealer and wax: type recommended by resilient flooring material manufacturer for material type and location.

3 EXECUTION

3.1 Inspection

.1 Ensure existing and new plywood floors are dry, true, even and smooth and free of paint, grease, oil and dirt to flooring manufacturer’s recommendations.

.2 Commencement of work under this section will imply unconditional acceptance of the surfaces to receive work of these specifications.

3.2 Subfloor Treatment

.1 Remove subfloor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with subfloor filler. Ensure security caulking in all routed edges.

.2 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.

3.3 Flooring Application

.1 Residence: Apply manufacturer's recommended low VOC adhesive uniformly using recommended trowel. Do not spread more adhesive than can be covered by flooring before initial set takes place. Government of Canada Building: apply epoxy base adhesive in accordance with manufacturer's instructions.

.2 Residence: Provide tile edges according to manufacturers instructions. Damaged edges will not be accepted. Government of Canada Building: seal with cold weld liquid application.

.4 As installation progresses, and after installation, roll flooring with 45 kg minimum roller to ensure full adhesion.

.5 Cut flooring neatly around fixed objects.

.6 Provide transition at centerline of door in openings.

.7 Government of Canada Building: Provide security caulking continuously at perimeter of rooms at partitions .

3.4 Initial Cleaning and Waxing

.1 Remove excess adhesive from floor, base and wall surfaces without damage.

.2 Clean, seal and wax floor and base surface to flooring manufacturer's printed instructions.

3.5 Protection of Finished Work

.1 Protect new floors from time of final set of adhesive until interim inspection.

.2 Prohibit traffic on floor for 48 hours after installation.

3.6 Cleaning

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

1 GENERAL

1.1 General Requirements

.1 All requirements of the Contract apply to and govern all work of this Section.

2 Comply with the requirements of Division 1.

1.2 Related Work Specified in Other Sections

.1 Submittal Procedures Section 01 33 00

.2 Closeout Submittals Section 01 78 00

1.3 References

.1 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-4.129-93(R1997), Carpets for Commercial Use.

.2 Carpet and Rug Institute (CRI)
.1 CRI-104-96, Standard Installation of Commercial Carpet.

1.4 Quality Assurance and Extended Guarantees

.1 Installer Qualifications:
.1 Flooring contractor requirements.
.1 Specialty contractor normally engaged in this type of work, with prior experience in installation of these types of materials.

.2 Be responsible for proper product installation, including floor testing and preparation as specified and in accordance with carpet manufacturers written instructions.

.3 15 year wear guarantee, 10 year no-zippering.

1.5 Specific Handling and Transportation Requirements

.1 Store packaged materials in original containers or wrapping with manufacturer's seals and labels intact.

.2 Store carpet tile and accessories in location as directed by Departmental Representative. Store carpet and adhesive at minimum temperature of 18° C and relative humidity of maximum 65% for minimum of 48 hours before installation.

.3 Prevent damage to materials during handling and storage. Keep materials under cover and free from dampness.

.4 Maintain temperature of store room at a minimum of 20°C, for at least 24 hours immediately before the installation.

1.6 Submittals

.1 Shop drawings : Not required

.2 Samples :
- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit duplicate 500 x 500 mm samples.

1.7 Closeout Submittals

.1 Maintenance Data and Material
- .1 Provide maintenance data for carpet maintenance for incorporation into Operation and Maintenance Manual specified in Section 01 78 00 - Closeout Submittals.
- .2 Deliver 20 tiles of each type, pattern and colour of carpet tile required for this project for maintenance use. Identify each box. Store where directed.
- .3 Maintenance materials to be full size piece of same production run as installed materials.

1.8 Specific Environmental Requirements

.1 Ensure substrate is within moisture limits and alkalinity limits prescribed by manufacturer.

.2 Maintain ambient temperature of not less than 18° C from 48 hours before installation to at least 48 hours after completion of work.

.3 Maintain relative humidity between 10 and 65% RH for 48 hours before, during and 48 hours after installation.

.4 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.

.5 Provide continuous ventilation during and after carpet application. Run ventilation system 24 hours per day during installation; provide continuous ventilation for 7 days after completion of carpet installation.

.6 Do not install carpet until work above ceilings is complete.

1.9 Specific Protection Requirements

.1 No specific requirements.

2 PRODUCTS

2.1 Materials

.1 Detachment Carpet tile: flammability to CGSB 4-GP-129 except as noted.
- .1 Surface texture: tufted textured loop.
- .2 Fibre type: post-consumer type 6 nylon
- .3 Yarn construction:
  - .1 Pile height: 3.7 mm
  - .3 Tufted yarn weight: 610 g/m^2
  - .4 Stitch rate: 32.12 / 100 mm
  - .5 Yarn dye Method: 100 % solution dyed
  - .6 Primary backing: GlasBac Tile
  - .7 Pile density: 6968
  - .8 Pile thickness: 6.98 mm
  - .9 antimicrobial treated
  - .10 Colour: as per section 09 99 60
- .4 Standard of Acceptance : Entropy by Interface.

.2 Residence Carpet tile: flammability to CGSB 4-GP-129 except as noted.
- .1 Surface texture: tufted textured loop.
- .2 Fibre type: post-consumer type 6 nylon
- .3 Yarn construction:
  - .1 Pile height: 4.9 mm
  - .3 Tufted yarn weight: 882 g/m^2
  - .4 Stitch rate: 38.03 / 100 mm
  - .5 Yarn dye Method: 100 % solution dyed
  - .6 Primary backing: GlasBac Tile
  - .7 Pile density: 5143
  - .8 Pile thickness: 7.11 mm
  - .9 antimicrobial treated
  - .10 Colour: as per section 09 99 60
- .4 Standard of Acceptance : Pinhole “Southern Analog” by Millikin

.3 Adhesive: of types as recommended by carpet manufacturer for purpose intended.

.4 Binder bars: of type recommended by carpet manufacturer.

.5 Carpet protection: non-staining heavy duty kraft paper or 0.15 mm thick polyethylene film.

.6 Subfloor filler: white premix latex requiring only water to produce cementitious paste.

.7 Rubber Base: 100 mm coved for carpet and resilient flooring, manufacturer’s standard outside corners, maximum length available.

3 EXECUTION

3.1 Workmanship

.1 Finish installation to present smooth wearing surface free from conspicuous seams, burring and other faults.

.2 Use material from same dye lot and ensure colour, pattern and texture match within any one area.

3.2 Preparation

.1 Prepare floor surfaces in accordance with CRI 104 Standard for Installation of Commercial Carpet.

.2 Pre-condition carpet tile following manufacturer’s printed instructions.

3.3 Carpet Binder Bars

.1 Use metal binder bars at exposed carpet edges. Centre under doors in door openings.

3.4 Carpet Tile Installation

.1 Install carpet tile in accordance with manufacturer's printed instructions and in accordance with Carpet and Rug Institute Standard for Installation of Commercial Carpet, CRI 104. Install in a quarter turn pattern.

.2 Install carpet tile after finishing work is completed.

.3 Finish installation to present smooth wearing surface free from conspicuous seams, burring and other faults.

.4 Use material from same dye lot. Ensure colour, pattern and texture match within any one visual area. Maintain constant pile direction.

.5 Fit neatly around architectural, mechanical, electrical and telephone outlets, furniture fitments, around perimeter of rooms into recesses, and around projections.

.6 Install carpet smooth and free of bubbles, puckers, and other defects.

3.5 Protection of Finished Work

.1 Vacuum carpet tile clean. Protect traffic areas of carpeted floors with carpet protection. Tape edges and joints to prevent shifting.

3.6 Cleaning

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

1 GENERAL

1.1 General Requirements

.1 All requirements of the Contract apply to and govern all work of this Section.

.2 Comply with requirements of Division 01.

1.2 Related Work

.1 Submittal Procedures — Section 01 33 00

1.3 Standards Referred to in this Section

.1 Architectural Painting Specifications Manual, Master Painters Institute (MPI).

.2 National Fire Code of Canada.

1.4 Quality Assurance

.1 Conform to latest MPI requirements for exterior painting work including preparation and priming.

.2 Paint contractor shall have a minimum of five years proven satisfactory experience. When requested, provide a list of last three comparable jobs including, job name and location, specifying authority, and project manager.

.3 Materials (primers, paints, coatings, fillers, thinners, solvents, etc.) shall be in accordance with MPI Painting Specification Manual "Approved Product" listing and shall be from a single manufacturer for each system used.

.4 Standard of Acceptance:
- .1 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

1.5 Specific Handling and Transportation Requirements

.1 Deliver and store materials in original containers, sealed, with labels intact.

.2 Indicate on containers or wrappings:
- .1 Manufacturer's name and address.
- .2 Type of paint.
- .3 Compliance with applicable standard.
- .4 Colour number in accordance with established colour schedule.

.3 Remove damaged, opened and rejected materials from site.

.4 Provide and maintain dry, temperature controlled, secure storage.

.5 Observe manufacturer's recommendations for storage and handling.

.6 Store materials and supplies away from heat generating devices.

.7 Store materials and equipment in a well ventilated area with temperature range 7 °C to 30 °C.

.8 Store temperature sensitive products above minimum temperature as recommended by manufacturer.

.9 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Departmental Representative. After completion of operations, return areas to clean condition to approval of Departmental Representative.

.10 Provide minimum one 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.

.11 Remove only in quantities required for same day use.

.12 Fire Safety Requirements:
- .1 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
- .2 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

1.6 Submittals

.1 Shop drawings: not required.

.2 Samples: not required.

1.7 Closeout Submittals

.1 Maintenance Data and Materials
- .1 Provide one litre of identical material in sealed and properly identified containers for each type and colour of paint used.

1.8 Specific Environmental Conditions

.1 Surface and Environmental Conditions:
- .1 Apply paint finish only in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.
- .2 Apply paint only to adequately prepared surfaces.
- .3 Apply paint only when previous coat of paint is dry or adequately cured.
- .4 Apply paint finishes only when conditions forecast for entire period of application fall within manufacturer's recommendations.
- .5 Do not apply paint when:
  - .1 Temperature is expected to drop below 10° C before paint has thoroughly cured.
  - .2 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's limits.
  - .3 Surface to be painted is wet, damp or frosted.
- .6 Provide and maintain cover when paint must be applied in damp or cold weather. Heat substrates and surrounding air to comply with temperature and humidity conditions specified by manufacturer. Protect until paint is dry or until weather conditions are suitable.
- .7 Schedule painting operations such that surfaces exposed to direct, intense sunlight are scheduled for completion during early morning.
- .8 Remove paint from areas which have been exposed to freezing, excess humidity, rain, snow or condensation. Prepare surface again and repaint.

1.9 Specific Protection Requirements

.1 Post "Wet Paint" and "No Smoking" signs while work is in progress and while coatings are curing.

.2 Protect building components and finished surfaces from paint spatter and damage. Make good all damage as a result of inadequate or unsuitable protection.

.3 Furnish drop cloths, shields and protective equipment to prevent spray or droppings from fouling surfaces not being painted.

.4 Place waste cloths and material which may constitute a fire hazard in closed metal containers and remove from site daily.

.5 Remove electrical cover plates, surface hardware, fitting, and fastenings prior to painting operations. Store until painting operations for area is complete. Replace each item on completion of work.

2 PRODUCTS

2.1 Materials

.1 Paint materials listed in the latest edition of the MPI Approved Products List (APL) are acceptable for use on this project.

.2 Paint materials for paint systems shall be products of a single manufacturer.

2.2 Colours

.1 See Section 09 99 60.

.2 Second coat in a three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

2.3 Mixing and Tinting

.1 Perform colour tinting operations prior to delivery of paint to site.

.2 Paste, powder or catalysed paint mixes shall be mixed in strict accordance with manufacturer's written instructions.

.3 Where thinner is used, addition shall not exceed paint manufacturer's recommendations. Do not use kerosene or any such organic solvents to thin water-based paints.

.4 Thin paint for spraying in strict accordance with paint manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer.

.5 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

2.4 Exterior Painting Systems

.1 for galvanized metal:
EXT 5.3B - alkyd, gloss level 5.

3 EXECUTION

3.1 General

.1 Perform preparation and operations for exterior painting in accordance with MPI Painting Specifications Manual except where specified otherwise.

.2 Apply paint materials in accordance with paint manufacturer's written application instructions.

3.2 Protection

.1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore such surfaces as directed by Departmental Representative.

.2 As painting operations progress, place "WET PAINT" signs in pedestrian and vehicle traffic areas to approval of Departmental Representative.

3.3 Cleaning and Preparation

.1 Clean and prepare exterior surfaces in accordance with MPI Painting Specification Manual requirements. Refer to the MPI Manual in regard to specific requirements and as follows:
  .1 Remove dust, dirt, and other surface debris by brushing.

.2 Remove dust, dirt, and other surface debris by wiping with dry, clean cloths.

.3 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes.

.4 Touch up of shop primers with primer as specified in applicable section. Major touch-up including cleaning and painting of field connections, welds, rivets, nuts, washers, bolts, and damaged or defective paint and rusted areas, shall be by supplier of fabricated material.

3.4 Application

.1 Conform to manufacturer's application instructions unless specified otherwise.

.2 Brush and Roller Application:
  .1 Apply paint in a uniform layer using brush and/or roller of types suitable for application.
  .2 Work paint into cracks, crevices and corners.
  .3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins.
  .4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces shall be free of roller tracking and heavy stipple.
  .5 Remove runs, sags and brush marks from finished work and repaint.

.3 Apply coats of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.

.4 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.

.5 Sand and dust between coats to remove visible defects.

END OF SECTION

1 GENERAL

1.1 General Requirements

.1 All requirements of the Contract apply to and govern all work of this Section.

.2 Comply with the requirements of Division 1.

1.2 Related Work Specified in Other Sections

.1	Finish Carpentry	Section 06 20 00
.2	Metal Doors and Frames	Section 08 11 14
.3	Wood Doors	Section 08 14 10
.4	Gypsum Board Assemblies	Section 09 21 16
.5	Mechanical	Division 20 - 25

1.3 References

.1 Architectural Painting Specifications Manual, Master Sections Painters Institute (MPI).

.2 National Fire Code of Canada.

.3 Systems and Specifications Manual, SSPC Painting Manual, Volume Two, Society for Protective Coatings (SSPC).

.4 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings) of the Environmental Protection Agency (EPA).

1.4 Quality Assurance and Extended Guarantees

.1 Conform to latest MPI requirements for interior painting work including preparation and priming.

.2 Paint contractor shall have a minimum of five years proven satisfactory experience. When requested, provide a list of last three comparable jobs including, job name and location, specifying authority, and project manager.

.3 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) shall be in accordance with MPI Painting Specification Manual "Approved Product" listing and shall be from a single manufacturer for each system used.

.4 Other paint materials such as linseed oil, shellac, turpentine, etc. shall be product of an approved manufacturer listed in MPI Painting Specification Manual and shall be compatible with other coating materials as required.

.5 Standard of Acceptance:
.1 Walls: No defects visible from a distance of 1000 mm at 90° to surface.
.2 Ceilings: No defects visible from floor at 45° to surface when viewed using final lighting source.
.3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

.6 Contractor shall have a minimum of five years proven satisfactory experience. When requested, provide a list of last three comparable jobs including, job name and location, specifying authority, and project manager.

.7 Qualified journeymen who have a "Tradesman Qualification Certificate of Proficiency" shall be engaged in painting work. Apprentices may be employed provided they work under the direct supervision of a qualified journeyman in accordance with trade regulations.

.8 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Departmental Representative.

1.5 Special Handling and Transportation Requirements

.1 Deliver and store materials in original containers, sealed, with labels intact.

.2 Indicate on containers or wrappings:
.1 Manufacturer's name and address.
.2 Type of paint.
.3 Compliance with applicable standard.
.4 Colour number in accordance with established colour schedule.

.3 Do not permit any paint materials to be subjected to freezing temperatures. Remove damaged, opened and rejected materials from site.

.4 Provide and maintain dry, temperature controlled, secure storage.

.5 Observe manufacturer's recommendations for storage and handling.

.6 Store materials and supplies away from heat generating devices.

.7 Store materials and equipment in a well ventilated area with temperature range 7 °C to 30 °C.

.8 Store temperature sensitive products above minimum temperature as recommended by manufacturer.

.9 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Departmental Representative. After completion of operations, return areas to clean condition to approval of Departmental Representative.

.10 Provide minimum one 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.

.11 Remove only in quantities required for same day use.

.12 Fire Safety Requirements:
- .1 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
- .2 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

.13 Site Requirements
- .1 Heating, Ventilation and Lighting:
  - .1 Ventilate enclosed spaces in accordance with Section 01 51 00.
  - .2 Perform no painting work unless adequate and continuous ventilation and sufficient heating facilities are in place to maintain ambient air and substrate temperatures above 10 ° C for 24 hours before, during and after paint application until paint has cured sufficiently.
  - .3 Where required, provide continuous ventilation for seven days after completion of application of paint.
  - .4 Perform no painting work unless a minimum lighting level of 323 Lux is provided on surfaces to be painted. Adequate lighting facilities shall be provided by General Contractor.
- .2 Temperature, Humidity and Substrate Moisture Content Levels:
  - .1 Unless specifically pre-approved by the Departmental Representative, perform no painting work when:
    - .1 Ambient air and substrate temperatures are below 10 ° C.
    - .2 Substrate temperature is over 32 ° C unless paint is specifically formulated for application at high temperatures.
    - .3 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's prescribed limits.
    - .4 The relative humidity is above 85% or when the dew point is less than 3 ° C variance between the air/surface temperature.
  - .2 Perform no painting work when the maximum moisture content of the substrate exceeds:
    - .1 15 % for wood.
    - .2 12% for plaster and gypsum board.
  - .3 Conduct moisture tests using a properly calibrated electronic Moisture Meter.

.3 Surface and Environmental Conditions:
.1 Apply paint finish only in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.
.2 Apply paint only to adequately prepared surfaces and to surfaces within moisture limits noted herein.
.3 Apply paint only when previous coat of paint is dry or adequately cured.

.4 Additional Interior Application Requirements:
.1 Apply paint finishes only when temperature at location of installation can be satisfactorily maintained within manufacturer's recommendations.

1.6 Submittals

.1 Shop drawings : Not required

.2 Samples : Not required

1.7 Closeout Submittals

.1 Upon completion, submit records of products used. List products in relation to finish system and include the following:
.1 Product name, type and use.
.2 Manufacturer's product number.
.3 Colour numbers.
.4 MPI Environmentally Friendly classification system rating.
.5 Manufacturer's Material Safety Data Sheets (MSDS).

.2 Extra Materials
.1 Submit maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
.2 Submit one - four litre can of each type and colour of primer, finish coating. Identify colour and paint type in relation to established colour schedule and finish system.
.3 Store where directed.

1.8 Special Environmental Requirements

.1 Do not apply paint finish in areas where dust is being generated.

.2 Schedule painting operations to prevent disruption of occupants in and about the building.

.3 Maintain temperature in interior area to receive coatings between 13 deg. C and 20 deg. C for at least 24 hours before and during application and until coatings have cured after application.

.4 Provide continuous ventilation during and after application of paint. Run ventilation system 24 hours per day during installation; provide continuous ventilation for 7 days after completion of application of paint.

.5 Provide paint products meeting MPI "Environmentally Friendly" E3 ratings based on VOC (EPA Method 24) content levels.

.6 Scheduling of Work
- .1 Submit work schedule for various stages of painting to Departmental Representative for approval. Submit schedule minimum of 48 hours in advance of proposed operations.
- .2 Obtain written authorization from Departmental Representative for any changes in work schedule.
- .3 Schedule painting operations to prevent disruption of occupants in and about the building.

1.9 Special Protection Requirements

.1 Post "Wet Paint" and "No Smoking" signs while work is in progress and while coatings are curing.

.2 Protect building components and finished surfaces from paint spatter and damage. Make good all damage as a result of inadequate or unsuitable protection.

.3 Furnish drop cloths, shields and protective equipment to prevent spray or droppings from fouling surfaces not being painted.

.4 Place waste cloths and material which may constitute a fire hazard in closed metal containers and remove from site daily.

.5 Remove electrical cover plates, surface hardware, fittings, and fastenings prior to painting operations. Store until painting operations in room or area is complete. Replace each item on completion of work in each room or area.

2 PRODUCTS

2.1 Materials

.1 Use only paint materials listed in the MPI Approved Products List (APL) on this project.

.2 Use paint materials from single manufacturer for each coating formulae.

.3 Provide semi-gloss finish on walls and eggshell finish on ceilings unless otherwise indicated.

.4 Select products exhibiting low odour characteristics. Select product with lowest odour if two products are otherwise equivalent.

.5 Perform all colour tinting operations prior to delivery of paint to site.

2.2 Colours

.1 See Section 09 99 60.

.2 Tint second coat in a three coat system slightly lighter colour than top coat to show visible difference between coats.

2.3 Mixing and Tinting

.1 Perform colour tinting operations prior to delivery of paint to site.

.2 Paste, powder or catalysed paint mixes shall be mixed in strict accordance with manufacturer's written instructions.

.3 Where thinner is used, addition shall not exceed paint manufacturer's recommendations. Do not use kerosene or any such organic solvents to thin water-based paints.

.4 Thin paint for spraying in strict accordance with paint manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer.

.5 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

2.4 Interior Painting Systems

.1 for galvanized metal (doors, frames, railings, misc. steel, pipes, ducts, etc.)
  .1 INT 5.3C, alkyd (over cementitious primer), gloss level 3

.2 for plaster and gypsum board walls:
  .1 INT 9.2B High performance architectural latex semi-gloss finish, gloss level 5.

.3 for plaster and gypsum board ceilings:
  .1 INT 9.2A, latex (over latex sealer), gloss level 3.

.4 for wood panelling and casework to receive clear finish (including doors, millwork, etc.)
  .1 INT 6.3K, polyurethane varnish, gloss level 5.

3 EXECUTION

3.1 General

.1 Perform preparation and operations for interior painting in accordance with MPI Painting Specifications Manual except where specified otherwise.

.2 Apply paint materials in accordance with paint manufacturer's written application instructions.

3.2 Existing Conditions

.1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Departmental Representative damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.

.2 Conduct moisture testing of surfaces to be painted using a properly calibrated electronic moisture meter, except test concrete floors for moisture using a simple "cover patch test" and report findings to Departmental Representative. Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

.3 Maximum moisture content as follows:
.1 Stucco, Plaster and Gypsum Board: 12%.
.2 Wood: 7%.

3.3 Protection

.1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore such surfaces as directed by Departmental Representative.

.2 Protect items that are permanently attached such as Fire Labels on doors and frames.

.3 Protect factory finished products and equipment.

.4 Protect building occupants in and about the building.

.5 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking any painting operations. Securely store items and re-installed after painting is completed.

.6 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.

.7 As painting operations progress, place "WET PAINT" signs in occupied areas to approval of Departmental Representative.

3.4 Cleaning and Preparation

.1 Clean and prepare surfaces in accordance with MPI Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:
- .1 Remove dust, dirt, and other surface debris by vacuuming or wiping with dry, clean cloths.
- .2 Wash surfaces with a biodegradable detergent and bleach where applicable and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.
- .3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
- .4 Allow surfaces to drain completely and allow to dry thoroughly.
- .5 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.
- .6 Use trigger operated spray nozzles for water hoses.

.2 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.

.3 Prime surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces
- .1 Apply vinyl sealer to MPI #36 over knots, pitch, sap and resinous areas.
- .2 Apply wood filler to nail holes and cracks.
- .3 Follow manufacturer's instructions for priming for epoxy system..

.4 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.

.5 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes.

.6 Touch up shop primers with primer as specified in applicable section. Major touch-up including cleaning and painting of field connections, welds, rivets, nuts, washers, bolts, and damaged or defective paint and rusted areas, shall be by supplier of fabricated material.

3.5 Application

.1 Apply paint by brush or roller, except on wood and metal surfaces where paint shall be applied by brush only. Spray painting may be permitted in areas where advantageous and shall be subject to approval. When spray painting is permitted use only airless spray guns.

.2 Brush and Roller Application:
- .1 Apply paint in a uniform layer using brush and/or roller of types suitable for application.
- .2 Work paint into cracks, crevices and corners.
- .3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.
- .4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces shall be free of roller tracking and heavy stipple.
- .5 Remove runs, sags and brush marks from finished work and repaint.

.3 Spray application:
- .1 Provide and maintain equipment that is suitable for intended purpose, capable of properly atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.
- .2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.
- .3 Apply paint in a uniform layer, with overlapping at edges of spray pattern.
- .4 Brush out immediately all runs and sags.
- .5 Use brushes to work paint into cracks, crevices and places which are not adequately painted by spray.

.4 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access and only when specifically authorized by Departmental Representative.

.5 Apply coats of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.

.6 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.

.7 Sand and dust between coats to remove visible defects.

.8 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.

.9 Finish closets and alcoves as specified for adjoining rooms.

.10 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

3.6 Mechanical and Electrical Equipment

.1 Paint exposed conduits, pipes, hangers and other mechanical and electrical equipment occurring in finished areas as well as inside cupboards and cabinet work. Colour and texture to match adjacent surfaces, except as noted otherwise.

.2 In unfinished areas leave equipment, piping, conduits, hangers etc., in original finish and touch up scratches and marks

.3 Paint inside of ductwork where visible with primer and one coat of matt black paint.

.4 Paint disconnect switches for fire alarm system and exit light systems in red enamel.

.5 Leave inside of mechanical cabinets unpainted.

.6 Leave name plates unpainted.

3.7 Restoration

.1 Clean and re-install all hardware items removed before undertaking painting operations.

.2 Remove protective coverings and warning signs as soon as practical after operations cease.

.3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.

.4 Protect freshly completed surfaces from paint droppings and dust. Avoid scuffing newly applied paint.

.5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition.

END OF SECTION

1 GENERAL

1.1 General Requirements

.1 All requirements of the Contract apply to and govern all work of this Section.

.2 Comply with the requirements of Division 1.

1.2 Related Work in Other Sections

.1 Submittal Procedures — Section 01 33 00

1.3 Standards Referred to in this Section

.1 American Society for Testing and Materials (ASTM International)
.1 ASTM standards as indicated on proprietary product.

1.4 Quality Assurance and Extended Guarantees

.1 Submit manufacturer's standard 5 year warranty document executed by authorized company official in accordance with Section 01 33 00 - Submittals commencing on date of Substantial Completion.

1.5 Specific Handling and Transportation Requirements

.1 No specific requirements.

1.6 Submittals

.1 Shop drawings : Not required.

.2 Samples : Not required.

1.7 Closeout Submittals

.1 Maintenance Data and Materials
.1 Provide maintenance data for epoxy flooring for incorporation into manual specified in Section 01 33 00 - Submittals.

1.8 Specific Environmental Requirements

.1 Maintain air temperature and structural base temperature at flooring installation area above 20°C for 48 hours before, during and 48 hours after installation.

1.9 Specific Protection Requirements

.1 Refer to manufacturer's instructions for cure schedule for foot traffic.

2 PRODUCTS

2.1 Materials

.1 Colour: Refer to Section 09 99 60

.1 INT 6.1U fire retardant, pigmented, based on AFG SafeCoat

.2 INT 5.3 B waterborne epoxy, light industrial coating, gloss level 5, based on Devoe Tru Glaze WB.
.1 3 base coats as per manufacturer's instructions.
.2 2 overcoats as per manufacturer's instructions.

3 EXECUTION

3.1 Inspection

.1 Ensure plywood partitions and ceilings are dry, true, even and smooth and free of paint, grease, oil and dirt to coating manufacturer's recommendations.

.2 Commencement of work under this section will imply unconditional acceptance of the surfaces to receive work of these specifications.

3.2 Plywood Treatment

.1 Remove ridges and bumps.

.2 Clean plywood to manufacturer's recommendations.

.3 Fill routed edges with security caulking and level as required.

.4 Apply fire retardant coating to exposed surfaces of plywood according to manufacturer's instructions.

3.3 Application

.1 Edge detailing: provide edge terminations at free edges of flooring as indicated. Fill edge termination with security caulking.

.2 Mix components as recommended by manufacturer.

.3 Apply coatings neatly around fixed objects.

3.4 Protection of Finished Work

.1 Protect the work from traffic during the curing period according Work to manufacturers instructions.

3.5 Cleaning

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.7 Schedule

.1 Apply Epoxy coating to exposed partition and ceiling plywood in Rooms 113 and 119.

END OF SECTION

1 GENERAL

1.1 General Requirements

.1 All requirements of the Contract apply to and govern all work of this Section.

.2 Comply with the requirements of Division 1.

1.2 Related Work in Other Sections

.1 Submittal Procedures — Section 01 33 00

1.3 Standards Referred to in this Section

.1 American Society for Testing and Materials (ASTM International)
.1 ASTM standards as indicated on proprietary product.

1.4 Quality Assurance and Extended Guarantees

.1 Submit manufacturer's standard 5 year warranty document executed by authorized company official in accordance with Section 01 33 00 - Submittals commencing on date of Substantial Completion.

1.5 Specific Handling and Transportation Requirements

.1 No specific requirements.

1.6 Submittals

.1 Shop drawings : Not required.

.2 Samples : Not required.

1.7 Closeout Submittals

.1 Maintenance Data and Materials
.1 Provide maintenance data for epoxy flooring for incorporation into manual specified in Section 01 33 00 - Submittals.

1.8 Specific Environmental Requirements

.1 Maintain air temperature and structural base temperature at flooring installation area above 20°C for 48 hours before, during and 48 hours after installation.

1.9 Specific Protection Requirements

.1 Refer to manufacturer's instructions for cure schedule for foot traffic.

2 PRODUCTS

2.1 Materials

.1 INT 6.1U fire retardant, pigmented, based on AFG SafeCoat

.2 Levelling coat: self levelling polymer (resin) based, colour pigment
- .1 Thickness: as recommended by manufacturer for plywood application
- .2 Colour: See Section 09 99 60
- .3 Acceptable Material: Superstrength concentrated polymer by Granicrete

.3 Texture coat: texture coat polymer, high-build, coloured, matt finish.
- .1 Thickness: as recommended by manufacturer for application
- .2 Colour: See Section 09 99 60
- .3 Acceptable Material: “Authentic” Texture Blend by Granicrete

.4 Waterproofer: plywood site applied waterproof sealer, application as recommended by manufacturer.
- .1 Acceptable material: Hydro Barrier Membrane by Granicrete.

.5 Accessories: proprietary mesh lath, paint-like colourant, sealer and mesh fasteners as recommended by manufacturer.

3 EXECUTION

3.1 Inspection

.1 Ensure plywood floors, partitions and ceilings are dry, true, even and smooth and free of paint, grease, oil and dirt to flooring manufacturer’s recommendations.

.2 Commencement of work under this section will imply unconditional acceptance of the surfaces to receive work of these specifications.

3.2 Partition Treatment

.1 Remove subfloor ridges and bumps.

.2 Clean plywood followed by caulking joints and waterproofer to manufacturer’s recommendations.

.3 Install mesh lath to flooring manufacturer's printed instructions.

.4 Prior to caulking joints or installation of waterproofer, apply fire retardant coating to exposed plywood.

3.3 Application

.1 Edge detailing: provide edge terminations at free edges of flooring. Edge detailing to be as per manufacturer's instructions.

.2 Mix polymer components as recommended by manufacturer.

.3 Apply mesh lath as recommended by manufacturer. Using manufacturer's recommended fasteners. Mesh to be monolithic. Corners to have mesh lapped as recommended by manufacturer.

.4 Apply polymer coating neatly around fixed objects, floated over installed lath.

3.4 Top Coat

.1 Apply over base coating to manufacturers recommendations using manufacturer's recommended equipment. Build up to thickness as recommended by manufacturer. Minimum thickness to cover mesh lath. Top coat to be monlithic and carry up vertical surfaces as indicated.

.2 Mix top coat components to manufacturers recommendations.

.3 Provide ventilation as recommend by manufacturer to aid drying.

3.5 Sealer

.1 Apply sealer over surfaces as recommended by manufacturer.

.2 Provide second over first when cured.

3.6 Protection of Finished Work

.1 Protect the work from traffic during the curing period according to manufacturers instructions.

3.7 Cleaning

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.8 Schedule

.1 Apply Granicrete to partition and ceiling of exposed plywood of Room 118.

END OF SECTION

SECTION	SPECIFICATION	MANUFACTURER	PRODUCT	COLOUR
Detachment				
06 20 00	finish carpentry			
	standing / running trim,	Benjamin Moore	polyurethane	as indicated
06 40 00	architectural woodwork			
	cabinets	Benjamin Moore	polyurethane	Clear finish
	countertop - staff room		plastic laminate	TBA
	countertop - matrons desk	Stainless Steel		brushed finish
08 10 14	metal door and frame	Benjamin Moore		TBA
08 14 10	wood door	Benjamin Moore	polyurethane	Clear finish
08 32 00	detention doors	Benjamin Moore		TBA
09 68 00	carpet tile	Interface	Entropy	Basalt 7238
	Vinyl	Johnsonite	IQ Optima	TBA
09 91 23	interior painting			
	walls	Benjamin Moore		
09 96 70	Epoxy coating			
	walls	Sika		TBA
	ceiling	Sika		TBA
Residence				
06 20 00	wood base board	Benjamin Moore	polyurethane	Clear finish
06 40 00	architectural woodwork	Benjamin Moore	polyurethane	Clear finish
08 14 10	wood door	Benjamin Moore	polyurethane	Clear finish
09 68 00	carpet tile	Milliken	Pinhole	PH418 Zoom
	resilient flooring	Tarket	Sundance	Travertine
09 91 23	interior painting			
	Walls	Benjamin Moore		to match existing
	Ceiling	Benjamin Moore		to match existing

ROOM : 101					
SURFACE	**COMPONENT**	**SUBSTRATE**	**FINISH**	**COMMENTS**	
FLOOR	FLOOR	existing	existing		
	BASE	existing	existing		
WALL	NORTH	existing	existing		
	SOUTH	existing	existing		
	EAST	existing	existing		
	WEST	existing	existing		
CEILING	BULKHEAD	---	---	HEIGHT	
	CEILING	existing	existing	HEIGHT	existing
COMMENTS					

ROOM : 102					
SURFACE	**COMPONENT**	**SUBSTRATE**	**FINISH**	**COMMENTS**	
FLOOR	FLOOR	existing	existing		
	BASE	existing	existing		
WALL	NORTH	existing	existing		
	SOUTH	existing	existing		
	EAST	existing	existing		
	WEST	existing	existing		
CEILING	BULKHEAD	---	---	HEIGHT	
	CEILING	existing	existing	HEIGHT	existing
COMMENTS					

ROOM : 103					
SURFACE	**COMPONENT**	**SUBSTRATE**	**FINISH**	**COMMENTS**	
FLOOR	FLOOR	existing	carpet tile		
	BASE	existing	rubber		
WALL	NORTH	existing	existing		
	SOUTH	existing	existing		
	EAST	existing	paint	paint as required for new partition	
	WEST	existing	existing		
CEILING	BULKHEAD	---	---	HEIGHT	
	CEILING	existing	paint	HEIGHT	existing
COMMENTS	paint ceiling as required by work to new partition				

ROOM : 104					
SURFACE	**COMPONENT**	**SUBSTRATE**	**FINISH**	**COMMENTS**	
FLOOR	FLOOR	existing	carpet tile		
	BASE	existing	rubber		
WALL	NORTH	existing	paint	paint as required by new window	
	SOUTH	existing	existing		
	EAST	existing	existing		
	WEST	existing	existing		
CEILING	BULKHEAD	---	---	HEIGHT	
	CEILING	existing	existing	HEIGHT	existing
COMMENTS					

ROOM : 105					
SURFACE	**COMPONENT**	**SUBSTRATE**	**FINISH**	**COMMENTS**	
FLOOR	FLOOR	existing	carpet tile		
	BASE	existing	rubber		
WALL	NORTH	existing	existing		
	SOUTH	existing	existing		
	EAST	existing	existing		
	WEST	existing	paint	paint as required by new partition	
CEILING	BULKHEAD	---	---	HEIGHT	
	CEILING	existing	paint	HEIGHT	existing
COMMENTS					

ROOM : 106					
SURFACE	**COMPONENT**	**SUBSTRATE**	**FINISH**	**COMMENTS**	
FLOOR	FLOOR	existing	carpet tile		
	BASE	existing	rubber		
WALL	NORTH	existing	existing		
	SOUTH	existing	existing		
	EAST	existing	existing		
	WEST	existing	existing		
CEILING	BULKHEAD	---	---	HEIGHT	
	CEILING	existing	existing	HEIGHT	existing
COMMENTS					

ROOM : 107					
SURFACE	**COMPONENT**	**SUBSTRATE**	**FINISH**	**COMMENTS**	
FLOOR	FLOOR	existing	existing		
	BASE	existing	existing		
WALL	NORTH	existing	existing		
	SOUTH	existing	existing		
	EAST	existing	existing		
	WEST	existing	existing		
CEILING	BULKHEAD	---	---	HEIGHT	
	CEILING	existing	existing	HEIGHT	existing
COMMENTS					

ROOM : 108					
SURFACE	**COMPONENT**	**SUBSTRATE**	**FINISH**	**COMMENTS**	
FLOOR	FLOOR	existing	existing		
	BASE	existing	existing		
WALL	NORTH	existing	existing		
	SOUTH	existing	existing		
	EAST	existing	existing		
	WEST	existing	existing		
CEILING	BULKHEAD	---	---	HEIGHT	
	CEILING	existing	existing	HEIGHT	existing
COMMENTS					

ROOM : 109					
SURFACE	**COMPONENT**	**SUBSTRATE**	**FINISH**	**COMMENTS**	
FLOOR	FLOOR	existing	existing		
	BASE	existing	existing		
WALL	NORTH	existing	existing		
	SOUTH	existing	existing		
	EAST	existing	existing		
	WEST	existing	existing		
CEILING	BULKHEAD	---	---	HEIGHT	
	CEILING	existing	existing	HEIGHT	existing
COMMENTS					

ROOM : 110					
SURFACE	**COMPONENT**	**SUBSTRATE**	**FINISH**	**COMMENTS**	
FLOOR	FLOOR	existing	existing		
	BASE	existing	existing		
WALL	NORTH	existing	existing		
	SOUTH	existing	existing		
	EAST	existing	existing		
	WEST	existing	existing		
CEILING	BULKHEAD	---	---	HEIGHT	
	CEILING	existing	existing	HEIGHT	existing
COMMENTS					

ROOM : 111					
SURFACE	**COMPONENT**	**SUBSTRATE**	**FINISH**	**COMMENTS**	
FLOOR	FLOOR	existing	existing		
	BASE	existing	existing		
WALL	NORTH	existing	existing		
	SOUTH	existing	existing		
	EAST	existing	existing		
	WEST	existing	existing		
CEILING	BULKHEAD	---	---	HEIGHT	
	CEILING	existing	existing	HEIGHT	existing
COMMENTS					

ROOM : 112					
SURFACE	**COMPONENT**	**SUBSTRATE**	**FINISH**	**COMMENTS**	
FLOOR	FLOOR	existing	carpet tile		
	BASE	existing	rubber		
WALL	NORTH	existing	existing		
	SOUTH	existing	paint	paint as required by new window	
	EAST	existing	existing		
	WEST	existing	existing		
CEILING	BULKHEAD	---	---	HEIGHT	
	CEILING	existing	existing	HEIGHT	existing
COMMENTS	remove and replace counter top patch and repair side of millwork, repaint to match existing				

ROOM : 113					
SURFACE	**COMPONENT**	**SUBSTRATE**	**FINISH**	**COMMENTS**	
FLOOR	FLOOR	plywood	vinyl	security caulking to partition	
	BASE	plywood	vinyl	security caulking to partition	
WALL	NORTH	plywood	epoxy paint		
	SOUTH	plywood	epoxy paint		
	EAST	plywood	epoxy paint		
	WEST	plywood	epoxy paint		
CEILING	BULKHEAD			HEIGHT	
	CEILING	plywood	epoxy paint	HEIGHT	existing
COMMENTS	new millwork cabinets, new matt storage cabinets, new fingerprint cabinet, new folding seat				

ROOM : 114					
SURFACE	**COMPONENT**	**SUBSTRATE**	**FINISH**	**COMMENTS**	
FLOOR	FLOOR	existing	existing		
	BASE	existing	existing		
WALL	NORTH	gypsum board	paint		
	SOUTH	gypsum board	paint		
	EAST	gypsum board	paint		
	WEST	gypsum board	paint		
CEILING	BULKHEAD			HEIGHT	
	CEILING	gypsum board	paint	HEIGHT	existing
COMMENTS	new rated coiling access hatch				

ROOM : 118					
SURFACE	**COMPONENT**	**SUBSTRATE**	**FINISH**	**COMMENTS**	
FLOOR	FLOOR	plywood	vinyl	security caulking to partition	
	BASE	plywood	vinyl	security caulking to partition	
WALL	NORTH	plywood	polymer finish	Granicrete	
	SOUTH	plywood	polymer finish	Granicrete	
	EAST	plywood	polymer finish	Granicrete	
	WEST	plywood	polymer finish	Granicrete	
CEILING	BULKHEAD			HEIGHT	
	CEILING	plywood	polymer finish	HEIGHT	existing
COMMENTS	bunk, polycarbonate glazing on window				

ROOM : 119					
SURFACE	**COMPONENT**	**SUBSTRATE**		**COMMENTS**	
FLOOR	FLOOR	plywood	vinyl	security caulking to partition	
	BASE	plywood	vinyl	security caulking to partition	
WALL	NORTH	plywood	epoxy paint		
	SOUTH	plywood	epoxy paint		
	EAST	plywood	epoxy paint		
	WEST	plywood	epoxy paint		
CEILING	BULKHEAD			HEIGHT	
	CEILING	plywood	epoxy paint	HEIGHT	existing
COMMENTS	bunk, polycarbonate glazing on window				

ROOM : 120					
SURFACE	**COMPONENT**	**SUBSTRATE**	**FINISH**	**COMMENTS**	
FLOOR	FLOOR	existing	existing		
	BASE	---			
WALL	NORTH	existing	existing		
	SOUTH	framing	n/a		
	EAST	---			
	WEST	existing	existing		
CEILING	BULKHEAD			HEIGHT	
	CEILING	existing	n/a	HEIGHT	existing
COMMENTS	mechanical chase / storage				

ROOM : 121					
SURFACE	**COMPONENT**	**SUBSTRATE**	**FINISH**	**COMMENTS**	
FLOOR	FLOOR	existing	existing		
	BASE	---			
WALL	NORTH	framing	n/a		
	SOUTH	existing	existing		
	EAST	---			
	WEST	existing	existing		
CEILING	BULKHEAD			HEIGHT	
	CEILING	existing	existing	HEIGHT	existing
COMMENTS	mechanical chase				

1 GENERAL

1.1 General Requirements

.1 All requirements of the Contract apply to and govern all work of this Section.

.2 Comply with the requirements of Division 1.

1.2 Related Work Specified in Other Sections

.1 No specific requirements

1.3 References

.1 No specific requirements.

1.4 Quality Assurance and Extended Guarantees

.1 No specific requirements.

1.5 Specific Handling and Transportation Requirements

.1 No specific requirements.

1.6 Submittals

.1 Shop drawings :
- .1 Submit shop drawings for each specialty in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Clearly indicate fabrication and erection details; including anchorage accessories and colour charts or samples.

.2 Samples : Not required

1.7 Maintenance Data and Materials

.1 Provide maintenance data for cleaning and maintenance of object for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.8 Specific Environmental Requirements

.1 No specific requirements.

1.9 Specific Protection Requirements

.1 No specific requirements.

2 PRODUCTS

2.1 Materials

.1 Items specified herein shall be standard manufactured items modified if required and as specified to suit conditions of this project.

.2 Fabricate work true to dimension, square and plumb, to suit site conditions.

.3 Finished work shall be free from warping, open seams, and other defects. Drilling shall be reamed and exposed edges finished smooth.

3 EXECUTION

3.1 Installation

.1 Install manufactured items in accordance with the manufacturer's printed instructions.

3.2 Schedule of Items

.1 Supply the following items and install where indicated or where specified herein.

.1 Folding Seat: type 304 stainless steel frame and mounting bracket, self locking mechanism, 8 mm thick sold phenolic seat, size 455 wide, 400 mm deep, mounted 450 mm off floor, non-corrosive fasteners.
.1 Standard of Acceptance: Bobrick B-5191
.2 Quantity: One (01) unit.

.2 Mattress Hook: Type 304 stainless steel, concealed surface mounted, 1.6 mm thick.
.1 Standard of Acceptance: B-6827 by Bobrick
.2 Quantity: four (4) units

END OF SECTION

1.1 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Shop drawings to show:

- .1 Mounting arrangements.
- .2 Operating and maintenance clearances.

.3 Shop drawings and product data accompanied by:

- .1 Detailed drawings of bases, supports, and anchor bolts.
- .2 Acoustical sound power data, where applicable.
- .3 Points of operation on performance curves.
- .4 Manufacturer to certify current model production.
- .5 Certification of compliance to applicable codes.

.4 Closeout Submittals:

- .1 Provide operation and maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.
- .2 Operation and maintenance manual approved by, and final copies deposited with, Departmental Representative before final inspection.
- .3 Operation data to include:
  - .1 Control schematics for systems including environmental controls.
  - .2 Description of systems and their controls.
  - .3 Description of operation of systems at various loads together with reset schedules and seasonal variances.
  - .4 Operation instruction for systems and component.
  - .5 Description of actions to be taken in event of equipment failure.
  - .6 Valves schedule and flow diagram.
  - .7 Colour coding chart.
- .4 Maintenance data to include:
  - .1 Servicing, maintenance, operation and trouble-shooting instructions for each item of equipment.
  - .2 Data to include schedules of tasks, frequency, tools required and task time.
- .5 Performance data to include:
  - .1 Equipment manufacturer's performance datasheets with point of operation as left after commissioning is complete.
  - .2 Equipment performance verification test results.
  - .3 Special performance data as specified.
  - .4 Testing, adjusting and balancing reports as specified in Section 23 05 93 - Testing, Adjusting and Balancing for HVAC.

.6 Approvals:

.1 Submit 2 copies of draft Operation and Maintenance Manual to Departmental Representative for approval. Submission of individual data will not be accepted unless directed by Departmental Representative.

.2 Make changes as required and re-submit as directed by Departmental Representative.

.7 Additional data:

.1 Prepare and insert into operation and maintenance manual additional data when need for it becomes apparent during specified demonstrations and instructions.

.8 Site records:

.1 Departmental Representative will provide 1 set of reproducible mechanical drawings. Mark changes as work progresses and as changes occur. Include changes to existing mechanical systems, control systems and low voltage control wiring.

.2 Transfer information to reproducibles, revising reproducibles to show work as actually installed.

.3 Use different colour waterproof ink for each service.

.4 Make available for reference purposes and inspection.

.9 As-built drawings:

.1 Prior to start of Testing, Adjusting and Balancing for HVAC, finalize production of as-built drawings.

.2 Identify each drawing in lower right hand corner in letters at least 12 mm high as follows: - "AS BUILT DRAWINGS: THIS DRAWING HAS BEEN REVISED TO SHOW MECHANICAL SYSTEMS AS INSTALLED" (Signature of Contractor) (Date).

.3 Submit to Departmental Representative for approval and make corrections as directed.

.4 Perform testing, adjusting and balancing for HVAC using as-built drawings.

.5 Submit completed reproducible as-built drawings with Operating and Maintenance Manuals.

.10 Submit copies of as-built drawings for inclusion in final TAB report.

1.2 QUALITY ASSURANCE

.1 Quality Assurance: in accordance with Section 01 45 00 - Quality Control.

.2 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.3 MAINTENANCE

.1 Furnish spare parts in accordance with Section 01 78 00 - Closeout Submittals as follows:

.2 Provide one set of special tools required to service equipment as recommended by manufacturers and in accordance with Section 01 78 00 - Closeout Submittals.

Part 2 Products

2.1 MATERIALS

.1 Not used

Part 3 Execution

3.1 PAINTING REPAIRS AND RESTORATION

.1 Do painting in accordance with Section 09 91 23 - Interior Painting.

.2 Prime and touch up marred finished paintwork to match original.

.3 Restore to new condition, finishes which have been damaged.

3.2 CLEANING

.1 Clean interior and exterior of all systems including strainers. Vacuum interior of ductwork and air handling units.

3.3 FIELD QUALITY CONTROL

.1 Site Tests: conduct following tests in accordance with Section 01 45 00 - Quality Control and submit report as described in PART 1 - SUBMITTALS.

3.4 DEMONSTRATION

.1 Supply tools, equipment and personnel to demonstrate and instruct operating and maintenance personnel in operating, controlling, adjusting, trouble-shooting and servicing of all systems and equipment during regular work hours, prior to acceptance.

.2 Use operation and maintenance manual, as-built drawings, and audio visual aids as part of instruction materials.

.3 Instruction duration time requirements as specified in appropriate sections.

.4 Departmental Representative may record these demonstrations on video tape for future reference.

3.5 PROTECTION

.1 Protect equipment and systems openings from dirt, dust, and other foreign materials with materials appropriate to system.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 American National Standards Institute (ANSI)/American Society of Mechanical Engineers International (ASME)

.1 ANSI/ASME B16.15-2011, Cast Bronze Threaded Fittings, Classes 125 and 250.

.2 ANSI/ASME B16.18-2012, Cast Copper Alloy Solder Joint Pressure Fittings.

.3 ANSI/ASME B16.22-2012, Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.

.2 ASTM International Inc.

.1 ASTM B88M-2011, Standard Specification for Seamless Copper Water Tube (Metric).

.3 Manufacturer's Standardization Society of the Valve and Fittings Industry (MSS).

.1 MSS-SP-80-2008, Bronze Gate, Globe, Angle and Check Valves.

.4 National Research Council (NRC)/Institute for Research in Construction

.1 NRCC 38728, National Plumbing Code of Canada (NPC) - 2010.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Provide manufacturer's printed product literature and datasheets for insulation and adhesives, and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Closeout Submittals:

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

1.3 DELIVERY, STORAGE AND HANDLING

.1 Store and manage hazardous materials in accordance with Section 01 47 15 - Sustainable Requirements: Construction.

Part 2 Products

2.1 PIPING

.1 Domestic hot (HWS), cold (CWS) and recirculation (HWC) systems, within building.

.1 Above ground: copper tube, hard drawn, type K OR L : to ASTM B88M.

2.2 FITTINGS

.1 Cast copper, solder type: to ANSI/ASME B16.18.

.2 Wrought copper and copper alloy, solder type: to ANSI/ASME B16.22.

2.3 JOINTS

.1 Solder: 95/5 tin copper alloy.

.2 Teflon tape: for threaded joints.

.3 Dielectric connections between dissimilar metals: dielectric fitting, complete with thermoplastic liner.

2.4 BALL VALVES

.1 NPS 2 and under, soldered:

.1 To ANSI/ASME B16.18, Class 150.

.2 Bronze body, chrome plated brass ball, PTFE adjustable packing, brass gland and PTFE seat, steel lever handle, with NPT to copper adaptors

Part 3 Execution

3.1 APPLICATION

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

3.2 INSTALLATION

.1 Install in accordance with NPC and local authority having jurisdiction.

.2 Assemble piping using fittings manufactured to ANSI standards.

.3 Install CWS piping below and away from HWS and HWC and other hot piping so as to maintain temperature of cold water as low as possible.

.4 Connect to fixtures and equipment in accordance with manufacturer's written instructions unless otherwise indicated.

3.3 VALVES

.1 Isolate equipment, fixtures and branches with ball valves.

3.4 PRESSURE TESTS

.1 Conform to requirements of Section 22 05 00 - Common Work Results for Mechanical.

.2 Test pressure: greater of 1 times maximum system operating pressure or 860 kPa.

3.5 FLUSHING AND CLEANING

.1 Flush each new outlet for 2 hours.

3.6 PRE-START-UP INSPECTIONS

.1 Systems to be complete, prior to flushing, testing and start-up.

.2 Verify that system can be completely drained.

.3 Ensure that pressure booster systems are operating properly.

.4 Ensure that air chambers, expansion compensators are installed properly.

3.7 DISINFECTION

.1 Flush out, disinfect and rinse system to approval of Departmental Representative.

3.8 START-UP

.1 Timing: start up after:

.1 Pressure tests have been completed.
.2 Disinfection procedures have been completed.
.3 Certificate of static completion has been issued.
.4 Water treatment systems operational.

.2 Provide continuous supervision during start-up.

.3 Start-up procedures:

.1 Establish circulation and ensure that air is eliminated.
.2 Check control, limit, safety devices for normal and safe operation.

.4 Rectify start-up deficiencies.

3.9 PERFORMANCE VERIFICATION

.1 Scheduling:

.1 Verify system performance after pressure and leakage tests and disinfection are completed, and Certificate of Completion has been issued by authority having jurisdiction.

.2 Procedures:

.1 Verify that flow rate and pressure meet Design Criteria.

.2 Adjust pressure regulating valves while withdrawal is maximum and inlet pressure is minimum.

.3 Sterilize HWS systems for Legionella control.

.4 Verify performance of temperature controls.

.5 Verify compliance with safety and health requirements.

.6 Check for proper operation of water hammer arrestors. Run one outlet for 10 seconds, then shut of water immediately. If water hammer occurs, replace water hammer arrestor or re-charge air chambers. Repeat for outlets and flush valves.

.7 Confirm water quality consistent with supply standards, and ensure no residuals remain as result of flushing or cleaning.

.8 Include certificate of water flow and pressure tests conducted on incoming water service, demonstrating adequacy of flow and pressure.

3.10 OPERATION REQUIREMENTS

3.11 CLEANING

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

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 ASTM International Inc.

.1 ASTM D2564-2012, Standard Specification for Solvent Cements for Poly(Vinyl-Chloride) (PVC) Plastic Piping Systems.

.2 Canadian Standards Association (CSA International)

.1 CAN/CSA-Series B1800-11, Thermoplastic Nonpressure Pipe Compendium - B1800 Series.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section[01 33 00 - Submittal Procedures.

.2 Product Data:

1.3 DELIVERY, STORAGE AND HANDLING

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

.2 Store at temperatures and conditions recommended by manufacturer.

Part 2 Products

2.1 PIPING AND FITTINGS

.1 For above ground DWV piping to:

.1 CAN/CSA B1800.

.2 Use PVC piping only. ABS piping is not allowed.

2.2 JOINTS

.1 Solvent weld for PVC: to ASTM D2564.

Part 3 Execution

3.1 APPLICATION

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

3.2 INSTALLATION

.1 Install in accordance with National Plumbing Code and local authority having jurisdiction.

3.3 PERFORMANCE VERIFICATION

.1 Cleanouts:

.1 Ensure accessible and that access doors are correctly located.

.2 Open, cover with linseed oil and re-seal.

.3 Verify cleanout rods can probe as far as the next cleanout, at least.

.2 Test to ensure traps are fully and permanently primed.

.3 Ensure fixtures are properly anchored, connected to system and effectively vented.

.4 Affix applicable label (sanitary, vent) c/w directional arrows 4.5 m.

3.4 CLEANING

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

.1 Remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CAN/CSA-B45 Series-02(R2008), Plumbing Fixtures.

.2 CAN/CSA-B125.3-12, Plumbing Fittings.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Provide manufacturer's printed product literature and datasheets for washroom fixtures, and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Indicate fixtures and trim:

.1 Dimensions, construction details, roughing-in dimensions.

.2 Factory-set water consumption per flush at recommended pressure.

.3 For water closets: minimum pressure required for flushing.

1.3 CLOSEOUT SUBMITTALS

.1 Provide operation and maintenance data for washroom fixtures, for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

.2 Include:

.1 Description of fixtures and trim, giving manufacturer's name, type, model, year, capacity.

.2 Details of operation, servicing, maintenance.

.3 List of recommended spare parts.

1.4 DELIVERY, STORAGE AND HANDLING

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

Part 2 Products

2.1 MANUFACTURED UNITS

.1 Fixtures: manufacture in accordance with CAN/CSA-B45 series.

.2 Trim, fittings: manufacture in accordance with CAN/CSA-B125.3.

.3 Exposed plumbing brass to be chrome plated.

.4 Number, locations: as indicated.

.5 Fixtures in any one location to be product of one manufacturer and of same type.

.6 Trim in any one location to be product of one manufacturer and of same type.

.7 Water closets:

.1 WC-1: Suicide Resistant Cell Fixture.

.1 One piece 460mm type 14 gauge 304 stainless steel combination lavatory/water closet, seamless welded construction with exposed satin finish, floor mounted type with integral seal and wall waste outlet. Angled type configuration as indicated on architectural drawings. Each unit shall be c/w concealed flush valve with air-control pneumatically operated push button, penal bubbler, airtrol control hot and cold lavatory valve to deliver 0.0315 L/sec maximum flow through bubbler, security wall sleeve with welded security bars suitable for 150mm wood stud, anti-flood system.

.2 Acceptable material: Acorn Penalware 1440 series (no substitutions) complete with:

.1 MVCTV Electronic flush valve ULF 1.6 GPF
.2 MVC1 Time-Trol Controller
.3 MVC2 Time-Trol (hot & cold) controller
.4 With hot & cold similar valve
.5 CI Cycle interrupt
.6 Auxilary flush valve push button to initate flushing from outside the cell.
.7 SW Wall Sleeve

.8 Kitchen Sink Trim

.1 Faucet to be single lever kitchen sink faucet similar to Delta 100-DST

.9 Floor Drains

.1 Type B: floor drain body with clamping collar and round strainer w/square openings not to exceed 12mm in size): Cast iron body with bottom outlet, combination invertible membrane clamp and adjustable collar with square heel-proof openings and secured grate. Assembly designed for finished wood floor area.

.2 Acceptable material: Zurn Z415 with type B round strainer. (Confirm that strainer has no openings greater than 12mm in size).

.10 Fixture piping:

.1 Hot and cold water supplies to fixtures:

.1 Chrome plated flexible supply pipes with handwheel stop, reducers, escutcheon.

.2 Waste:

.1 Brass P trap with clean out on fixtures not having integral trap.

.2 Chrome plated in exposed places.

.11 Chair carriers:

.1 Factory manufactured floor-mounted carrier systems for wall-mounted fixtures.

Part 3 Execution

3.1 APPLICATION

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

3.2 INSTALLATION

.1 Mounting heights:

.1 Standard: to manufacturer's recommendations.

3.3 ADJUSTING

.1 Conform to water conservation requirements specified this section.

.2 Adjustments:

.1 Adjust water flow rate to design flow rates.

.2 Adjust pressure to fixtures to ensure no splashing at maximum pressures.

.3 Adjust flush valves to suit actual site conditions.

.4 Set controls of automatic flush valves for WCs to prevent unnecessary flush cycles.

.3 Checks:

.1 Water closets: flushing action.

.2 Aerators: operation, cleanliness.

.3 Vacuum breakers, backflow preventers: operation under all conditions.

.4 Thermostatic controls:

.1 Verify temperature settings, operation of control, limit and safety controls.

3.4 CLEANING

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

.1 Remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 TAB is used throughout this Section to describe the process, methods and requirements of testing, adjusting and balancing for HVAC.

.2 TAB means to test, adjust and balance to perform in accordance with requirements of Contract Documents and to do other work as specified in this section.

1.2 QUALIFICATIONS OF TAB PERSONNEL

.1 TAB: performed in accordance with the requirements of standard under which TAB Firm's qualifications are approved:

.1 Associated Air Balance Council, (AABC) National Standards for Total System Balance, MN-1-2002.

.2 National Environmental Balancing Bureau (NEBB) TABES, Procedural Standards for Testing, Adjusting, Balancing of Environmental Systems.

.3 Sheet Metal and Air Conditioning Contractors' National Association (SMACNA), HVAC TAB HVAC Systems - Testing, Adjusting and Balancing-2002.

.2 Use TAB Standard provisions, including checklists, and report forms to satisfy Contract requirements.

.3 Use TAB Standard for TAB, including qualifications for TAB Firm and Specialist and calibration of TAB instruments.

.4 Where instrument manufacturer calibration recommendations are more stringent than those listed in TAB Standard, use manufacturer's recommendations.

.5 TAB Standard quality assurance provisions such as performance guarantees form part of this contract.

.1 For systems or system components not covered in TAB Standard, use TAB procedures developed by TAB Specialist.

.2 Where new procedures, and requirements, are applicable to Contract requirements have been published or adopted by body responsible for TAB Standard used (AABC, NEBB, or TABB), requirements and recommendations contained in these procedures and requirements are mandatory.

1.3 PURPOSE OF TAB

.1 Test to verify proper and safe operation, determine actual point of performance, evaluate qualitative and quantitative performance of equipment, systems and controls at design, average and low loads using actual or simulated loads

.2 Adjust and regulate equipment and systems to meet specified performance requirements and to achieve specified interaction with other related systems under normal and emergency loads and operating conditions.

.3 Balance systems and equipment to regulate flow rates to match load requirements over full operating ranges.

1.4 EXCEPTIONS

.1 TAB of systems and equipment regulated by codes, standards to satisfaction of authority having jurisdiction.

1.5 CO-ORDINATION

.1 Schedule time required for TAB (including repairs, re-testing) into project construction and completion schedule to ensure completion before acceptance of project.

.2 Do TAB of each system independently and subsequently, where interlocked with other systems, in unison with those systems.

1.6 START-UP

.1 Follow start-up procedures as recommended by equipment manufacturer unless specified otherwise.

.2 Follow special start-up procedures specified elsewhere in Division 23.

1.7 START OF TAB

.1 Notify Departmental Representative7 days prior to start of TAB.

.2 Start TAB when building is essentially completed, including:

.3 Installation of ceilings, doors, windows, other construction affecting TAB.

.4 Application of weatherstripping, sealing, and caulking.

.5 Pressure, leakage, other tests specified elsewhere Division 23.

.6 Provisions for TAB installed and operational.

.7 Start-up, verification for proper, normal and safe operation of mechanical and associated electrical and control systems affecting TAB including but not limited to:

.1 Proper thermal overload protection in place for electrical equipment.

.2 Air systems:

.1 Filters in place, clean.

.2 Duct systems clean.

.3 Ducts, air shafts, ceiling plenums are airtight to within specified tolerances.

.4 Correct fan rotation.

.5 Fire, smoke, volume control dampers installed and open.

.6 Coil fins combed, clean.

.7 Access doors, installed, closed.

.8 Outlets installed, volume control dampers open.

1.8 APPLICATION TOLERANCES

.1 Do TAB to following tolerances of design values:

.1 HVAC systems: plus 10 %, minus 10 %.

1.9 ACCURACY TOLERANCES

.1 Measured values accurate to within plus or minus 5 % of actual values.

1.10 INSTRUMENTS

.1 Prior to TAB, submit to Departmental Representative list of instruments used together with serial numbers.

.2 Calibrate in accordance with requirements of most stringent of referenced standard for either applicable system or HVAC system.

.3 Calibrate within 3 months of TAB. Provide certificate of calibration to Departmental Representative.

1.11 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit, prior to commencement of TAB:

.2 Proposed methodology and procedures for performing TAB if different from referenced standard.

1.12 PRELIMINARY TAB REPORT

.1 Submit for checking and approval of Departmental Representative, prior to submission of formal TAB report, sample of rough TAB sheets. Include:

.1 Details of instruments used.

.2 Details of TAB procedures employed.

.3 Calculations procedures.

.4 Summaries.

1.13 TAB REPORT

.1 Format in accordance with [referenced standard].

.2 TAB report to show results in SI units and to include:

.1 Project record drawings.

.2 System schematics.

.3 Submit 1 electronic copy of TAB Report to Departmental Representative for verification and approval, in English, complete with index tabs.

1.14 SETTINGS

.1 After TAB is completed to satisfaction of Departmental Representative, replace drive guards, close access doors, lock devices in set positions, ensure sensors are at required settings.

.2 Permanently mark settings to allow restoration at any time during life of facility. Do not eradicate or cover markings.

1.15 COMPLETION OF TAB

.1 TAB considered complete when final TAB Report received and approved by Departmental Representative.

1.16 AIR SYSTEMS

.1 Standard: TAB to most stringent of TAB standards of AABC NEBB SMACNA ASHRAE.

.2 Do TAB of following systems, equipment, components, controls:

.1 Both existing furnace systems. Measure air volumes at all supply air grilles.

.2 Cell exhaust fans. Measure air volumes at both cell exhaust fans

.3 HRV. Measure both supply and exhaust air volumes.

.3 Measurements: to include as appropriate for systems, equipment, components, controls: air velocity, static pressure, flow rate, pressure drop (or loss), temperatures (dry bulb, wet bulb, dewpoint), duct cross-sectional area, RPM, electrical power, voltage, noise, vibration.

.4 Locations of systems measurements to include as appropriate: main ducts, main branch, sub-branch, run-out (or grille, register or diffuser).

1.17 OTHER TAB REQUIREMENTS

.1 General requirements applicable to work specified this paragraph:

.1 Qualifications of TAB personnel: as for air systems specified this section.

.2 Quality assurance: as for air systems specified this section.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE).

.2 Sheet Metal and Air Conditioning Contractors' National Association (SMACNA).

.1 SMACNA HVAC Duct Construction Standards - Metal and Flexible, 2005.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit shop drawings and product data in accordance with Section 01 33 00 - Submittal Procedures.

1.3 QUALITY ASSURANCE

.1 Certification of Ratings:

.1 Catalogue or published ratings shall be those obtained from tests carried out by manufacturer or independent testing agency signifying adherence to codes and standards.

.2 Health and Safety:

.1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Protect on site stored or installed absorptive material from moisture damage.

Part 2 Products

2.1 SEAL CLASSIFICATION

.1 Classification as follows:

Maximum Pressure Pa	SMACNA Seal Class
500	C
250	C
125	C
125	Unsealed

.2 Seal classification:

.1 Class A: longitudinal seams, transverse joints, duct wall penetrations and connections made airtight with sealant and tape.

.2 Class B: longitudinal seams, transverse joints and connections made airtight with sealant tape, or combination thereof.

.3 Class C: transverse joints and connections made air tight with sealant tape or combination thereof. Longitudinal seams unsealed.

.4 Unsealed seams and joints.

2.2 SEALANT

.1 Sealant: oil resistant, water borne, polymer type flame resistant duct sealant. Temperature range of minus 30 degrees C to plus [93] degrees C.

2.3 TAPE

.1 Tape: polyvinyl treated, open weave fiberglass tape, 50 mm wide.

2.4 FITTINGS

.1 Fabrication: to SMACNA.

.2 Radiused elbows.

.1 Rectangular: standard radius Centreline radius: 1.5 times width of duct.

.2 Round: smooth radius or five piece. Centreline radius: 1.5 times diameter.

.3 Mitred elbows, rectangular:

.1 To 400 mm: with single thickness turning vanes.

.4 Branches:

.1 Rectangular main and branch: with 45 degrees entry on branch.

.2 Round main and branch: enter main duct at 45 degrees [with conical connection].

.3 Provide volume control damper in branch duct near connection to main duct.

.4 Main duct branches: with splitter damper.

.5 Transitions:

.1 Diverging: 20 degrees maximum included angle.

.2 Converging: 30degrees maximum included angle.

.6 Offsets:

.1 as indicated.

.7 Obstruction deflectors: maintain full cross-sectional area.

.1 Maximum included angles: as for transitions.

2.5 FIRE STOPPING

.1 Retaining angles around duct, on both sides of fire separation in accordance with Section 07 84 00 - Firestopping.

.2 Fire stopping material and installation must not distort duct.

2.6 GALVANIZED STEEL

.1 Lock forming quality: to ASTM A653/A653M, Z90 zinc coating.

.2 Thickness, fabrication and reinforcement: to ASHRAE or SMACNA.

.3 Joints: to SMACNA.

2.7 HANGERS AND SUPPORTS

.1 Hangers and Supports.

.1 Strap hangers: of same material as duct but next sheet metal thickness heavier than duct.

.1 Maximum size duct supported by strap hanger: 500.

.2 Hanger configuration: to ASHRAE or SMACNA.

.3 Hangers: galvanized steel angle with galvanized steel rods to ASHRAE or SMACNA and the following table:

Duct Size	Angle Size	Rod Size
(mm)	(mm)	(mm)
up to 750	25 x 25 x 3	6

Part 3 Execution

3.1 GENERAL

.1 Do work in accordance with SMACNA.

.2 Do not break continuity of insulation vapour barrier with hangers or rods.

.1 Insulate strap hangers 100 mm beyond insulated duct Ensure diffuser is fully seated].

.3 Install breakaway joints in ductwork on sides of fire separation.

.4 Install proprietary manufactured flanged duct joints in accordance with manufacturer's instructions.

3.2 HANGERS

.1 Strap hangers: install in accordance with SMACNA.

.2 Angle hangers: complete with locking nuts and washers.

.3 Hanger spacing: in accordance with SMACNA and as follows:

Duct Size	Spacing
(mm)	(mm)
to 1500	3000

3.3 SEALING AND TAPING

.1 Apply sealant to outside of joint to manufacturer's recommendations.

.2 Bed tape in sealant and recoat with minimum of one coat of sealant to manufacturers recommendations.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Air Conditioning and Mechanical Contractors Association (AMCA)

.1 AMCA 201-02, Fans and Systems.

1.2 SYSTEM DESCRIPTION

.1 Performance Requirements:

.1 Catalogued or published ratings for manufactured items: obtained from tests carried out by manufacturer or those ordered by manufacturer from independent testing agency signifying adherence to codes and standards in force.

1.3 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section [01 33 00 - Submittal Procedures. Include product characteristics, performance criteria, and limitations.

.2 Closeout Submittals

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

1.4 QUALITY ASSURANCE

.1 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.5 MAINTENANCE

.1 Extra Materials:

.1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

.2 Furnish list of individual manufacturer's recommended spare parts for equipment, include:

.1 Bearings and seals.

.2 Addresses of suppliers.

.3 List of specialized tools necessary for adjusting, repairing or replacing.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Packing, shipping, handling and unloading:

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

.2 Deliver, store and handle materials in accordance with manufacturer's written instructions.

Part 2 Products

2.1 FANS - GENERAL

.1 Standard of rating:

.1 AMCA 201 for fan application.

.2 Performance: to ANSI/AMCA 210.

.2 Maximum loudness: 5 sones.

2.2 WALL AND CEILING DISCHARGE FANS

.1 Centrifugal direct drive, with plug-in type electric motor suitable for wall installation, zinc coated rectangular metal housing.

.2 Sizes and capacity: as indicated.

.3 Side duct outlet with integral backdraft damper.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

.1 Install in accordance with manufacturer's recommendations.

3.3 CLEANING

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

.2 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

Part 1 General

1.1 SYSTEM DESCRIPTION

.1 Performance Requirements:

.1 Catalogued or published ratings for manufactured items: obtained from tests carried out by manufacturer or those ordered by manufacturer from independent testing agency signifying adherence to codes and standards.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 - Submittal Procedures. Include product characteristics, performance criteria, and limitations.

1.3 QUALITY ASSURANCE

.1 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Packing, shipping, handling and unloading:

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

.2 Deliver, store and handle materials in accordance with manufacturer's written instructions.

1.5 MAINTENANCE

.1 Extra Materials:

.1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

Part 2 Products

2.1 GENERAL

.1 To meet capacity, pressure drop, terminal velocity, throw, noise level, neck velocity as indicated.

.2 Frames:

.1 Full perimeter gaskets.

.2 Concealed fasteners.

.3 Concealed manual volume control damper operators.

.4 Colour: as directed by Departmental Representative.

2.2 MANUFACTURED UNITS

.1 Grilles, registers and diffusers of same generic type, products of one manufacturer.

2.3 SECURITY SUPPLY AND EXHASUT GRIL

.1 Frames: are constructed of 4.76 mm thick cold rolled steel with 6 mm diameter mounting holes counter bored to a depth of 1.6 mm from front surface.

.2 Offset flanges are formed with self-clinching fasteners pressed in on all flanges.

.3 Flanges are offset to accept the flush mounting of the grille.

.4 Grilles: are fabricated of 3.2 mm cold rolled steel with countersunk holes in eight locations for affixing to the mounting frames.

.5 Vent holes are 3.2 mm in diameter with 6 mm hole centres.

.6 Finish: Tiger Drylax Sandtex White Powder Paint.

.7 Acceptable material:

.1 Chubb OP-20V, e-mail address: www.gunnebosecurity.ca

.2 Simpson V-2, e-mail address: www.simpsoninstall@email.com; phone 1-902-664-6266

.3 Eneround security-type ventilating grille, e-mail address: www.dthompson@heatingproducts.nf.net; Phone 1-709-754-9100

.4 Virtucom SCO Security, e-mail address: www.virtucom-inc.com.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

.1 Install in accordance with manufacturers instructions.

.2 Install with oval head stainless steel security screws in countersunk holes where fastenings are visible.

3.3 CLEANING

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

.2 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE)

.1 ASHRAE 84-2013, Method of Testing Air-to-Air Heat Exchangers (ANSI approved).

1.2 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 - Submittal Procedures. Include product characteristics, performance criteria, and limitations.

.2 Quality assurance submittals: submit following in accordance with Section 01 33 00 - Submittal Procedures.

.1 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.3 Closeout Submittals:

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

.4 Certificates:

.1 Catalogued or published ratings: obtained from tests carried out by manufacturer or those ordered from independent testing agency signifying adherence to codes and standards in force.

.2 Provide confirmation of testing.

1.3 QUALITY ASSURANCE

.1 Health and Safety:

.1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

.2 Unit shall be constructed in accordance with CSA C22.2 and UL 1812 and shall carry the ETL and (C)ETL label of approval.

.3 Energy transfer device shall be AHRI CertifiedTM to AHRI Standard 1060 and bear the AHRI CertifiedTM mark signature.

.4 Insulation shall comply with NFPA 90A requirements for flame spread and smoke generation.

.5 Airflow data shall comply with AMCA 210 method of testing.

.6 All units shall be run tested prior to shipment.

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Packing, shipping, handling and unloading:

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

1.5 MAINTENANCE

.1 Extra Materials:

.1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

.2 Furnish list of individual manufacturer's recommended spare parts for equipment include:

.1 Bearings and seals.

.2 Addresses of suppliers.

.3 List of specialized tools necessary for adjusting, repairing or replacing.

Part 2 Products

2.1 AIR TO AIR EXCHANGER

.1 Packaged indoor heat recovery ventilator consisting of a flat plate heat exchanger, ventilation air fan, exhaust air fan, necessary dampers, temperature sensors and controls. All regularly maintained parts must be serviceable in just minutes.

.2 Unit Cabinet

.1 Unit shall include white, baked on, polyester pre-painted galvanized steel package. Cabinet shall withstand 10 years without cracking, chipping, peeling, brazing or spotting.

.2 Cabinet shall be less than 635mm in height for ease of installation.

.3 Cabinet shall be insulated throughout with a minimum 25mm foil faced fire retardant material.

.4 Main access panel shall be hinged and provide access to all components.

.5 Flat plate heat exchanger sections shall be easily removable from the unit.

.3 Operating Characteristics

.1 Unit shall be capable of providing a constant volume of air at a specified external static pressure at all fan operating speeds.

.4 Blowers

.1 Fan ratings are based on tests made in accordance with AMCA Standard 210.

.2 Blowers must be selected to operate on a stable, efficient part of the fan curve when delivering air quantities scheduled against static of the system.

.3 Fan blades shall be statically and dynamically balanced and tested prior to shipment.

.4 Fan shall be provided with internal vibration isolation mounts.

.5 Fan discharge shall be as noted in the equipment schedule.

.5 Motors

.1 Motors shall be continuous duty, permanently lubricated and matched to the fan loads.

.2 Motor selection must include a 15% service factor.

.6 Electrical Requirements

.1 Unit shall have single point power connection only (120V).

.2 All controls shall be factory mounted and wired, requiring only field installation of remote sensing devices and wiring to unit mounted terminal strips.

.7 Flat Plate Heat Exchanger

.1 Flat plate, cross flow heat exchanger shall be made of rugged polypropylene with a minimum 0.02mm wall thickness and rated to UL94HB. Plate corners shall be sealed with silicone or hot melt and be capable of withstanding 2500 Pa pressure differentials without permanent deformation or decrease in performance. Heat exchanger shall operate at temperature up to 60°C.

.2 Energy transfer ratings shall be AHRI Certified™ to AHRI Standard 1060 and bear the AHRI Certified™ mark signature for the Air-to-Air Energy Recovery Ventilation Equipment Program. Ratings "in accordance with 1060" without certification shall be deemed unacceptable.

.3 The flat plate heat exchanger shall be a UL recognized component and shall be manufactured under ISO 9001-2000 certified quality procedures.

.8 2.02 Controls

.1 General

.1 Unit shall be provided with factory mounted and wired microprocessor control.

.2 All service connectors shall be quick disconnect type.

.3 Unit circuitry shall allow the following operational characteristics:

.1 dry contacts for occupancy control

.2 remote fan interlock on call for ventilation

.3 selection of low or high speeds

.4 remote wall control contacts

.9 Options

.1 Frost Control

.1 Recirculation Defrost Cycle: Unit shall be equipped with recirculation defrost to prevent frost from forming on the flat plate heat exchanger and to prevent negative pressure from occurring in the building envelope.

.2 *Exhaust Only Defrost Cycle:* Unit shall be equipped with exhaust only defrost to prevent frost from forming on the flat plate heat exchanger and to maintain exhaust ventilation at all times.

.2 Energy Recovery

.1 Flat plate, cross flow heat exchanger shall be made of aluminum 3003 with a minimum 0.15mm wall thickness. The heat exchanger frame shall be fabricated from minimum of 18 gauge galvanized steel or 16 gauge aluminum frame as required. Plate corners shall be sealed with silicone and be capable of withstanding 750 Pa pressure differentials without permanent deformation or decrease in performance. Heat exchanger shall operate at temperature up to 100°C.

.3 MEF Filtration: Unit shall include MEF supply filtration.

.4 Access Door: Unit shall come equipped with reversed door (right hand flow) option.

.5 Low Speed: Unit shall come equipped with reduced low speed option.

.10 Acceptable Manufacturers:Heat recovery unit(s) shall be supplied by Venmar CES Inc. Model: HRV600i.

2.2 CONDENSATE PUMP

.1 Condensate pump system complete with basin, pump and all controls.

.2 Acceptable Product: Little Giant Condensate pump model VCMX-20 ULST. 1/30 HP, 1Ph, 115V.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

.1 Install in accordance with manufacturers recommendations.

.2 Support independently of adjacent ductwork.

.3 Install access doors in accordance for access to coils, dampers.

.4 Drain condensate to condensate pump and discharge to the sanitary tank.

3.3 CLEANING

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

.2 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

1.0 GENERAL

1.1	General	.1	This Section covers items common to Sections of Division 26. This section supplements requirements of Division 01.
1.2	Codes And Standards	.1	Do complete installation in accordance with CSA C22.1-2012 except where specified otherwise.
1.3	Care, Operation and Start-Up	.1	Instruct Engineer in the operation, care and maintenance of systems, system equipment and components.
1.4	Voltage Ratings	.1	Operating voltages: to CAN3-C235-83 (R2010).
1.5	Permits, Fees and Inspection	.1	Submit to Electrical Inspection Department and Supply Authority necessary number of drawings and specifications for examination and approval prior to commencement of work.
		.2	Pay associated fees.
		.3	Engineer will provide drawings and specifications required by Electrical Inspection Department and Supply Authority at no cost.
		.4	Notify Engineer of changes required by Electrical Inspection Department prior to making changes.
		.5	Furnish Certificates of Acceptance from authorities having jurisdiction on completion of work to Engineer.

1.6 Materials and Equipment

.1 Provide materials and equipment in accordance with Section 01 61 00 - Common Product Requirements.

.2 Equipment and material to be CSA certified. Where there is no alternative to supplying equipment which is not CSA certified, obtain special approval from Electrical Inspection Department.

.3 Factory assemble component assemblies.

1.7 Wiring Terminations

.1 Lugs, terminals, screws used for termination of wiring to be suitable for copper conductors.

1.8 Manufacturers and CSA Labels

.1 Visible and legible, after equipment is installed.

1.9 Field Quality Control

.1 All electrical work to be carried out by qualified, licensed electricians or apprentices as per the conditions of the Territorial Act respecting manpower vocational training and qualification. Employees registered in a territorial apprentices program shall be permitted, under the direct supervision of a qualified licensed electrician, to perform specific tasks - the activities permitted shall be determined based on the level of training attained and the demonstration of ability to perform specific duties.

.2 The work of this division to be carried out by a contractor who holds a valid Master Electrical contractor license as issued by the Territory that the work is being constructed.

.3 Perform test in accordance with Section 01 91 00-Commissioning. Conduct and pay for following tests:

.1 Lighting and its control in accordance with Section 26 50 00 – Lighting Equipment.

.4 Carry out tests in presence of Engineer.

.5 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of

project.

.6 Submit test results for Engineer's review.

2.0 PRODUCTS

2.1 Not Used .1 Not Used.

3.0 EXECUTION

3.1 Not Used .1 Not Used.

END OF SECTION

1.0 GENERAL

1.1 Section Includes

.1 Materials and installation for wire and box connectors.

1.2 References

.1 Canadian Standards Association (CSA International)

.1 CSA C22.2 No.65-03 Wire Connectors.

.2 Electrical and Electronic Manufacturers' Association of Canada (EEMAC)

.1 EEMAC 1Y-2, 1961 Bushing Stud Connectors and Aluminum Adapters (1200 Ampere Maximum Rating).

2.0 PRODUCTS

2.1 Materials

.1 Pressure type wire connectors to: CSA C22.2 No.65, with current carrying parts of copper sized to fit copper conductors as required.

.2 Fixture type splicing connectors to: CSA C22.2 No.65, with current carrying parts of copper sized to fit copper conductors 10 AWG or less.

.3 Clamps or connectors for armoured cable, aluminum sheathed cable, mineral insulated cable, flexible conduit, and non-metallic sheathed cable as required.

3.0 EXECUTION

3.1 Installation

.1 Remove insulation carefully from ends of conductors and:

.1 Install mechanical pressure type connectors and tighten screws with appropriate compression tool recommended by manufacturer. Installation shall meet secureness tests in accordance with CSA C22.2 No.65.

.2 Install fixture type connectors and tighten. Replace insulating cap.

.3 Install bushing stud connectors in accordance with EEMAC 1Y-2.

END OF SECTION

1.0 GENERAL

1.1 Related Sections
.1 Section 26 05 20 - Wire and Box Connectors - 0 - 1000 V.

1.2 References
.1 CSA C22.2 No .0.3-01(R2005), Test Methods for Electrical Wires and Cables.

1.3 Product Data
.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.

2.0 PRODUCTS

2.1 Building Wires
.1 Conductors: stranded for 10 AWG and larger. Minimum size: 12 AWG.

.2 Copper conductors: size as indicated, with 600 V or 1000 V (as applicable) insulation of chemically cross-linked thermosetting polyethylene material rated RW90.

.3 Aluminum conductors are not acceptable.

2.2 Teck Cable
.1 Cable: to CAN/CSA-C22.2 No. 131.

.2 Conductors:

.1 Grounding conductor: copper.

.2 Circuit conductors: copper, size as indicated.

.3 Insulation:

.1 Chemically cross-linked thermosetting polyethylene rated type RW90, 600 or 1000 V as available, suitable -40˚C.

.4 Inner jacket: polyvinyl chloride (PVC) material.

.5 Armour: interlocking galvanized steel.

.6 Overall covering: polyvinyl chloride (PVC) material.

.7 Fastenings:

.1 One hole steel straps to secure surface cables 50 mm and smaller. Two hole steel straps for cables larger than 50 mm.

.2 Channel type supports for two or more cables at 150 mm centers.

.3 Threaded rods: 13 mm dia. to support suspended channels.

.8 Connectors:

.1 Watertight approved for TECK cable. T & B only.

2.3 Armoured Cables

.1 Conductors: insulated, copper, size as indicated.

.2 Type: AC90 - lead sheath over cable assembly and under armour.

.3 Armour: interlocking type fabricated from galvanized steel strip.

.4 Type: PVC flame retardant jacket over armour meeting requirements of Vertical Tray Fire Test of CSA C22.2 No. 0.3 with maximum flame travel of 1.2 m.

2.4 System Cables

.1 To system manufacturer's requirement.

.2 To CSA C22.1-2012 requirements.

2.5 Non-Metallic Sheathed Cable

.1 Non-metallic sheathed cable not to be utilized.

3.0 EXECUTION

3.1 Installation of Building Wires

.1 Install wiring as follows:

.1 In conduit systems in accordance with section 26

05 34.

3.2	Installation of Teck Cable 0 -1000 V	.1	Install cables.
		.1	Group cables wherever possible on channels.
		.2	Terminate cables in accordance with Section 26 05 20-Wire and Box Connectors - 0 - 1000 V.
3.3	Installation of Armoured Cables	.1	Permitted where making final connection to luminaries mounted in suspended acoustic ceilings. Maximum length of cable is 3000 mm. Coil and tie extra cable to permit future movement of luminaire one tile to each side of location shown.
3.4	Installation of System Cables	.1	Install exit lighting, cell lighting and smoke/CO alarm cables in conduit.

END OF SECTION

1.0 GENERAL

1.1 References

.1 Canadian Standards Association (CSA International)

.1 CAN/CSA C22.2 No. 18-98 (R2003), Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware, A National Standard of Canada.

.2 CSA C22.2 No. 56-04, Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.

.3 CSA C22.2 No. 83-M1985 (R2003), Electrical Metallic Tubing.

2.0 PRODUCTS

2.1 Conduits

.1 Electrical metallic tubing (EMT): to CSA C22.2 No. 83, with couplings.

.2 Flexible metal conduit: to CSA C22.2 No. 56.

2.2 Conduit Fastenings

.1 One hole steel straps to secure surface conduits 50 mm and smaller. Two hole steel straps for conduits larger than 50 mm.

.2 Beam clamps to secure conduits to exposed steel work.

.3 Channel type supports for two or more conduits at 750 mm on centre.

.4 Threaded rods, 6 mm diameter, to support suspended channels.

2.3 Conduit Fittings

.1 Fittings: manufactured for use with conduit specified. Coating: same as conduit.

.2 Ensure factory "ells" where 90 degrees bends for 25 mm and larger conduits.

.3 Watertight connectors and couplings for EMT. Set-screws are not acceptable.

2.4 Fish Cord

.1 Polypropylene.

3.0 EXECUTION

3.1 Manufacturer's Instructions

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

3.2 Installation

.1 Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.

.2 Use electrical metallic tubing (EMT) above 2.4 m not subject to mechanical injury.

.3 Use flexible metal conduit for connection to surface or recessed fluorescent fixtures.

.4 Minimum conduit size for lighting and power circuits: 19 mm.

.5 Bend conduit cold. Replace conduit if kinked or flattened more than 1/10th of its original diameter.

.6 Mechanically bend steel conduit over 19 mm diameter.

.7 Install fish cord in empty conduits.

.8 Remove and replace blocked conduit sections.

.1 Do not use liquids to clean out conduits.

.9 Dry conduits out before installing wire.

3.3 Surface Conduits

.1 Run parallel or perpendicular to building lines.

.2 Locate conduits behind infrared or gas fired heaters with 1.5 m clearance.

.3 Run conduits in flanged portion of structural steel.

.4 Group conduits wherever possible.

.5 Do not pass conduits through structural members except as indicated.

.6 Do not locate conduits less than 75 mm parallel to steam or hot water lines with minimum of 25 mm at crossovers.

3.4 Concealed Conduits

.1 Run parallel or perpendicular to building lines.

.2 Do not install horizontal runs in masonry walls.

.3 Do not install conduits in terrazzo or concrete toppings.

END OF SECTION

1.0 GENERAL

1.1 References

.1 American National Standards Institute (ANSI)

.1 ANSI C82.1-97, Electric Lamp Ballasts-Line Frequency Flourescent Lamp Ballast.

.2 American National Standards Institute/Institute of Electrical and Electronics Engineers (ANSI/IEEE)

.1 ANSI/IEEE C62.41-1991, Surge Voltages in Low-Voltage AC Power Circuits.

.3 American Society for Testing and Materials (ASTM)

.1 ASTM F1137-00(2006), Specification for Phosphate/Oil and Phosphate/Organic Corrosion Protective Coatings for Fasteners.

1.2 Related Sections

.1 Section 01 33 00 - Submittal Procedures.

1.3 Shop Drawings and Product Data

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

1.4 Waste Management and Disposal

.1 Place materials defined as hazardous or toxic waste in designated containers.

.2 Ensure emptied containers are sealed and stored safely for disposal away from children.

.3 Disposal of fluorescent lamps.

2.0 PRODUCTS

2.1 Lamps

.1 Fluorescent lamps.

Lamp Design	Bulb shape Wattage	Base	Type	Initial Lumens	Life h	Descrip.	Colour deg k
A	T8-32	md.bip	RS	3150	20000	cool white	4100

2.2 Ballasts

.1 Fluorescent ballast: CBM and CSA certified, energy efficient type, IC electronic design.

.1 Rating: 120 V, 60 Hz voltage as indicated, for use with 2-32W, rapid start lamps.

.2 RFI/EMI suppression circuit to: FCC (CFR47) Part 18, sub-part C, Class A and Part 15, sub-part B, Class B.

.3 Totally encased and designed for 40 deg C ambient temperature.

.4 Power factor: minimum 95 % with 95% of rated lamp lumens.

.5 Crest factor: 1.5 maximum current, 2.0 maximum voltage.

.6 Capacitor: thermally protected.

.7 Thermal protection: non-resettable on coil.

.8 Sound rated: Class A.

.9 Mounting: integral with luminaire.

2.3 Finishes

.1 Baked enamel finish:

.1 Conditioning of metal before painting:

.1 For corrosion resistance conversion coating to ASTM F1137.

.2 For paint base, conversion coating to ASTM F1137.

.2 Metal surfaces of luminaire housing and reflectors finished with high gloss baked enamel, polyester powdercoat, or alzak aluminum to give smooth, uniform appearance, free from pinholes or defects.

.3 Reflector and other inside surfaces finished as

follows:

.1 White, minimum reflection factor 85%.

.2 Colour fastness: yellowness factor not above 0.02 and after 250 hours exposure in Atlas fade-ometer not to exceed 0.05.

.3 Film thickness, not less than 0.03 mm average and in no areas less than 0.025 mm.

.4 Gloss not less than 80 units as measured with Gardner 60 deg gloss meter.

.5 Flexibility: withstand bending over 12 mm mandrel without showing signs of cracking or flaking under 10 times magnification.

.6 Adhesion: 24 mm square lattice made of 3 mm squares cut through film to metal with sharp razor blade. Adhesive cellulose tape applied over lattice and pulled. Adhesion satisfactory if no coating removed.

.2 Alzak finish:

.1 Aluminium sheet fabricated from special aluminum alloys and chemically brightened, subsequently anodically treated to specifications established by Alcoa, to produce:

.1 Finish for mild commercial service, minimum density of coating 7.8 g/m2, minimum reflectivity 83% for specular, 80.5% for semi-specular and 75% for diffuse.

.2 Finish for regular industrial service, minimum density of coating 14.8 g/m2, minimum reflectivity 82% for specular and 73% for diffuse.

.3 Finish for heavy duty service, minimum density of coating 21.8 g/m2, minimum reflectivity 85% for specular, 65% for diffuse.

2.4 Luminaires

.1 Luminaires to be one of fixtures below, all fixtures utilized to be of same manufacture, no substitutions:

.1 Cooper Lighting FCC Ultimax Corner Luminaire, with 12Ga. Steelhousing, clear polycarbonate outer lens (86), prismatic acrylic diffuser and fluorescent nightlight FNL.

.2 All fixtures must be stamped with manufacturer and model number on faceplate of the fixture located behind lens.

3.0 EXECUTION

3.1 Installation

.1 Locate and install luminaires as indicated.

.2 The area between all cell fixtures and adjacent surfaces must be grouted using security caulking. Approved products are Sonnecrete Epogel and Sika Powerfix 4.

.3 Ensure security screws are used. Provide minimum 24 spare screws, and provide one special tool per light fixture to the Engineer at the end of the project.

3.2 Wiring

.1 Connect luminaires to existing lighting circuits, provide new control switches and indicated on the drawing.

3.3 Field Quality Control

.1 Perform tests in accordance with Section 26 05 00 - Electrical General Requirements.

.2 Lighting Equipment:

.1 Test each cell with new lighting to ensure switching scheme of Up – Main Light On, Centre – All lights

off, and Down – Night Light On is maintained.

END OF SECTION

1.0 GENERAL

1.1 Product Data

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

2.0 PRODUCTS

2.1 Self-Powered Units

.1 Exit lights: to CSA C22.2 No.141 and CSA C860.

.2 Housing: to be exturded aluminum frame, white enamel finish.

.3 Face and back plates: to be extruded aluminum (unless faceplate is dual language, where PVC faceplate is permitted).

.4 Lamps: LED-2.5 W 120 V.

.5 Letters: 150 mm high x 19 mm wide, with 13 mm thick stroke, red on die-cast aluminum face, reading EXIT.

.6 Supply voltage: 120 V, ac.

.7 Output voltage: 6 to 24 V dc.

.8 Operating time: 30 minimum.

.9 Battery: sealed, maintenance free.

.10 Charger: solid state, voltage/current regulated, inverse temperature compensated, short circuit protected, with regulated output of plus or minus 0.01 V for plus or minus 10% V input variation.

.11 Acceptable Manufactures

.1 Lumacell.

.2 Aimlite equivalents.

2.2 Design

.1 Meeting requirements of 2010 National Building Code.

.2 Single face plate as required. Universal wall or ceiling mount.

.3 Arrow: to be snap-out type.

.4 Dual mounting canopies for ceiling mounted units for added stability.

3.0 EXECUTION

3.1 Manufacturer's Instructions

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

3.2 Installation

.1 Install exit lights to manufacturer's recommendations, listing requirements, NFPA standard and local regulatory requirements.

.2 Connect fixtures to exit light circuits as indicated.

.3 Connect emergency lamp sockets to emergency circuits.

.4 Snap arrows out to match types called for in the luminaire schedule, and as shown on the drawings.

.5 Ensure that exit light circuit breaker is locked in on position.

.6 Perform 30-minutes test of exit lighting system. Subject units to full load test for specified period. Rectify all faults, and re-test if required.

END OF SECTION