1 GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

.1 Work of this Contract comprises general construction of an approximately 1245 square foot, two story residential duplex, located at [_____].

1.02 WORK BY OTHERS

.1 Co-operate with other Contractors in carrying out their respective works and carry out instructions from Departmental Representative.

.2 Co-ordinate work with that of other Contractors. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to Departmental Representative, in writing, any defects which may interfere with proper execution of Work.

1.03 CONTRACTOR USE OF PREMISES

.1 Unrestricted use of site until Substantial Performance.

.2 Co-ordinate use of premises under direction of Departmental Representative.

.3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

1.04 EXISTING SERVICES

.1 Notify, Departmental Representative and utility companies 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 for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to pedestrian and vehicular traffic.

.3 Provide alternative routes for pedestrian and vehicular traffic.

.4 Establish location and extent of service lines in area of work before starting Work. Notify Departmental Representative of findings.

.5 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.

.6 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.

.7 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.

.8 Protect, relocate or maintain existing active services. When inactive

services are encountered, cap off in manner approved by authorities having jurisdiction.

.9 Record locations of maintained, re-routed and abandoned service lines.

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

1.05 DOCUMENTS REQUIRED

.1 Maintain at job site, one copy each document as follows:
- .1 Contract Drawings.
- .2 Specifications.
- .3 Addenda.
- .4 Reviewed Shop Drawings.
- .5 List of Outstanding Shop Drawings.
- .6 Change Orders.
- .7 Other Modifications to Contract.
- .8 Field Test Reports.
- .9 Copy of Approved Work Schedule.
- .10 Health and Safety Plan and Other Safety Related Documents.
- .11 Other documents as specified.

2 PRODUCTS

2.01 NOT USED

.1 Not used.

3 EXECUTION

3.01 NOT USED

.1 Not used.

END OF SECTION

1 GENERAL

1.01 ACCESS AND EGRESS

.1 Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.

1.02 USE OF SITE AND FACILITIES

.1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.

.2 Maintain existing services to building and provide for personnel and vehicle access.

.3 Where security is reduced by work provide temporary means to maintain security.

.4 Contractor will assign sanitary facilities for use by Contractor's personnel. Keep facilities clean.

.5 Closures: protect work temporarily until permanent enclosures are completed.

1.03 EXISTING SERVICES

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

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

.3 Provide for pedestrian and vehicular traffic.

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

1.04 SPECIAL REQUIREMENTS

.1 Carry out noise generating Work as acceptable by local community bylaws.

.2 Submit schedule in accordance with Section 01 32 16.07 - Construction Progress Schedule - Bar Chart.

.3 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.

.4 Keep within limits of work and avenues of ingress and egress.

1.05 SECURITY

.1 Where security has been reduced by Work of Contract, provide temporary means to maintain security as indicated by Departmental Representative.

1.06 SECURITY CLEARANCES

.1 Contractor personnel must submit to local law enforcement verification by RCMP, prior to admittance to the site. The Client reserves the right to deny access to any facility / site or part thereof to any Contractor personnel, at any time.

.2 Security documents are attached at the end of the Section.

1.07 BUILDING SMOKING ENVIRONMENT

.1 Comply with smoking restrictions. Smoking is not permitted on the site.

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

Government of Canada / Gouvernement du Canada

PROTECTED (when completed)

PERSONNEL SCREENING, CONSENT AND AUTHORIZATION FORM

OFFICE USE ONLY		
Reference number	Department/Organization number	File number

NOTE: For *Privacy Act* Statement refer to Section C of this form and for completion instructions refer to attached instructions.
Please typewrite or print in block letters.

A ADMINISTRATIVE INFORMATION (To be completed by the Authorized Departmental/Agency/Organizational Official)

☐ New ☐ Update ☐ Upgrade ☐ Transfer ☐ Supplemental ☐ Re-activation

The requested level of reliability/security check(s)

☐ Reliability Status ☐ Level I (CONFIDENTIAL) ☐ Level II (SECRET) ☐ Level III (TOP SECRET)

☐ Other _____

PARTICULARS OF APPOINTMENT/ASSIGNMENT/CONTRACT

☐ Indeterminate ☐ Term ☐ Contract ☐ Industry ☐ Other (specify secondment, assignment, etc.) _____

Justification for security screening requirement

Contractor

Position/Competition/Contract number	Title		Group/Level (Rank if applicable)
Employee ID number/PRI/Rank and Service number (if applicable)	If term or contract, indicate duration period ▶	From	To
Name and address of department / organization / agency	Name of official	Telephone number ( )	Facsimile number ( )

B BIOGRAPHICAL INFORMATION (To be completed by the applicant)

Surname (Last name)	Full given names (no initials) underline or circle usual name used	Family name at birth

All other names used (i.e. Nickname)	Sex ☐ Male ☐ Female	Date of birth Y M D	Country of birth	Date of entry into Canada if born outside Canada Y M D

RESIDENCE (provide addresses for the last five years, starting with the most current) Home address	Daytime telephone number ( )	E-mail address

	Apartment number	Street number	Street name	Civic number (if applicable)	From Y M	To present
1						
	City	Province or state	Postal code	Country	Telephone number ( )	
2	Apartment number	Street number	Street name	Civic number (if applicable)	From Y M	To Y M
	City	Province or state	Postal code	Country	Telephone number ( )	

Have you previously completed a Government of Canada security screening form? ☐ Yes ☐ No

If yes, give name of employer, level and year of screening. Y

CRIMINAL CONVICTIONS IN AND OUTSIDE OF CANADA (see instructions)

Have you ever been convicted of a criminal offence for which you have not been granted a pardon? ☐ Yes ☐ No

If yes, give details. (charge(s), name of police force, city, province/state, country and date of conviction) ▼

Charge(s)	Name of police force	City

Province/State	Country	Date of conviction ▶ Y M D

Government of Canada / Gouvernement du Canada

PERSONNEL SCREENING, CONSENT AND AUTHORIZATION FORM

PROTECTED (when completed)

Surname and full given names	Date of birth (Y M D)

C CONSENT AND VERIFICATION (To be completed by the applicant and authorized Departmental/Agency/Organizational Official)

Checks Required (See Instructions)	Applicant's initials	Name of official (print)	Official's Initials	Official's Telephone number
1. ☑ Date of birth, address, education, professional qualifications, employment history, personal character references				( )
2. ☑ Criminal record check				( )
3. ☑ Credit check (financial assessment, including credit records check)				( )
4. ☑ Loyalty (security assessment only)				
5. ☑ Other (specify, see instructions) Law Enforcement Records Checks				( )

The Privacy Act Statement
The information on this form is required for the purpose of providing a security screening assessment. It is collected under the authority of subsection 7(1) of the *Financial Administration Act* and the Government Security Policy (GSP) of the Government of Canada, and is protected by the provisions of the *Privacy Act* in institutions that are covered by the *Privacy Act*. Its collection is mandatory. A refusal to provide information will lead to a review of whether the person is eligible to hold the position or perform the contract that is associated with this Personnel Screening Request. Depending on the level of security screening required, the information collected by the government institution may be disclosed to the Royal Canadian Mounted Police (RCMP) and the Canadian Security Intelligence Service (CSIS), which conduct the requisite checks and/or investigation in accordance with the GSP and to entities outside the federal government (e.g. credit bureaus). It is used to support decisions on individuals working or applying to work through appointment, assignment or contract, transfers or promotions. It may also be used in the context of updating, or reviewing for cause, the reliability status, security clearance or site access, all of which may lead to a re-assessment of the applicable type of security screening. Information collected by the government institution, and information gathered from the requisite checks and/or investigation, may be used to support decisions, which may lead to discipline and/or termination of employment or contractual agreements. The personal information collected is described in Standard PIB PSU 917 (Personnel Security Screening) which is used by all government agencies, except the Department of National Defence PIB DND/PPE 834 (Personnel Security Investigation File), RCMP PIB CMP PPU 065 (Security/Reliability Screening Records), CSIS PIB SIS PPE 815 (Employee Security), and PWGSC PIB PWGSC PPU 015 (Personnel Clearance and Reliability Records) used for Canadian Industry Personnel. Personal information related to security assessments is also described in the CSIS PIB SIS PPU 005 (Security Assessments/Advice).

I, the undersigned, do consent to the disclosure of the preceding information including my photograph for its subsequent verification and/or use in an investigation for the purpose of providing a security screening assessment. By consenting to the above, I acknowledge that the verification and/or use in an investigation of the preceding information may also occur when the reliability status, security clearance or site access are updated or otherwise reviewed for cause under the Government Security Policy. My consent will remain valid until I no longer require a reliability status, a security clearance or a site access clearance, my employment or contract is terminated, or until I otherwise revoke my consent, in writing, to the authorized security official.

Signature _____ Date (Y/M/D) _____

D REVIEW (To be completed by the authorized Departmental/Agency/Organizational Official responsible for ensuring the completion of sections A, B and C)

Name and title	Telephone number
Address	Facsimile number

E APPROVAL (To be completed by authorized Departmental/Agency/Organizational Security Official only)

I, the undersigned, as the authorized security official, do hereby approve the following level of screening.

Reliability Status

☐ Approved Reliability Status ☐ Not approved

Name and title _____

Signature _____ Date (Y/M/D) _____

Security Clearance (if applicable)

☐ Level I ☐ Level II ☐ Level III ☐ Not recommended

Name and title _____

Signature _____ Date (Y/M/D) _____

Comments

PHOTO (for Level III T.S., and/or upon request - see instructions)

Government of Canada | Gouvernement du Canada

INSTRUCTIONS FOR PERSONNEL SCREENING CONSENT AND AUTHORIZATION FORM TBS/SCT 330-23E (Rev. 2002/02)
Once completed, this form shall be safeguarded and handled at the level of Protected A.

General:
If space allotted in any portion is insufficient please use separate sheet using same format.

1. Section A (Administrative Information) Authorized Departmental/Agency/Organizational Official
The Official, based on instructions issued by the Departmental Security Officer, may be responsible for determining, based on five year background history, what constitutes sufficient verification of personal data, educational and professional qualifications, and employment history. References are to be limited to those provided on the application for employment or equivalent forms.

SUPPLEMENTAL INFORMATION REQUIREMENTS
Persons who presently hold a SECURITY CLEARANCE and subsequently marry, remarry or commence a common-law partnership, in addition to having to update sections of the *Security Clearance Form (TBS/SCT 330-60)*, are required to submit an original *Personnel Screening, Consent and Authorization Form*, with the following parts completed:

Part A - As set forth in each question
Part B - As set forth in each question, excluding CRIMINAL CONVICTIONS IN AND OUTSIDE OF CANADA.
Part C - Applicant's signature and date only are required

"Other". This should be used to identify if the security screening is for Site Access, NATO, SIGINT etc.

2. Section B (Biographical Information)
To be completed by the ***applicant***. If more space is required use a separate sheet of paper. Each sheet must be signed.

Country of Birth - For "NEW" requests, if born abroad of Canadian parents, please provide a copy of your Certificate of Registration of Birth Abroad. If you arrived in Canada less than five years ago, provide a copy of the Immigration Visa, Record of Landing document or a copy of passport.

- List only criminal convictions for which a pardon has NOT been granted. Include on a separate attached sheet of paper, if more than one conviction. Applicant must include those convictions outside Canada.
- Offences under the *National Defence Act* are to be included as well as convictions by courts-martial are to be recorded.

3. Section C (Consent and Verification)
A copy of Section "C" may be released to institutions to provide acknowledgement of consent.

Criminal record checks (fingerprints may be required) and credit checks are to be arranged through the Departmental Security Office or the delegated Officer.

Consent may be given only by an applicant who has reached the age of majority, otherwise, the signature of a parent or guardian is mandatory.

The age of majority is:
19 years in NFLD., N.S., N.B., B.C., Yukon, Norhwest Territories and Nunavut;
18 years in P.E.I., Que., Ont., Man., Sask. and Alta.

The applicant will provide initials in the " applicant's initials box".

The official who carried out the verification of the information will print their name, insert their initials and telephone number in the required space.
- Reliability Screening (for all types of screening identified within Section A): complete numbers 1 and 2 and 3 if applicable.
- Security Clearance (for all types of screening identified within Section A): complete numbers 1 to 4 and 5 where applicable.
- Other: number 5 is used only where prior Treasury Board of Canada Secretariat approval has been obtained.

4. Section D (Review)
To be completed by authorized Departmental/Agency/Organizational Official who is responsible for ensuring the completion of sections A to C as requested.

5. Section E (Approval)
Authorized Departmental/Agency/Organizational Security Official refers to the individuals as determined by departments, agencies, and organizations that may verify reliability information and/or approve/not approve reliability status and/or security clearances. Approved Reliability Status and Level I, II and III, as well as the signature of the authorized security official or manager are added for Government of Canada use only. Applicants are to be briefed, acknowledge, and be provided with a copy of the "Security Screening Certificate and Briefing Form (TBS/SCT 330-47)".
Note: Private sector organizations do not have the authority to approve any level of security screening.

Photographs: Departments/Agencies/Organizations are responsible for ensuring that three colour photographs of passport size are attached to the form for the investigating agency. Maximum dimensions are 50mm x 70mm and minimum are 43mm x 54mm. The face length from chin to crown of head must be between 25mm x 35mm. The photographs must be signed by the applicant and an authorized security official. The photographs must have been taken within the last six months. It is required for new or upgrade Level III security clearances for identification of the applicant during the security screening investigation by the investigating agency. The investigating agency may in specific incidents request a photograph for a Level I or II clearances when an investigation is required.

Instructions for completing the **Facility Access Security Clearance Form** (Form 330-23E) are as follows.

Section A:
Leave Blank
This will be filled out by the administrative staff/ clerk.

Section B:

1. Provide your Last and First name.
2. Check "Male" or "Female"
3. Provide your Date of Birth and Country.
4. Provide Telephone Number and Email Address
5. Provide residency addresses for the **last 5 years with no gaps**.
    - Full Address (including Number, Street Name, City, Province, Postal Code, Country)
    - Provide the Year and Month of residency (ensure no gaps).
    - Please write on the backside or an additional piece of paper if additional space is required.
    - Ensure no date is in the to present box of the residences
6. Check "**Yes**" or "**No**" to next question regarding previous security screening.
7. Check "**Yes**" or "**No**" to Criminal Convictions. If yes, provide details.

Section C:

1. Provide your Full Name and Date of Birth at the top.
2. Any credit checks carried out by the RCMP will **NOT** have any effect on a credit rating.
3. Check each box and initial beside each box.
    - **Please ensure that Box 5 states "Law Enforcement Record Check"**
    - **You must check and initial all boxes.**
    - **Sign and Date the form.**

Please provide a photocopy of your Driver's License and/or other government issued Photo ID along with your application.

Please ensure the information provided is legible and Photo ID is clear.

You may scan your completed application and send an electronic copy to: RCMP.FPropertyManagement-FGestiondelapropriete.GRC@rcmp-grc.gc.ca Please send the completed, original forms to our office. We will advise you by email when the security clearance has been issued. Security clearances can take approximately 4 to 8 weeks to process.

Please mail all original forms to:

Attn: Asset Management
RCMP North West Region
Bag Service 2500
6101 Dewdney Avenue
Regina, SK S4P 3K7

1 GENERAL

1.01 REFERENCE STANDARDS

.1 Owner/Contractor Agreement.

1.02 APPLICATIONS FOR PROGRESS PAYMENT

.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, to facilitate evaluation of applications for payment.

1.03 SCHEDULE OF VALUES

.1 Provide schedule of values supported by evidence as Departmental Representative may reasonably direct and when accepted by Departmental Representative, be 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.

1.04 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 due. If Departmental Representative amends application, Departmental Representative will give notification in writing giving reasons for amendment.

1.06 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. Failure to include items on list does not alter responsibility to complete Contract.

.2 No later than 10 days after receipt of list and application, 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: 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.

1.07 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF WORK

.1 After issuance of certificate of Substantial Performance of Work:
.1 Submit application for payment of holdback amount.
.2 Submit sworn statement that accounts for labour, subcontracts, products, construction machinery and equipment, and other indebtedness which may have been incurred in Substantial Performance of Work and for which Owner might in be held responsible have been paid in full, except for amounts properly retained as holdback or as identified amount in dispute.

.2 After receipt of application for payment and sworn statement, Departmental Representative will issue certificate for payment of holdback amount.

.3 Where holdback amount has not been placed in a separate holdback account, Owner shall, 10 days prior to expiry of holdback period stipulated in lien legislation applicable to Place of Work, place holdback amount in bank account in joint names of Owner and Contractor.

.4 Amount authorized by certificate for payment of holdback amount is due and payable on day following expiration of holdback period stipulated in lien legislation applicable to Place of Work. Where lien legislation does not exist or apply, holdback amount is due and payable in accordance with other legislation, industry practice, or provisions which may be agreed to between parties. Owner may retain out of holdback amount sums required by law to satisfy liens against Work or, if permitted by lien legislation applicable to Place of Work, other third party monetary claims against Contractor which are enforceable against Owner.

1.08 PROGRESSIVE RELEASE OF HOLDBACK

.1 Where legislation permits, if Departmental Representative has certified that Work of subcontractor or supplier has been performed prior to Substantial Performance of Work, Owner shall pay holdback amount retained for such subcontract Work, or products supplied by such supplier, on day following expiration of holdback period for such Work stipulated in lien legislation applicable to Place of Work.

.2 In addition to provisions of preceding paragraph, and certificate wording, ensure that such subcontract Work or products is protected pending issuance of final certificate for payment and be responsible for correction of defects or Work not performed regardless of whether or not such was apparent when such certificates were issued.

1.09 FINAL PAYMENT

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

.2 Departmental Representative will, no later than 10 days after receipt of 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.

.5 [Departmental Representative] will issue final certificate for payment when application for final payment is found valid.

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 01 52 00 Construction Facilities.

1.02 ADMINISTRATIVE

.1 Schedule and administer project meetings throughout the progress of the work at the call of Departmental Representative.

.2 Prepare agenda for meetings.

.3 Distribute written notice of each meeting four days in advance of meeting date to Departmental Representative.

.4 Provide physical space and make arrangements for meetings.

.5 Preside at meetings.

.6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.

.7 Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants, affected parties not in attendance, and Departmental Representative.

.8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.03 PRECONSTRUCTION MEETING

.1 Within 10 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

.2 Departmental Representative, Contractor, and major Subcontractors will be in attendance.

.3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.

.4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.

.5 Agenda to include:
- .1 Appointment of official representative of participants in the Work.
- .2 Schedule of Work.
- .3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 -

Construction Facilities.

.5 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

.6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.

.7 Owner provided products.

.8 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.

.9 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.

.10 Monthly progress claims, administrative procedures, photographs, hold backs.

.11 Appointment of inspection and testing agencies or firms.

.12 Insurances, transcript of policies.

1.04 PROGRESS MEETINGS

.1 During course of Work and two weeks prior to project completion, schedule progress meetings monthly.

.2 Contractor, major Subcontractors involved in Work and Departmental Representative are to be in attendance.

.3 Notify parties minimum five days prior to meetings.

.4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within three days after meeting.

.5 Agenda to include the following:

.1 Review, approval of minutes of previous meeting.

.2 Review of Work progress since previous meeting.

.3 Field observations, problems, conflicts.

.4 Problems which impede construction schedule.

.5 Review of off-site fabrication delivery schedules.

.6 Corrective measures and procedures to regain projected schedule.

.7 Revision to construction schedule.

.8 Progress schedule, during succeeding work period.

.9 Review submittal schedules: expedite as required.

.10 Maintenance of quality standards.

.11 Review proposed changes for affect on construction schedule and on completion date.

.12 Other business.

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Not used.

1.02 REFERENCE STANDARDS

.1 Not used.

1.03 ADMINISTRATIVE

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

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

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

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

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

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

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

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

1.04 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 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Saskatchewan, Canada.

.3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.4 Allow 10 days for Departmental Representative's review of each submission.

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

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

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

.8 Submissions include:
- .1 Date and revision dates.
- .2 Project title and number.
- .3 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.

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

.10 Submit one transparency **OR** electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.

.11 Submit electronic copies of product data sheets or brochures for

requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.

.12 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
- .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
- .2 Testing must have been within 3 years of date of contract award for project.

.13 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Departmental Representative.
- .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
- .2 Certificates must be dated after award of project contract complete with project name.

.14 Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Departmental Representative.
- .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

.15 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.

.16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.17 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.

.18 Delete information not applicable to project.

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

.20 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, electronic copy 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.

.21 The review of shop drawings by Departmental Representative is for sole purpose of ascertaining conformance with general concept.
- .1 This review shall not mean that they approve detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings

or of responsibility for meeting requirements of construction and Contract Documents.

.2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.05 SAMPLES

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

.2 Deliver samples prepaid to Departmental Representative.

.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.

1.06 CERTIFICATES AND TRANSCRIPTS

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

.2 Submit transcription of insurance immediately after award of Contract.

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Not used.

1.02 REFERENCE STANDARDS

.1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations

.2 Province of Saskatchewan
.1 Occupational Health and Safety Act, 1993, S.S. - Updated [2012].

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
.1 Results of site specific safety hazard assessment.
.2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.

.3 Submit one copy of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative weekly.

.4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.

.5 Submit copies of incident and accident reports.

.6 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 47 15 - Sustainable Requirements: Construction and Section 02 81 01 - Hazardous Materials.

.7 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within seven days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within seven days after receipt of comments from Departmental Representative.

.8 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.

.9 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

1.04 FILING OF NOTICE

.1 File Notice of Project with Provincial authorities prior to beginning of Work.

.2 Contractor shall be responsible and assume the Principal Contractor role for each work zone location and not the entire complex. Contractor shall provide a written acknowledgement of this responsibility with 3 weeks of contract award.

.3 Contractor shall agree to install proper site separation and identification in order to maintain time and space at all times throughout life of project.

1.05 SAFETY ASSESSMENT

.1 Perform site specific safety hazard assessment related to project.

1.06 MEETINGS

.1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.

1.07 REGULATORY REQUIREMENTS

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

1.08 GENERAL REQUIREMENTS

.1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.

.2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.09 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 Contractor will be responsible and assume the role Constructor as described in the Saskatchewan Occupational Health and Safety Act and Regulations for Construction Projects.

.3 Contractor shall be the Principal Contractor as described in the Quebec Act Respecting Health and Safety code for the Construction for only their scope and areas of work as defined and described this project specification.

.4 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.10 COMPLIANCE REQUIREMENTS

.1 Comply with Occupational Health and Safety Regulations, 1996.

.2 Comply with Canada Labour Code, Canada Occupational Safety and Health

Regulations.

1.12 UNFORSEEN HAZARDS

.1 When unforeseen or peculiar safety-related factors, hazards, or conditions occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Saskatchewan and advise Departmental Representative verbally and in writing.

.2 When unforeseen or peculiar safety-related factors, hazards, or conditions occur during performance of Work, advise Safety Officer and follow procedures in accordance with Acts and Regulations of Saskatchewan and advise Departmental Representative verbally and in writing.

1.13 HEALTH AND SAFETY CO-ORDINATOR

.1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
- .1 Have site-related working experience specific to activities associated with commercial construction.
- .2 Have working knowledge of occupational safety and health regulations.
- .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
- .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
- .5 Be on site during execution of Work and report directly to and be under direction of site supervisor.

1.14 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 Saskatchewan, and in consultation with Departmental Representative.

1.15 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.

1.16 BLASTING

.1 Blasting or other use of explosives is not permitted without prior receipt of written instruction by Departmental Representative.

1.17 WORK STOPPAGE

.1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

2 PRODUCTS

2.01 NOT USED

.1 Not used.

3 EXECUTION

3.01 NOT USED

.1 Not used.

END OF SECTION

1 GENERAL

1.01 SUMMARY

.1 This Section references to laws, by laws, ordinances, rules, regulations, codes, orders of Authority Having Jurisdiction, and other legally enforceable requirements applicable to Work and that are; or become, in force during performance of Work.

1.02 RELATED REQUIREMENTS

.1 Not used.

1.03 REFERENCES TO REGULATORY REQUIREMENTS

.1 Perform Work in accordance with 2015 National Building Code of Canada (NBC) including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.

.2 Specific design and performance requirements listed in specifications or indicated on Drawings may exceed minimum requirements established by referenced Building Code; these requirements will govern over the minimum requirements listed in Building Code

.1 Meet or exceed requirements of:

.1 Contract documents.

.2 Specified standards, codes and referenced documents.

1.04 BUILDING SMOKING ENVIRONMENT

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

.2 Smoking on site is not permitted, including on roof areas and in vehicles.

1.05 QUALITY ASSURANCE

.1 Regulatory Requirements: Except as otherwise specified, Contractor will apply for, obtain, and pay fees associated with, permits, licenses, certificates, and approvals required by regulatory requirements and Contract Documents, based on General Conditions of Contract and the following:

.1 Regulatory requirements and fees in force on date of Bid submission, and

.2 A change in regulatory requirements or fees scheduled to become effective after date of tender submission and of which public notice has been given before date of tender submission

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

2.02 EASEMENTS AND NOTICES

.1 Owner will obtain permanent easements and rights of servitude that may be required for performance of Work.

.2 Contractor will give notices required by regulatory requirements.

2.03 PERMITS

.1 Building Permit:

.1 Contractor will apply for, obtain and pay for building permit on behalf of Owner, and other permits required for Work and its various parts.

.3 Contractor will require that specific Subcontractor's obtain and pay for permits required by authorities having jurisdiction, where their Work is affected by Work requiring permits.

.4 Contractor will display building permit and other permits in a conspicuous location at Place of Work.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Not used.

1.02 INSPECTION

.1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.

.3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

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

1.03 PROCEDURES

.1 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.

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

1.04 REJECTED WORK

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

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

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

1.05 REPORTS

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

.2 Provide copies to subcontractor of work being inspected or tested and manufacturer or fabricator of material being inspected or tested.

1.06 TESTS AND MIX DESIGNS

.1 Furnish test results and mix designs as requested.

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

1.07 EQUIPMENT AND SYSTEMS

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

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Not used.

1.02 REFERENCE STANDARDS

.1 Not used.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

1.04 INSTALLATION AND REMOVAL

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

.2 Remove from site all such work after use.

1.05 DEWATERING

.1 Provide temporary drainage and pumping facilities to keep excavations and site free from standing water.

1.06 WATER SUPPLY

.1 Provide continuous supply of potable water for construction use.

.2 Arrange for connection with appropriate utility company and pay costs for installation, maintenance and removal.

.3 Pay for utility charges at prevailing rates.

1.07 TEMPORARY HEATING AND VENTILATION

.1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.

.2 Construction heaters used inside building must be vented to outside or be non-flameless type. Solid fuel salamanders are not permitted.

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

.4 Maintain temperatures of minimum 10 degrees C in areas where construction

is in progress.

.5 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 Ventilate temporary sanitary facilities.
.6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.

.6 Contractor to confirm with Departmental Representative if permanent heating system of building, can be used when available. Be responsible for damage to heating system if use is permitted.

.7 On completion of Work for which permanent heating system is used, replace filters, clean (vacuum) duct work and grilles.

.8 Ensure Date of Substantial Performance and Warranties for heating system do not commence until entire system is in as near original condition as possible and is certified by Departmental Representative.

.9 Pay costs for maintaining temporary heat, when using permanent heating system.

.10 Maintain strict supervision of operation of temporary heating and 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.

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

1.08 TEMPORARY POWER AND LIGHT

.1 Provide and pay for temporary power during construction for temporary lighting and operating of power tools.

.2 Arrange for connection with appropriate utility company. Pay costs for installation, maintenance and removal.

.3 Provide and maintain temporary lighting throughout project. Ensure average level of illumination at all floors and stair treads is not less than 162lx and minimum level at these locations is 32lx.

.4 Electrical power and lighting systems installed under this Contract may be used for construction requirements only with prior approval of Departmental Representative provided that guarantees are not affected. Make good damage to electrical system caused by use under this Contract. Replace lamps which have been used for more than 3 months.

1.09 FIRE PROTECTION

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

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

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 TEMPORARY EROSION AND SEDIMENTATION CONTROL

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Not used.

1.02 REFERENCE STANDARDS

.1 Not used.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

1.04 INSTALLATION AND REMOVAL

.1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.

.2 Identify areas which have to be gravelled to prevent tracking of mud.

.3 Indicate use of supplemental or other staging area.

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

.5 Remove from site all such work after use.

1.05 SCAFFOLDING

.1 Scaffolding in accordance with CAN/CSA-S269.2.

.2 Provide and maintain scaffolding, ladders, temporary stairs.

1.06 SITE STORAGE/LOADING

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

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

1.07 CONSTRUCTION PARKING

.1 Parking will be permitted on site provided it does not disrupt performance of Work.

.2 Provide and maintain adequate access to project site.

1.08 SECURITY

.1 Provide and pay for responsible security personnel to guard site and contents

of site after working hours and during holidays as required.

1.09 OFFICES

.1 Provide office sufficiently heated, ventilated and lighted, of sufficient size to accommodate site meetings and furnished with drawing laydown table.

.2 Provide marked and fully stocked first-aid case in a readily available location.

.3 Subcontractors to provide their own offices as necessary. Direct location of these offices.

1.12 EQUIPMENT, TOOL AND MATERIALS STORAGE

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

.2 Locate materials not required to be stored in weatherproof vessels on site in manner to cause least interference with work activities.

1.13 SANITARY FACILITIES

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

.2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.14 CONSTRUCTION SIGNAGE

.1 Signage and advertisements, other than site safety and directional signage, are not permitted.

1.15 PROTECTION AND MAINTENANCE OF TRAFFIC

.1 Provide access and temporary relocated roads as necessary to maintain traffic.

.2 Maintain and protect traffic on affected roads during construction.

.3 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs

.4 Protect travelling public from damage to person and property.

.5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.

.6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.

.7 Construct access and haul roads necessary.

.8 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.

.9 Dust control: adequate to ensure safe operation at all times.

.10 Provide snow removal during period of Work.

.11 Remove, upon completion of work, haul roads designated by Departmental Representative.

1.16 CLEAN-UP

.1 Remove construction debris, waste materials, packaging material from work site daily.

.2 Clean dirt or mud tracked onto paved or surfaced roadways.

.3 Stack stored new or salvaged material not in construction facilities.

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Not used.

1.02 REFERENCE STANDARDS

.1 Not used.

1.03 INSTALLATION AND REMOVAL

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

.2 Remove from site all such work after use.

1.04 HOARDING

.1 Erect temporary site enclosures using 38 x 89 mm construction grade lumber framing at 600 mm centres and 1200 x 2400 x 13 mm exterior grade fir plywood to CSA O121.

.2 Erect temporary site enclosure using new 1.2 m high snow fence wired to rolled steel "T" bar fence posts spaced at 2.4 m on centre. Provide one lockable truck gate. Maintain fence in good repair.

.3 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

1.05 GUARD RAILS AND BARRICADES

.1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs.

1.06 WEATHER ENCLOSURES

.1 Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.

.2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.

.3 Design enclosures to withstand wind pressure and snow loading.

1.07 DUST TIGHT SCREENS

.1 Provide dust tight screens or insulated] partitions to localize dust generating activities, for protection of workers and finished areas of Work.

.2 Maintain and relocate protection until such work is complete.

1.08 ACCESS TO SITE

.1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.

1.09 PUBLIC TRAFFIC FLOW

.1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect public.

1.10 FIRE ROUTES

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

1.11 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

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

.2 Be responsible for damage incurred.

1.12 PROTECTION OF BUILDING FINISHES

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

.2 Provide necessary screens, covers, and hoardings.

.3 Confirm with Departmental Representative locations and installation schedule 5 days prior to installation.

.4 Be responsible for damage incurred due to lack of or improper protection.

1.13 WASTE MANAGEMENT AND DISPOSAL

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

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Not used.

1.02 REFERENCE STANDARDS

.1 Conform to these reference standards, in whole or in part as specifically requested in specifications.

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

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

1.03 QUALITY

.1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.

.2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.

.3 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.

.4 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.

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

.6 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.

1.04 AVAILABILITY

.1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Departmental Representative of such,

in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

.2 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.05 STORAGE, HANDLING AND PROTECTION

.1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

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

.7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.

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

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

1.06 TRANSPORTATION

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

1.07 MANUFACTURER'S INSTRUCTIONS

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

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

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

1.08 QUALITY OF WORK

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

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

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

1.09 CO-ORDINATION

.1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.10 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.

1.11 REMEDIAL WORK

.1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.

.2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.12 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.

1.13 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.

1.14 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.

1.15 PROTECTION OF WORK IN PROGRESS

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

1.16 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 pedestrian and vehicular traffic.

.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

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Not used.

1.02 REFERENCE STANDARDS

.1 Not used.

1.03 QUALIFICATIONS OF SURVEYOR

.1 Qualified registered land surveyor, licensed to practise in Place of Work, acceptable to Departmental Representative.

1.04 SURVEY REFERENCE POINTS

.1 Locate, confirm and protect control points prior to starting site work. Preserve permanent reference points during construction.

.3 Make no changes or relocations without prior written notice to Departmental Representative.

.4 Report to Departmental Representative when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.

.5 Require surveyor to replace control points in accordance with original survey control.

1.05 SURVEY REQUIREMENTS

.1 Establish one permanent bench mark on site, referenced to established bench marks by survey control points. Record locations, with horizontal and vertical data in Project Record Documents.

.2 Establish lines and levels, locate and lay out, by instrumentation.

.3 Stake for grading, fill and topsoil placement.

.4 Establish pipe invert elevations.

.5 Establish foundation, column locations and floor elevations.

.6 Establish lines and levels for mechanical and electrical work.

1.06 EXISTING SERVICES

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

.2 Remove abandoned service lines within 2 m of structures. Cap or otherwise seal lines at cut-off points as directed by Departmental Representative.

1.07 LOCATION OF EQUIPMENT AND FIXTURES

.1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.

.2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.

.3 Inform Departmental Representative of impending installation and obtain approval for actual location.

.4 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

1.08 RECORDS

.1 Maintain a complete, accurate log of control and survey work as it progresses.

.2 On completion of foundations and major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of Work.

.3 Record locations of maintained, re-routed and abandoned service lines.

1.09 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit name and address of Surveyor to Departmental Representative.

.2 Submit certificate signed by surveyor certifying those elevations and locations of completed Work that conform and do not conform with Contract Documents.

1.10 SUBSURFACE CONDITIONS

.1 Promptly notify Departmental Representative in writing if subsurface conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.

2 PRODUCTS

2.01 NOT USED

.1 Not Used. 3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Not used.

1.02 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Submit written request in advance of cutting or alteration which affects:
- .1 Structural integrity of elements of project.
- .2 Integrity of weather-exposed or moisture-resistant elements.
- .3 Efficiency, maintenance, or safety of operational elements.
- .4 Visual qualities of sight-exposed elements.
- .5 Work of Owner or separate contractor.

.3 Include in request:
- .1 Identification of project.
- .2 Location and description of affected Work.
- .3 Statement on necessity for cutting or alteration.
- .4 Description of proposed Work, and products to be used.
- .5 Alternatives to cutting and patching.
- .6 Effect on Work of Owner or separate contractor.
- .7 Written permission of affected separate contractor.
- .8 Date and time work will be executed.

1.03 MATERIALS

.1 Required for original installation.

.2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

1.04 PREPARATION

.1 After uncovering, inspect conditions affecting performance of Work.

.3 Beginning of cutting or patching means acceptance of existing conditions.

.4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

.5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.05 EXECUTION

.1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.

.2 Fit several parts together, to integrate with other Work.

.3 Uncover Work to install ill-timed Work.

.4 Remove and replace defective and non-conforming Work.

.5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.

.6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

.7 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.

.8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.

.9 Restore work with new products in accordance with requirements of Contract Documents.

.10 Fit Work to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

.12 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material in accordance with Section 07 84 00 – Firestopping, full thickness of the construction element.

.13 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

.14 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

.1 Not used.

1.02 PROJECT CLEANLINESS

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris.

.2 Remove waste materials from site at daily regularly scheduled. Do not burn waste materials on site.

.3 Clear snow and ice from access to building.

.4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris. Dispose of waste materials and debris at designated dumping areas.

.5 Provide on-site containers for collection of waste materials and debris.

.6 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.

.7 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.8 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

.9 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.03 FINAL CLEANING

.1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

.2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.

.3 Remove waste products and debris including that caused by other Contractors.

.4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.5 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.

.6 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.

.7 Clean lighting reflectors, lenses, and other lighting surfaces.

.8 Vacuum clean and dust building interiors, behind grilles, louvres and screens.

.9 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.

.10 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

.11 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.

.12 Remove dirt and other disfiguration from exterior surfaces.

.13 Clean and sweep roofs, gutters, areaways, and sunken wells.

.14 Sweep and wash clean paved areas.

.15 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.

.16 Clean roofs, downspouts, and drainage systems.

.17 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

.18 Remove snow and ice from access to building.

1.04 WASTE MANAGEMENT AND DISPOSAL

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

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.02 NOT USED

.1 Not Used.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Not used.

1.02 ADMINISTRATIVE REQUIREMENTS

.1 Acceptance of Work Procedures:
- .1 Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
  - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
  - .2 Request Departmental Representative inspection.
- .2 Departmental Representative Inspection:
  - .1 Departmental Representative and Contractor to inspect Work and identify defects and deficiencies.
  - .2 Contractor to correct Work as directed.
- .3 Completion Tasks: submit written certificates in English that tasks have been performed as follows:
  - .1 Work: completed and inspected for compliance with Contract Documents.
  - .2 Defects: corrected and deficiencies completed.
  - .3 Equipment and systems: tested, adjusted and balanced and fully operational.
  - .4 Certificates required by Fire Commissioner and Utility companies: submitted.
  - .5 Operation of systems: demonstrated to Owner's personnel.
  - .6 Work: complete and ready for final inspection.
- .4 Final Inspection:
  - .1 When completion tasks are done, request final inspection of Work by Departmental Representative, and Contractor.
  - .2 When Work incomplete according to Departmental Representative, complete outstanding items and request re-inspection.
- .5 Declaration of Substantial Performance: when Departmental Representative considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.
- .6 Final Payment:
  - .1 When Departmental Representative considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.

1.03 FINAL CLEANING

.1 Clean in accordance with Section 01 74 11 - Cleaning.
- .1 Remove surplus materials, excess materials, rubbish, tools and equipment.

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Not used.

1.02 REFERENCE STANDARDS

.1 Not used.

1.03 ADMINISTRATIVE REQUIREMENTS

.1 Pre-warranty Meeting:

.2 Convene meeting one week prior to contract completion with contractor's representative and Departmental Representative, in accordance with Section 01 31 19 - Project Meetings to:

.1 Verify Project requirements.

.2 Review manufacturer's installation instructions and warranty requirements.

.3 Departmental Representative to establish communication procedures for:

.1 Notifying construction warranty defects.

.2 Determine priorities for type of defects.

.3 Determine reasonable response time.

.4 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.

.5 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.04 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, three final copies of operating and maintenance manuals in English.

.3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.

.4 Provide evidence, if requested, for type, source and quality of products supplied.

1.05 FORMAT

.1 Organize data as instructional manual.

.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf [219 x 279] mm with spine and face pockets.

.3 When multiple binders are used correlate data into related consistent

groupings.
.1 Identify contents of each binder on spine.

.4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

.5 Arrange content by under Section numbers and sequence of Table of Contents.

.6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

.7 Text: manufacturer's printed data, or typewritten data.

.8 Drawings: provide with reinforced punched binder tab.
.1 Bind in with text; fold larger drawings to size of text pages.

1.06 CONTENTS - PROJECT RECORD DOCUMENTS

.1 Table of Contents for Each Volume: provide title of project;
.1 Date of submission; names.
.2 Addresses, and telephone numbers of Departmental Representative and Contractor with name of responsible parties.
.3 Schedule of products and systems, indexed to content of volume.

.2 For each product or system:
.1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.

.4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

.5 Typewritten Text: as required to supplement product data.
.1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

1.07 AS -BUILT DOCUMENTS AND SAMPLES

.1 Maintain, at site for Departmental Representative one record copy of:
.1 Contract Drawings.
.2 Specifications.
.3 Addenda.
.4 Change Orders and other modifications to Contract.
.5 Reviewed shop drawings, product data, and samples.
.6 Field test records.
.7 Inspection certificates.
.8 Manufacturer's certificates.

.2 Store record documents and samples in field office apart from documents used for construction.
.1 Provide files, racks, and secure storage.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.

.1 Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain record documents in clean, dry and legible condition.
.1 Do not use record documents for construction purposes.

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

1.08 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

.1 Record information on set of black line opaque drawings, and in copy of Project Manual.

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

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

.4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
.1 Measured depths of elements of foundation in relation to finish first floor datum.
.2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
.3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
.4 Field changes of dimension and detail.
.5 Changes made by change orders.
.6 Details not on original Contract Drawings.
.7 Referenced Standards to related shop drawings and modifications.

.5 Specifications: mark each item to record actual construction, including:
.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
.2 Changes made by Addenda and change orders.

1.09 MATERIALS AND FINISHES

.1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.

.2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.3 Moisture-protection and weather-exposed products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.4 Additional requirements: as specified in individual specifications sections.

1.10 MAINTENANCE MATERIALS

.1 Spare Parts:
.1 Provide spare parts, in quantities specified in individual specification sections.
.2 Provide items of same manufacture and quality as items in Work.
.3 Deliver to location as directed; place and store.
.4 Receive and catalogue items.
.1 Submit inventory listing to Departmental Representative.
.2 Include approved listings in Maintenance Manual.
.5 Obtain receipt for delivered products and submit prior to final payment.

.2 Extra Stock Materials:
.1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
.2 Provide items of same manufacture and quality as items in Work.
.3 Deliver to site; place and store.
.4 Receive and catalogue items.
.1 Submit inventory listing to Departmental Representative.
.2 Include approved listings in Maintenance Manual.
.5 Obtain receipt for delivered products and submit prior to final payment.

.3 Special Tools:
.1 Provide special tools, in quantities specified in individual specification section.
.2 Provide items with tags identifying their associated function and equipment.
.3 Deliver to site; place and store.
.4 Receive and catalogue items.
.1 Submit inventory listing to Departmental Representative.
.2 Include approved listings in Maintenance Manual.

1.11 DELIVERY, STORAGE AND HANDLING

.1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.

.2 Store in original and undamaged condition with manufacturer's seal and labels intact.

.3 Store components subject to damage from weather in weatherproof enclosures.

.4 Store paints and freezable materials in a heated and ventilated room.

.5 Remove and replace damaged products at own expense and for review by Departmental Representative.

1.12 WARRANTIES AND BONDS

.1 Submit, warranty information made available during construction phase, to Departmental Representative for approval prior to each monthly pay estimate.

.2 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
.1 Separate each warranty or bond with index tab sheets keyed to Table

of Contents listing.

.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.

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

.5 Co-execute submittals when required.

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

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

.4 Respond in timely manner to oral or written notification of required construction warranty repair work.

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 03 11 19 Insulated concrete Forms
Section 03 20 00 Concrete Reinforcing
Section 03 30 00.09 Cast in Place Concrete
Section 03 35 00 Concrete Finishing

1.02 REFERENCE STANDARDS

.1 Canadian Standards Association (CSA International)
.1 CSA-A23.1-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
.2 CSA O121-M1978(R2003), Douglas Fir Plywood.
.3 CSA O151-04, Canadian Softwood Plywood.
.4 CSA O153-M1980(R2003), Poplar Plywood.
.5 CAN/CSA-O325.0-92(R2003), Construction Sheathing.
.6 CSA O437 Series-93(R2006), Standards for OSB and Waferboard.
.7 CAN/CSA-S269.3-M92(R2003), Concrete Formwork, National Standard of Canada

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Submit shop drawings for formwork and falsework.
.1 Submit drawings stamped and signed by professional engineer registered or licensed in Saskatchewan, Canada.

.3 Submit WHMIS MSDS - Material Safety Data.

.5 Indicate method and schedule of construction, shoring, stripping procedures, materials, arrangement of joints and ties. Comply with CAN/CSA-S269.3 for formwork drawings.

.6 Indicate formwork design data: permissible rate of concrete placement, and temperature of concrete, in forms.

.7 Indicate sequence of erection and removal of formwork as directed by Departmental Representative.

1.04 DELIVERY, STORAGE AND HANDLING

.1 Waste Management and Disposal:
.1 Separate waste materials for recycling in accordance with Section 01 47 21 - Construction/Demolition Waste Management and Disposal.
.2 Place materials defined as hazardous or toxic in designated containers.
.3 Divert wood materials from landfill to a recycling facility as approved by Departmental Representative.
.4 Divert plastic materials from landfill to a recycling facility as approved by Departmental Representative.

2 PRODUCTS

2.01 MATERIALS

.1 Formwork materials:
  .1 For concrete without special architectural features, use wood and wood product formwork materials to CAN/CSA-23.1.
  .2 Rigid insulation board: to CAN/ULC-S701.

.2 Form ties:
  .1 For concrete not designated 'Architectural', use removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm diameter in concrete surface.

.3 Form liner:
  .1 Plywood: Douglas Fir to CSA O121, T and G, 16 mm thick.

.4 Form release agent: non-toxic, low VOC.

.5 Sealant: to Section 07 92 00 - Joint Sealants.

3 EXECUTION

3.01 FABRICATION AND ERECTION

.1 Verify lines, levels and centres before proceeding with formwork and ensure dimensions agree with drawings.

.2 Fabricate and erect formwork in accordance with CAN/CSA-S269.3 to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CSA-A23.1/A23.2.

.3 Align form joints and make watertight.
  .1 Keep form joints to minimum.

.4 Use 25 mm chamfer strips on external corners and/or 25 mm fillets at interior corners, joints, unless specified otherwise.

.5 Form chases, slots, openings, drips, recesses, expansion and control joints as indicated.

.6 Build in anchors, sleeves, and other inserts required to accommodate Work specified in other sections.
  .1 Ensure that anchors and inserts will not protrude beyond surfaces designated to receive applied finishes, including painting.

.7 Clean formwork in accordance with CSA-A23.1/A23.2, before placing concrete.

3.02 REMOVAL AND RESHORING

.1 Leave formwork in place for following minimum periods of time after placing concrete.
  .1 48 hours days for walls.
  .2 24 hours for footings.

.2 Remove formwork when concrete has reached 50% of its design strength or minimum period noted above, whichever comes later, and replace immediately with adequate reshoring.

.3 Provide necessary reshoring of members where early removal of forms may be required or where members may be subjected to additional loads during construction as required.

.4 Space reshoring in each principal direction at not more than 3000] mm apart.

.5 Re-use formwork and falsework subject to requirements of CSA-A23.1/A23.2.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 03 10 00 Concrete Forming and Accessories
Section 03 20 00 Concrete Reinforcing
Section 03 30 00.09 Cast in Place Concrete
Section 03 35 00 Concrete Finishing

1.02 REFERENCE STANDARDS

.1 ASTM International
.1 ASTM A 185-07, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.

.2 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-19.24-M90, Multicomponent, Chemical-Curing Sealing Compound.

.3 CSA International
.1 CSA A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.

.4 Underwriters' Laboratories of Canada (ULC)
.1 CAN/ULC-S701-05, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for insulated concrete forms, ties, joints, ties, and braces and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:
.1 Submit drawings stamped and signed by professional engineer registered or licensed in Saskatchewan, Canada.
.2 Before fabrication, submit drawings of insulated concrete form building system.
.3 Indicate method and schedule of construction, shoring procedures, materials, arrangement of joints, special architectural exposed finishes, ties, corner, intersection and connector ties, braces and locations of temporary embedded parts.
.4 Indicate sequence of erection of forms as directed by Departmental Representative.

.4 Samples:
.1 Submit one 305 mm long piece of insulation and 1 sample of each tie, connector and brace to be used.

.5 Certificates: submit certificates signed by manufacturer certifying that

materials comply with specified performance characteristics and physical properties.

.6 Test Reports: submit test reports for thermal resistance, water vapour permeance, flexural compressive strength, and rigidity from approved independent testing laboratories, indicating compliance with specified performance characteristics and physical properties.

1.04 QUALIFICATIONS

.1 Installers, supervisors and inspectors: trained and certified by ICF manufacturer.

.2 Submit certification letter to Departmental Representative from ICF manufacturer listing ICF installer/supervisor/inspector's name, address, level of certification and certification number.

.3 Submit inspection schedule to Departmental Representative for each item of work to be inspected prior to placement of concrete and for work to be inspected during and after placement of concrete in accordance with ICF manufacturer's recommendations.

1.05 DELIVERY, STORAGE AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
.1 Store materials off ground, protected from direct sunlight using light-coloured opaque polyethylene film and ventilated to prevent excessive temperature.
.2 Replace defective or damaged materials with new.

1.06 WARRANTY

.1 Manufacturer's Warranty: submit properly executed manufacturer's standard warranty. Manufacturer's warranty is in addition to and not a limitation of other rights Owner may have under Contract.

.2 Warranty Period: 60 months commencing on Date of Substantial Performance of Work. Warranty covers repair or replacement of defective insulation.

2 PRODUCTS

2.01 MATERIALS

.1 Insulation: closed cell expanded polystyrene rigid boards to CAN/ULC-S701, Type 2, RSI 0.70 per 25 mm of thickness, 110 Kpa compressive strength, Ecologo certified.

.2 Web spacer: Manufacturer's standard polypropylene web spacer, flush with panel interior, flared, snap-in reinforcement bar mounting points,

mechanical interlock system.

.3 Inserts: moulded inside panels, spaced 200 mm OC, reinforcement against bulging, integral slide for web spacers.

.4 Bracing: Manufacturer's standard internal alignment brace.

.5 Anchor Bolts: to CSA G40.20/G40.21, Grade 300W.

.6 Furring Channels: 0.5 mm core thickness galvanized steel channels.

.7 Polyurethane Spray Foam: compatible with polystyrene, as and when recommended by ICF manufacturer.

.8 Concrete: in accordance with Section 03 30 00.09 - Cast-in-place Concrete to CSA A23.1, 25 MPa at 28 days, Exposure class F-2, 20 mm maximum size aggregate; 75 mm slump at time of deposit, plus or minus 10 mm; 4 to 7 percent air entrainment].

.9 Reinforcing Bars: in accordance with Section 03 20 00 - Concrete Reinforcing to CSA G30.18, Grade 400, deformed.

.10 Joint Filler: preformed, asphalt saturated fibre to ASTM D 1751.

.11 Sealant: in accordance with Section 07 92 00 - Joint Sealants [multi-component, chemical curing to CAN/CGSB-19.24, Type 1, Class B, with compatible primer for concrete.

.12 Adhesive: as recommended by ICF manufacturer.

.13 Sealing Tape: as recommended by ICF manufacturer.

.14 Panel Protective Coating: parging in accordance with manufacturer's written recommendations.

2.02 COMPONENTS

.1 Wall Sections: 200 mm thick profiles, comprised of 2 layers of factory processed rigid board insulation connected with web spacers, inserts and bracing.

.2 Corner Kits: Manufacturer's standard factory-processed 90 degree corner kits.

2.03 FABRICATION

.1 Fabricate panels and special shapes in shop to facilitate on-site assembly with mechanically-interlocked joints.

3 EXECUTION

3.01 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for insulated

concrete form installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of Departmental Representative.

.2 Verify lines, levels and centres before proceeding with form erection.

.1 Ensure site dimensions agree Shop Drawings.

.3 Inform Departmental Representative of unacceptable conditions immediately upon discovery.

.4 Proceed with installation only after unacceptable conditions have been remedied.

3.02 PREPARATION

.1 Cover and protect adjacent materials before beginning Work.

.2 Temporary Erosion and Sedimentation Control:

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction, specific to site, that complies with EPA 832/R-92-005 or requirements of authorities having jurisdiction, whichever is more stringent.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.03 INSTALLATION

.1 Install forms to lines and levels, widths and sizes indicated on Shop Drawings, including special shapes.

.2 Place forms on standard footing or concrete pad as indicated and temporarily brace to prevent displacement during final assembly and concrete pour.

.3 Keep form joints to minimum.

.4 Align form joints and make watertight.

.5 Form chases, slots, openings, drips, recesses, expansion and control joints as indicated.

.6 Build in anchors, sleeves and other inserts required or specified in other Sections of Project Manual and as indicated.

.1 Ensure anchors and inserts do not protrude beyond surfaces designated to receive applied finishes.

.7 Include external bracing as indicated on Shop Drawings.

.8 Include vertical braces every 2.4 m along one side of form and anchor with dimensional lumber.

.9 Include diagonal bracing to align and support forms as indicated on Shop Drawings.

.10 Install reinforcing to CSA A23.1 Section 03 20 00 - Concrete Reinforcing.

.11 Reinforce service penetrations exceeding 400 x 400 mm in size.

.12 Apply adhesive and sealing tape to panel intersections in accordance with ICF manufacturer's instructions.

.13 Apply protective coating to panel forms in accordance with manufacturer's written recommendations.

.14 Install concrete in accordance with Section 03 30 00 - Cast-in-place Concrete to [CSA A23.1.

.15 Remove insulated concrete forms.

3.04 FIELD QUALITY CONTROL

.1 Arrange with manufacturer's representative to review work of this Section and submit written reports to verify compliance with Contract Documents.

.2 Submit manufacturer's reports to Departmental Representative within 3 days of manufacturer representative's review.

.3 Manufacturer's Field Services:
- .1 Obtain written reports from manufacturer verifying compliance of Work, in handling, installing, erecting insulated concrete forms.
- .2 Submit manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
- .3 Ensure manufacturer's representative is present before and during critical periods of installation.
- .4 Schedule site visits to review Work at stages listed:
  - .1 After delivery and storage of products, and when preparatory Work on which Work of this Section depends is complete, but before installation begins.
  - .2 Once during progress of Work at 25%.
  - .3 Upon completion of Work, after cleaning is carried out.

3.05 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
- .1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .1 Remove protective coverings from accessories and components.
- .2 Repair or replace damaged materials.

3.06 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 When rigid polystyrene insulation boards will remain exposed to sunlight for more than 60 days, protect insulation from ultra-violet radiation by installing temporary covers.

.3 Repair damage to adjacent materials caused by insulated concrete form installation.

END OF SECTION

1 GENERAL

1.0 WORK INCLUDED

.1 Furnish and install all bonded reinforcement and associated items required and/or indicated on the Drawings for all cast-in-place concrete and reinforced masonry work.

1.01 RELATED REQUIREMENTS

.1	Concrete Forming and Accessories	– Section 03 10 00
.2	Insulated Concrete Forms	- Section 03 11 19
.3	Cast-in-Place Concrete	- Section 03 30 00.09
.4	Concrete Finishing	- Section 03 35 00

1.02 INSPECTION AND TESTING

.1 Upon request, provide certified copy of mill test report of steel supplied, showing physical and chemical analysis.

1.03 REFERENCE STANDARDS

.1 CSA Group
- .1 CSA-A23.1-14 Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
- .2 CAN W186-M1990 (R2012) Welding of Reinforcement

1.04 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
- .1 Submit manufacturer's instructions, printed product literature and data sheets for proprietary materials used in Cast-In-Place Concrete and additives and include product characteristics, performance criteria, physical size, finish, and limitations.

.3 Shop Drawings:
- .1 Submit drawings stamped and signed by professional engineer registered or licensed in Saskatchewan, Canada.
  - .1 Prepare reinforcement drawings in accordance with RSIC Manual of Standard Practice and SP-66.
  - .2 Indicate placing of reinforcement and:
    - .1 Bar bending details.
    - .2 Lists.
    - .3 Quantities of reinforcement.
    - .4 Sizes, spacings, locations of reinforcement
    - .5 Indicate sizes, spacings and locations of chairs, spacers and hangers.
  - .3 Detail lap lengths and bar development lengths to CAN/CSA-A23.3
  - .4 Indicate position and size of openings in slabs and walls. Coordinate with trades requiring openings.

.4 Quality Assurance Submittals:
.1 Submit in accordance with Section 01 45 00 - Quality Control

1.05 DELIVERY, STORAGE AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
.1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Replace defective or damaged materials with new.

2 PRODUCTS

2.01 MATERIALS

.1 Substitute different size bars only if permitted in writing by Departmental Representative.

.2 Reinforcing steel: deformed bars of new billet steel conforming to CSA-G30.18-09 (R2014), Grade 400, plain finish for all bars. Minimum splice for 10 M bars to be 450 mm. Minimum lap splice for all other bars to be 36 bar diameter or 675 mm, whichever is greater.

.3 Deformed steel wire for concrete reinforcement: to ASTM 1064/A 1064M.

.4 Chairs, bolsters, bar supports, spacers: to CSA-A23.1/A23.2.

.5 Tie wire: 1.5 mm diameter annealed wire.

.6 Mechanical splices: subject to the approval of the Departmental Representative.

2.02 FABRICATION

.1 Fabricate bends, splices and ties and supply bar supports and accessories in accordance with the requirements of CAN-A23.3-14. Spacing and arrangements of supports in accordance with ACI 315R-04.

.2 All intermediate grade reinforcing bars shall be bent cold without hickeying. All high strength steel shall be preheated.

.3 Reinforcing bars shall not be straightened or rebent.

.4 Location of reinforcement splices not shown on the drawings subject to approval by the Departmental Representative and shall, for beams and slabs be away from points of maximum stress in the steel.

.5 *Welding of reinforcing bars:* use only weldable bars, preheat and weld to CSA W186-1990 (R2012).

3 EXECUTION

3.01 EXAMINATION

.1 Examine the work upon which this section depends and report any discrepancies to the Departmental Representative.

.2 Commencement of the work shall imply acceptance of conditions.

3.02 PLACING REINFORCEMENT

.1 Reinforcement of the size and shapes shown on the drawings shall be accurately placed in accordance with the approved shop drawings, the structural drawings and the requirements of the current National Building Code.

.2 Clear distances between parallel bars, except for columns, shall be not less than 1.4 times the diameter of the bar, or 30 mm or 1.4 times the maximum size of the coarse aggregate. Bars placed in two or more layers shall be placed directly above and below each other.

.3 Clear distance between bars in columns shall be not less than 1½ the nominal diameter of the bar or 40 mm or 1½ times the maximum size of the coarse aggregate.

.4 Reinforcing steel shall, where not otherwise shown on the structural drawings, be protected by the clear cover of concrete over the reinforcement as follows:

.1 Where concrete placed against forms is to be exposed to the weather or be in contact with the ground, not less than 50 mm for bars larger than 15 M, and not less than 40 mm for bars 15 M and smaller.

.2 In slabs and walls not exposed to the ground or weather, not less than 20 mm.

The foregoing clear covers shall be maintained within 5 mm.

.5 Reinforcement shall be adequately supported by metal chairs, spacers or hangers and secured against displacement within the tolerance permitted and in accordance with the latest ACI Standard 315R-04.

.6 For slabs on grade, footings or similar construction, concrete blocks may be used in place of metal chairs.

.7 Unless specifically detailed otherwise, supply and install additional 10 M bars by 2400 long at 300 mm centres above all steel floor beams supporting open web steel floor joists. Bars to be centred above beam and placed with 25 mm cover to top of slab. Provide 1 - 15 M carrier bar below for chairing.

.8 Unless detailed otherwise, all exterior slabs, walks and pads abutting building foundations to be dowelled with 15 M at 400 on centre, extending minimum 750 into slab.

.9 Review with the Departmental Representative, placement of reinforcement prior to concreting.

.10 Notify the Departmental Representative twenty-four (24) hours prior to placing concrete.

3.03 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

END OF SECTION

1 GENERAL

1.00 WORK INCLUDED

.1 Cast-in-Place Concrete required for this work is indicated on drawing and includes, but is not necessarily limited to:

.1 Concrete Slabs
.2 Miscellaneous Concrete
.3 Finishing of all Formed Concrete Surfaces.

1.01 RELATED REQUIREMENTS

.1	Concrete Forming and Accessories	– Section 03 10 00
.2	Insulated Concrete Forms	- Section 03 11 19
.3	Concrete Reinforcing	- Section 03 20 00
.4	Cast-in-Place Concrete	- Section 03 30 00.09
.5	Concrete Finishing	- Section 03 35 00

1.02 REFERENCE STANDARDS

.1 CSA International
.1 CSA-A23.1-2014, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
.2 CAN/CSA-G30.18-M92(R2007), Billet-Steel Bars for Concrete Reinforcement.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Shop Drawings:
.1 Submit placing drawings prepared in accordance with plans to clearly show size, shape, location and necessary details of reinforcing.
.3 Submit drawings showing formwork design to: CSA A23.1/A23.2.
.4 Submit drawings stamped and signed by professional engineer registered or licensed in Saskatchewan, Canada.

1.04 DELIVERY, STORAGE AND HANDLING

.1 Use all means necessary to protect cast-in-place concrete materials before, during and after installation and to protect the installed work and materials of all other trades.

.3 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.

1.1 INSPECTION AND TESTING

.1 Inspection and testing will be performed by a firm approved by the Departmental Representative and paid for by the Contractor. Unless

approved otherwise, the testing agency must perform all aspects of testing including cylinder preparation.

.2 Provide free access to all portions of work and co-operate with appointed firm.

.3 Submit proposed mix design for each class of concrete to Departmental Representative for approval two (2) weeks prior to commencement of work.

.4 Tests of cement and aggregates may be performed to ensure conformance with requirements stated herein.

.5 One concrete test, consisting of three test cylinders, will be taken for every 50 cubic meters or less of each class of concrete placed. One cylinder to be tested at seven (7) days, the remaining two cylinders to be tested at twenty-eight (28) days.

.6 One (1) additional test cylinder will be taken during cold weather concreting, and be cured on job site under same conditions of concrete it represents.

.7 One (1) slump test and one (1) air content test will be taken for each set of test cylinders taken.

.8 Testing of concrete will be performed in accordance with CSA-A23.2-14 "Method of Test for Concrete".

.9 Test results will be issued to the Contractor, Departmental Representative and Owner. Test reports are to be numbered consecutively beginning with number one.

.10 Required retesting will be paid for by the Contractor.

.11 The Departmental Representative may order additional testing any time even though the required tests indicate the strength requirements have been met. In this instance, the Owner will pay for those tests that meet the specified requirements and the Contractor will pay for those that do not.

.12 Non-destructive methods for testing concrete shall be according to CSA A23.2-14.

1.2 SHOP DRAWINGS

.1 Submit shop drawings in accordance with General Conditions.

.2 Prepare and submit to the Departmental Representative for review, shop drawings showing detailed layout of form dimensions, form joint fitting, form sealing and placement, location of openings and placement of form ties. Submit a detailed description of the exact construction method to be used, for all area designated as sand blasted finish, exposed aggregate finish and architectural exposed concrete.

2 PRODUCTS

1.3 CONCRETE MATERIALS

.1 *Cement:* Normal - N and Sulphate Resistant - HS Portland Type, to CSA A3000-13 - "Portland Cements".

.2 *Fine and Coarse Aggregates:* conforming to CSA-A23.1-14 - "Concrete Material and Methods of Concrete Construction".

.3 *Water:* clean and free from injurious amounts of oil, alkali, organic matter, or other deleterious material.

1.4 ADMIXTURES

.1 *Air Entrainment:* to ASTM C260-10 - "Air-Entraining Admixtures for Concrete".

.2 *Chemical:* to ASTM C494-15a - "Chemical Admixtures for Concrete"; water reducing, strength increasing type WN - normal setting.

.3 *Pozzolanic Mineral:* to CSA A3000-13 "Supplementary Cementing Materials and Their Use in Concrete Construction", fly ash permitted only as approved by Departmental Representative.

1.5 ACCESSORIES

.1 *Vapour Barrier:* 6 mil polyethylene film, to CGSB 51-34, Type 1 - low permeance heavy duty.

.2 *Curing Compounds:* shall conform to the requirements of the latest issue of ASTM Standard C309.

.3 *Non-shrink Grout:* premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 20 MPa at 3 days and 50 MPa at 28 days. CPD Non Shrink Grout by CPD Construction Products or approved equivalents.

.4 *Void Form:* **to comply with either of the following:**

.1 Biodegradable Void Form: biodegradable, 150 mm deep, structurally sufficient to support weight of wet concrete and other superimposed loads without collapsing until concrete has gained sufficient strength to support these loads after which time the form must promptly degrade. Do not wrap void form. Do not place void form on poly ground sheet. The onus is entirely on the Contractor and Supplier to ensure that the void form is installed to perform as intended.

.2 Compressible Void Form: GeoVoid (below slabs) or Geospan (below grade beams) compressible void form by Plasti-Fab designed for 150 mm soil heave, installed to supplier’s specifications.

.5 *Joint Filler:* pre moulded bituminous impregnated cane fibre board Flexcell as manufactured by Sternson or approved equal.

.6 *Vertical Joint Sealant:* non-sag polyurethane sealant designed for use on vertical surfaces. Vulkem 116 as manufactured by Mameco Ltd. or approved equal. Install strictly in accordance with manufacturer's recommendations.

.7 *Horizontal Joint Sealant:* three component chemically curing, self-levelling, polyurethane joint sealant, THC-900 as manufactured by Tremco. Colour selection by Departmental Representative. Install strictly in accordance with manufacturer's recommendations.

.8 *Concrete Expansion Anchors:* to be Hilti Kwik-Bolt or approved equivalent. Sized as per drawings. Minimum embedment length of all Hilti Kwik-Bolt to be 150 mm unless noted otherwise.

.9 *Concrete Inserts with Bolt Extension:* Concrete inserts to be Hilti HKD Anchors or approved equivalent, sized as detailed on drawings. Bolt extensions to be mild steel threaded extensions sized as detailed on drawings.

.10 *Concrete Patching Material:* pre-packaged, polymer modified, cementitious product containing graded natural aggregate, Planitop X - Rapid Setting Mortar as manufactured by MAPEI Inc.

.11 *Bonding Agent:* Approved high polymer polyvinyl acetate emulsion applied in strict accordance with manufacturer's recommendations for proposed application. Daraweld-C, Acrylbond by Allied or approved equal. Mix bonding agent with Portland cement, sand and water to manufacturer's recommendation to achieve a uniform slurry and scrubbed into the surface. Ensure surface is free from all laitance, dirt, dust, debris, grease or other substances. Clean surface with acid etching and hosing down. Neutralize acid if necessary.

.12 *Cement Grout Capsules:* reinforcing steel detailed to be installed in pre-placed concrete to be anchored using Lafarge Fondu Cement Grout Capsules M3RR.

1.6 CONCRETE MIXES

.1 Mechanical mix concrete in accordance with the requirements of CSA A23.1-14.

.2 All concrete shall have the following minimum properties.

Based on 2010 National Building Code

Location	Exposure Class	Comp. Strength (MPa) and Age	Aggregate	Air Entrainment	Slump
1. Piling	S-2	32 @ 56 d	40	3 – 6	80 ± 30
2. Footings/Pedestals	S-2	32 @ 56 d	20	4 – 7	80 ± 30
3. Grade Beams/Walls	S-2	32 @ 56 d	20	4 – 7	80 ± 30

in Contact with Soil					
4. Interior Walls, Structural Slabs, Beams	N	25 @ 28 d	20	0	80 ± 30
5. Interior Grade Supported Slab	N	28 @ 28 d	20	0	80 ± 30
6. Exterior Grade Supported Sidewalks/Landing Pads, Slabs	C-2	32 @ 28 d	20	5 – 8	80 ± 30
7. Miscellaneous Concrete	N	25 @ 28 d	20	Specify	80 ± 30

All slabs finished with dry shake hardener to contain no artificially entrained air.

.3 Submit proposed mix design to Inspection and Testing Firm and to Departmental Representative two (2) weeks prior to commencement of work. Provide certification that mix proportions selected will produce concrete of specified quality and that strength will comply with CSA A23.1-14.

.4 Each load of ready-mixed or transit-mixed concrete delivered to the project site shall be accompanied by duplicate delivery slips providing the following information:

.1 Name of ready-mix batch plant
.2 Serial number of ticket
.3 Date and truck number
.4 Name of contractor
.5 Specific designation of project
.6 Specific class of concrete
.7 Amount of concrete in cubic metres
.8 Time of loading or first mixing of aggregate, cement and water.

.5 Use accelerating admixtures in cold weather only when approved by Departmental Representative. If approved, the use of admixture will not relax cold weather placement requirements. Use calcium chloride only as approved by the Departmental Representative.

.6 Use set-retarding admixtures during hot weather only when approved by the Departmental Representative.

.7 Use of plasticizers only when approved by Departmental Representative.

Part 2 Execution

2.1 INSPECTION

.1 Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.

.2 Verify that all items to be embedded in concrete are in place.

.3 Verify that concrete may be placed to the lines and elevations indicated on the Drawings, with all required clearance from reinforcement.

2.2 DISCREPANCIES

.1 In the event of discrepancy, immediately notify the Departmental Representative.

.2 Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

2.3 PREPARATION

.1 Remove all wood scraps and debris from the formed areas in which concrete will be placed.

.2 Thoroughly clean the forms to ensure proper placement and bonding of concrete.

.3 Thoroughly wet the forms, except in freezing weather, or oil them; remove all standing water.

.4 Thoroughly clean all transporting and handling equipment.

.5 Construct slabs on grade on prepared subgrade as follows unless noted otherwise.

.1 Strip native soil minimum 300 mm (12”) and proof roll, replacing soft areas with Type 8 granular.

.2 Build base above native soil with Type 8 granular compacted to 96% proctor, placed in maximum 150 mm (6”) lifts.

.3 Top 150 mm (6”) below slab to be Type 32 compacted to 98% proctor.

2.4 PLACING CONCRETE

.1 Place concrete in accordance with requirements of CSA A23.1-14 and as indicated on Drawings.

.2 Notify Departmental Representative and Inspection and Testing Firm a minimum of twenty-four (24) hours prior to commencement of concreting operations.

.3 Ensure all anchors, seats, plates and other items to be cast into concrete are placed, held securely and will not cause undue hardship in placing concrete.

.4 Maintain accurate records of poured concrete items. Record date, location of pour, quantity, air temperature and test samples taken.

.5 Ensure reinforcement, inserts, embedded parts, formed joints and fitments are not disturbed during concrete placement.

.6 Prepare previously placed concrete by cleaning with steel brush.

.7 Pour concrete continuously between predetermined construction and control joints. All construction joints subject to approval of the Departmental Representative.

.8 Approval to place concrete shall be contingent on the formwork and reinforcing steel placement and evidence that the Contractor can place the planned casting without stopping.

.9 Pour slabs on grade in checkerboard pattern or saw cut, as indicated on Drawings. Saw cut control joints within twenty-four (24) hours after finishing. Use 6 mm thick blades, cutting 20 mm into depth of slab thickness. Vacuum clean saw cut prior to installation of sealant.

.10 Excessive honeycomb or embedded debris in concrete is not acceptable. Remove and replace defective concrete. Excessive honeycomb is when eraser end of a pencil fits into cavity.

2.5 COLD WEATHER REQUIREMENTS

.1 When the air temperature is at or below 5^{o} C. or when there is a probability of it falling to this limit during the placing or curing period, cold weather requirements shall be applicable.

.2 Provide heating equipment or heating plant on the job ready for use when concrete is being placed during cold weather. Such equipment shall be adequate for the purpose of maintaining the required temperature during the placing and curing of the concrete. The methods used for heating shall be approved by the Departmental Representative. Equipment inducing carbon monoxide gas in the building shall not be accepted.

.3 Concrete shall not be placed on or against reinforcement, formwork, ground or any surface that is at a temperature less than 5^{o}C.

.4 The temperature of the concrete at all surfaces shall be maintained at not less than 15^{o} C for three (3) days, or at not less than 10^{o} C for five days after placing. Means shall be provided to humidify the air within enclosures and to keep the concrete and formwork continuously moist if dry heat is used. The concrete shall be kept above freezing temperature for a period of seven (7) days, and shall be kept from alternate freezing and thawing for at least fourteen (14) days after placement.

.5 At the end of the specified protection period the temperature of the concrete shall be reduced gradually at a rate not exceeding that shown in CSA A23.1-14.

.6 Accelerator or so-called anti-freeze compounds shall ***not*** be permitted unless otherwise approved in writing by the Departmental Representative.

.7 All protective coverings shall be kept clear of the concrete and form surfaces to permit free circulation of air and shall be maintained intact for at least twenty-four (24) hours after artificial heat is discontinued.

2.6 HOT WEATHER REQUIREMENTS

.1 When the air temperature exceeds 27^{o}, hot weather requirements shall be applicable.

.2 Time of initial mixing to complete discharge shall not exceed 1 hour and 15 minutes and concrete placed shall not exceed 27^{o}.

.3 Concrete forming surfaces and reinforcing steel shall be sprinkled with cool water just prior to placing concrete. Standing water or puddles shall be removed prior to concrete placement.

.4 Special wind protection will be required as directed by the Departmental Representative.

.5 Columns, walls, beams and slabs shall be kept continuously damp for twenty-four (24) hours by normal curing procedures as outlined by this Specification. Slabs cured by the applications of sealing, shall have curing compound applied immediately after finishing of the slab but before evaporation of surface moisture.

.6 The use of water reducing agents shall be subject to the approval of the Departmental Representative when hot weather conditions prevail.

2.7 CONSTRUCTION JOINTS AND WATERSTOPS

.1 The location and detail of all construction joints not detailed on the structural drawings shall be approved by the Departmental Representative.

.2 Where fresh concrete is to be placed against concrete which has set or has partially set, the surface of the set or partially set concrete shall be roughened, cleaned of all laitance, and thoroughly soaked with water prior to the placement of fresh concrete.

.3 In general the construction joints in floor and roof systems shall be located in the middle of the spans of slabs, beams and girders. Proper key and dowels or extensions of reinforcing shall be provided at all construction joints.

.4 Concrete placed in wall and column forms shall be struck off flush with the underside of the floor and roof systems.

.5 Vertical construction joints in foundation walls shall be properly keyed and dowelled and constructed with an approved water stop, properly anchored against displacement during the placement of the concrete and properly sealed at all of the intersections. Splices and intersections of water stop shall be jointed by heat fusion in accordance with approved manufacturer's instructions.

.6 Where new below grade concrete foundation walls abut existing foundation walls, unless specifically detailed otherwise, install new pvc vertical waterstop at the joint by sawcutting and grouting the waterstop into the existing wall and casting into the new wall. Install full height vertical reglet each side of the joint and seal with approved vertical joint sealant over Ethafoam back up rod. Installation shall be in accordance with manufacturer’s recommendations.

2.8 DEFECTIVE CONCRETE

.1 Concrete not meeting the requirements of the Specifications and drawings shall be considered defective concrete.

.2 Concrete not conforming to the lines, details and grade specified herein or as shown on the drawings shall be modified or replaced at the Contractor's expense and to the satisfaction of the Departmental Representative. Finished lines, dimensions and surfaces shall be correct and true within tolerances specified in the Formwork Section of these Specifications.

.3 Concrete not properly placed resulting in excessive honeycombing and all honeycombing and other defects in critical areas of stress, shall be repaired or replaced at the Contractor's expense and to the satisfaction of the Departmental Representative.

.4 Concrete of insufficient strength or improper consistency shall be, as required by the Departmental Representative, subject to one or more of the following:

.1 Changes in mix proportions for the remainder of the work.

.2 Cores drilled and tested from the areas in question as directed by the Departmental Representative and in accordance with CSA A23.2-14. The test results shall be indicative of the in-place concrete.

.3 Load testing of the structural elements in accordance with CSA A23.3-14.

.4 The changes in the mix proportions and the testing shall be at the Contractor's expense.

.5 Concrete failing to meet the strength requirements of this Specification shall be strengthened or replaced at the Contractor's expense and to the satisfaction of the Departmental Representative.

2.9 PATCHING CONCRETE

.1 After the removal of the forms concrete surfaces may be subject to inspection by the Departmental Representative.

.2 All exposed metal form ties, nails, wires, shall be removed, fins broken off and all loose concrete removed.

.3 Form tie pockets shall be thoroughly wetted and patched with patching concrete followed by proper curing.

.4 Honeycombed and other defective surfaces shall be chipped away to a depth of not less than 25 mm with the edges perpendicular to the surface, thoroughly wetted and patched with patching concrete followed by proper curing.

.5 Patching concrete shall be thoroughly compacted into place and finished in such a manner as to match the adjoining concrete. The design mix of the patching concrete shall be approved by the Departmental Representative.

2.10 ANCHOR BOLTS AND WELDMENTS

.1 Set anchor bolts and weldments to the following tolerances:

.1 Alignment: ± 3mm of location, plumb and true.
.2 Projection: ± 6mm of elevations called for.

2.11 BASE PLATES GROUTING

.1 Mix and place as per Manufacturer's specifications. Pack grout tightly under plates and leave no voids. Neatly finish edges.

2.12 FOOTINGS

.1 All footings to be placed on undisturbed material. Any disturbed bearing material to be compacted to in situ density.

.2 Adequate precautions shall be taken by the Contractor to prevent the soil at foundation level from drying to becoming wet from surface water prior to placement of concrete.

.3 The Contractor shall ensure that the soil below the foundation is not allowed to freeze, either before or after construction. Under no circumstances should concrete be placed on frozen soil.

END OF SECTION

1 GENERAL

1.00 WORK INCLUDED

.1 Finish separate floor toppings, slabs on fill and monolithic floor slabs.

.2 Apply concrete hardener, sealer.

.3 Cure finished surfaces.

1.01 RELATED REQUIREMENTS

.1 Concrete Forming and Accessories – Section 03 10 00
.2 Insulated Concrete Forms - Section 03 11 19
.3 Concrete Reinforcing - Section 03 20 00
.4 Cast-in-Place Concrete - Section 03 30 00.09

1.02 REFERENCE STANDARDS

.1 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-25.20-[95], Surface Sealer for Floors.

.2 CSA International
.1 CAN/CSA-A23.1-14, Concrete Materials and Methods of Concrete Construction//Methods of Test for Concrete.

Part 1 1.04 Products

1.1 COMPOUNDS/HARDENERS/SEALERS

.1 *Curing Compound:* chlorinated liquid rubber to CGSB 90-GP-1a, Type 1.

.2 *Non-metallic Surface Sealer:* premixed natural mineral type; "Eurocure 700, by Elsro Ltd., "Flor Seal" by Sternson Ltd., "Master Seal" by Master Builders, "Sealtight CS-309" by W. R. Meadows or approved equal.

.3 *Penetrating Epoxy Sealer:* Acceptable products "905 Penetrating Epoxy" by Cementation Company (Canada) Ltd., or Cappar's Niklepoxy Penetrant Sealer".

.4 *Horizontal Joint Sealer*: three component, chemically curing, self-levelling polyurethane joint sealant. THC-900 as manufactured by Tremco. Color selection by Departmental Representative. Install strictly in accordance with manufacturer's recommendations.

.5 *Bonding Agent:* Approved high polymere polyvinyl acetate emulsion applied in strict accordance with manufacturer's recommendations for proposed application. Daraweld - C or approved equal.

Part 2 Execution

2.1 FLOOR FINISHING

.1 Finish concrete floor surfaces in accordance with CSA A23.1-14.

.2 Uniformly spread, screed and float concrete. Do not use grate tampers or mesh rollers. Do not spread concrete by vibration. Bring surfaces to levels indicated on Drawings.

.3 Apply Plain to concrete floors noted as receiving hardener. Apply dry shake in two passes at the rate of 5.0 kg/m2 (100 lb/100 Ft^2) or as recommended by manufacturer for Normal Traffic Conditions. After application of shake hardener is complete, apply minimum one coat of sealer. Application of both the dry shake hardener and sealer is to be strictly in accordance with manufacturer's recommendations.

.4 Unless otherwise noted, all concrete floors which are noted as exposed concrete, or as receiving carpeting, resilient flooring or hardener are to be final finished to a hard, smooth dense trowelled surface free from blemishes. Final finish to achieve a “flat” floor in accordance with CSA A23.1-14, Table 21 Class A straight edge method to produce floor surface of pleasing characteristics.

.5 All concrete slabs noted as receiving thin-set quarry tile finish are to be final finished with a swirl trowel finish plus fine hair brooming to give a surface finish to achieve a “flat” floor in accordance with CSA A23.1-14, Clause 7.6 maintaining surface flatness with maximum variation of 5 mm in 3 M and absolute maximum of ± 6 mm.

.6 All concrete slabs noted as receiving application of Penetrating Epoxy Sealer are to be final finished with a swirl trowel finish suitable for the application of penetrating type epoxy sealer. Slab is to be finished to a hard, smooth surface free from blemishes. Final finish to achieve a “flat” floor in accordance with CSA A23.1, Table 21, Class B to produce floor surface of pleasing appearance, easily cleaned and maintained with high wear-resistance qualities. Maintain surface flatness with maximum variation of 5 mm in 3 M and absolute maximum of ± 6 mm. Co-ordinate suitable curing method for slabs where penetrating type of sealer is used. Supplier's representative must be on site prior to application to advise on finishing procedures and application rate. Apply sealer at rate recommended for medium traffic in a minimum of two passes.

.7 Apply concrete Surface Sealer on floor surfaces noted as exposed concrete. Apply strictly in accordance with manufacturer's recommendations.

.8 In areas with floor drains, maintain floor level at walls and pitch surfaces uniformly to drain at 5 mm/M nominal unless indicated otherwise on Drawings.

2.2 CURING AND PROTECTION

.1 All equipment needed for the curing and protection of the concrete shall be on hand and ready for use before actual placing is started.

.2 All exposed non-formed surfaces shall be kept continuously moist for a minimum of seven consecutive days after placement of the concrete. The water for curing shall be clean and free from any materials that will cause staining or discolouration of the concrete. A liquid, membrane forming, curing compound shall be used under circumstances where the application of moisture is impracticable and where such compounds will not jeopardize the appearance of the concrete nor the bonding of future floor finishes.

.3 Special curing techniques shall be employed when the concrete is subject to drying conditions such as high temperatures, low relative humidity and high winds. Concrete wall and column forms shall be kept continuously moist.

.4 Freshly placed concrete shall be protected from the effects of direct sunshine, drying winds, cold, excessive heat and running water by the use of adequate tarpaulins or other suitable material to cover completely or enclose all freshly finished surfaces until the end of the curing period specified.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 03 30 00 – Cast-in-Place Concrete
.2 Section 09 90 00 - Painting and Finishing

1.02 QUALITY ASSURANCE

.1 CSA Standard S16-14 - “Design of Steel Structures”.

.2 CSA G40.21-13 - “Structural Quality Steel”.

.3 ASTM Standard A325M - “High Strength Bolts for Structural Steel Joints including Suitable Nuts and Plane Hardened Washers”.

.4 CSA Standard W59-13 - ‘Welded Steel Construction”.

.5 CSA Standard W47.1-09 (R2014) - “Certification of Companies for Fusion Welding of Steel Structures”.

.6 ASTM Standard A53 - “Welded and Seamless Steel Pipe”.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Shop Drawings:
.1 Submit shop drawings in accordance with General Conditions.

.2 Clearly indicate sizes, spacing and locations of structural members, connections, attachments, anchorages, framed openings and size and type of fasteners and welds.

.3 Indicate all shop and erection details including cuts, copes, connections, holes, threaded fasteners and welds.

.4 Show all welds, both shop and field, by the currently recommended symbols of the Canadian Welding Bureau.

.5 Provide drawings stamped and signed by a Professional Engineer registered in the Province of Saskatchewan.

.6 Review of shop drawings for size and arrangement of principal and auxiliary members only. Such review will not relieve the Contractor of responsibility for general and detail dimension and fit, or any errors or omissions.

1.04 DELIVERY, STORAGE AND HANDLING

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

.2 Deliver materials in manufacturer's original, undamaged containers with identification labels intact.

2 PRODUCTS

2.01 MATERIALS AND COMPONENTS

.1 *Standard Rolled Sections:* new material conforming to CSA G40.21-13, Grade 350W.

.2 *Hollow Structural Sections:* new material conforming to CSA G40.21-13, Grade 350W, Class C.

.3 *Steel Pipe Sections:* new material conforming to ASTM Standard A53, Grade 241.

.4 *Base and Cap Plates:* new material conforming to CSA G40.21-13, Grade 300W.

.5 *Beam End Plates, Ledger Angles and Miscellaneous Steel:* new material conforming to CSA G40.21-13, Grade 300W.

.6 *Anchor Bolts:* new material conforming to CSA G40.21-13, Grade 260W.

.7 *Bolts, Nuts and Washers:* high strength type recommended for structural steel joints, conforming to requirements of ASTM A325-14.

.8 *Paint for Primer:* shall be grey (unless approved otherwise) and meet requirements of one of the following:
.1 CGSB 1-GP-40d, Primer, Structural Steel, oil alkyd type.
.2 CISC/CPMA Standard 1-73a, quick drying one-coat paint for use on structural steel.

.9 *Shop and Field Studs:* shall be Nelson headed anchors to ASTM A108-13 or approved equivalent. Sizes as detailed on drawings.

2.02 FABRICATION

.1 Fabricate structural steel members in accordance with building design drawings and all requirements of CAN/CSA S16-14. Welding to conform to CSA W59-13 “Welded Steel Construction”. Verify all dimensions prior to fabrication.

.2 No cutting of openings in structural members except as shown on structural drawings. Reinforce openings to maintain required design strength.

.3 Accurately cut and mill column ends to assure full contact of bearing surfaces.

.4 Camber horizontal members as specified on drawings. Mill camber up where not specifically detailed.

.5 All bolted connections to be “bearing” type connections except where subject to stress reversal which are to be “slip resistant” type connections.

.6 All connections showing combined axial load (tension or compression) across the joint to be designed for loads shown. Such connection to be bolted through columns only.

.7 All beams to be connected for the greater of the following conditions.
.1 Loads shown on drawings.
.2 50% of the total uniformly distributed load resistance of the member.
.3 Half depth of the connected member using M20 bolts (minimum two bolts) in double shear.

.8 Shop installed shear studs to be installed in strict conformance with requirements of CSA Standard W59. Refer to Part 3 Execution for additional requirements.

.9 Fabricate all glued-laminated timber brackets supported directly from structural steel. Co-ordinate design and details of connections with glulam supplier.

.11 Tolerances

.1 Tolerances of all other structural steel shall be maintained strictly in accordance with CAN/CSA S16-14.

.12 All exposed steel and all related bridging and bracing shall be fabricated with clean, neat fitting welded connections.

3 EXECUTION

1.1 ERECTION

.1 Erect structural steel in accordance with building design drawings and all requirements on CAN/CSA S16-14.

.2 Make adequate provision for all erection loads and for sufficient temporary bracing to maintain structure safe, plumb and in true alignment until completion of erection. Leave such bracing in place as long as required for safety and integrity of the structure.

.3 As erection progresses, securely bolt work to take care of full design loads and to provide structural integrity as required.

.4 Use high tensile bolts for field connections unless otherwise noted on building design drawings.

.5 Set all baseplates which are shop welded to columns to proper elevation on steel shims. Maximum tolerance from stated elevations to be ± 2mm.

6. Tolerances

.1 Tolerance of all other structural steel shall be maintained strictly in accordance with CAN/CSA S16-14.

.8 After erection, prime all welds, abrasions, bolted connections and all other surfaces not shop primed, except surfaces to be in contact with concrete.

.9 Obtain written permission of Departmental Representative prior to altering or field welding of structural members.

3.01 FIELD QUALITY CONTROL

.1 Provide safe access and working areas for testing on site, as required by Departmental Representative.

3.02 CLEANING

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

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 06 10 00 - Rough Carpentry

1.02 REFERENCE STANDARDS

.1 ASTM International
  .1 ASTM A 53/A 53M-12, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
  .2 ASTM A 269M-15a, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

.3 CSA Group
  .1 CSA G40.20-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.6 ULC Standards
  .1 UL 2768-2011, Architectural Surface Coatings.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
  .1 Submit manufacturer's instructions, printed product literature and data.

.3 Shop Drawings:
  .1 Submit drawings that include plans, elevations, sections and attachment details.
  .2 Samples for initial selection: For products involving selection of color, texture or design, fittings and brackets.

1.04 QUALITY ASSURANCE

.1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.

.2 Structural Performance: Engineer, fabricate and install handrails, guardrails and railing systems to withstand the structural loading required by applicable codes.

.3 Installer Requirements: Installed by manufacturer certified installer.

.4 Field measurements: Verify actual locations of walls and other construction contiguous with railings by field measurements before fabrication and indicate measurements on shop drawings.

1.05 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section

01 61 00 - Common Product Requirements.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

2 PRODUCTS

2.01 MATERIALS

.1 Aluminum handrails, guardrails and railing systems including connectors, fasteners and required accessories.

.2 Acceptable Manufacturer: Duradek/Durarail Canada Ltd. Or approved equal.

2.02 FABRICATION

.1 General: provide products free from surface blemishes where exposed to view in the finished installation.

.2 Aluminum Handrail and railing system: Component Picket system by Durarail or approved equal.

.3 Colour: white

2.03 Components:

.1 General: Provide all aluminum components of same alloy.

.2 Posts: Aluminum, sizes indicated on the Drawings; welded bases.

.3 Rails: Aluminum, sizes indicated on approved shop drawings.
- i. Top rails continuous over posts.
- ii. Profile: Standard Square.
- iii. Bottom Rail Profiles: Unspliced lengths between posts.
- iv. Profile. Standard square

.4 Pickets: Aluminum, sizes indicated on the Drawings.

2.04 Accessories:

.1 Screws: Colour matche, stainless steel.

.2 Anchors and inserts: As required to support work specified, in accord with approved shop drwings

.3 Fittings and fasteners: Same basic material as parts being joined, unless otherwise indicated. Do not use metals corrosive or incompatible with materials being fastened.

3 FABRICATION

.1 Fabricate handrails and railing systems to comply with manufacturer's printed requirements, project design requirements, details, dimensions, finish and member sizes, including post spacing and anchorage, but not less than the structural requirements to support loading.

.2 Clearly mark component units for site assembly and installation.

.3 Use connections that maintain structural capacity of joined members.

3.01 FINISH

.1 Powder Coated Finish: Factory electrostatically-applied, color as specified.

.2 Premium Wood Finish: Factory applied, color as specified. Conforms to AAMA 2604/2605.

4 EXECUTION

4.01 EXAMINATION

.1 Do not begin installation until substrates have been properly prepared.

.2 If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

5 PREPARATION

.1 Prepare surrounding construction to receive railing system installations to comply with manufacturer's requirements.

.2 Review and coordinate setting drawings, shop drawings, templates, and instructions for assembly and installation of railing system and related items to be embedded in concrete and masonry.

INSTALLATION

.1 Install railing system and related components in strict accordance with manufacturer's printed installation instructions and approved project shop drawings.

.2 Preassemble railing system, including posts, pickets, and panels where shown, in easy to lift sections whenever possible.

.3 Align rails so that variations from level for horizontal members, and from parallel with rake of steps and ramps for sloping members, do not exceed 6 mm in 305 mm.

.4 Separate aluminum from building materials where electrolytic action may occur by means of asphaltic paint or other approved method.

.5 Adjust, level and securely install railing system components.

.6 Provide for thermal expansion and contraction by use of expansion joints or gaps in rails. Strictly adhere to manufacturer’s instructins for locations of expansion joints and fastening of expansion sleeves.

.7 Install bottom rails in unspliced lengths between posts.

.8 Install post of continuous sections from mounting base to top rail.

6 EXECUTION

6.01 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts acceptable for metal fabrications installation in accordance with manufacturer's written instructions.

6.02 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

6.03 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by metal fabrications installation.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 06 10 00 - Rough Carpentry

1.02 REFERENCE STANDARDS

.1 ASTM International
  .1 ASTM A 53/A 53M-12, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
  .2 ASTM A 269M-15a, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

.3 CSA Group
  .1 CSA G40.20-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.6 ULC Standards
  .1 UL 2768-2011, Architectural Surface Coatings.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
  .1 Submit manufacturer's instructions, printed product literature and data.

.3 Shop Drawings:
  .1 Submit drawings that include plans, elevations, sections and attachment details.
  .2 Samples for initial selection: For products involving selection of color, texture or design, fittings and brackets.

1.04 QUALITY ASSURANCE

.1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.

.2 Structural Performance: Engineer, fabricate and install handrails, guardrails and railing systems to withstand the structural loading required by applicable codes.

.3 Installer Requirements: Installed by manufacturer certified installer.

.4 Field measurements: Verify actual locations of walls and other construction contiguous with railings by field measurements before fabrication and indicate measurements on shop drawings.

1.05 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section

01 61 00 - Common Product Requirements.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

2 PRODUCTS

2.01 MATERIALS

.1 Aluminum handrails, guardrails and railing systems including connectors, fasteners and required accessories.

.2 Acceptable Manufacturer: Duradek/Durarail Canada Ltd. Or approved equal.

2.02 FABRICATION

.1 General: provide products free from surface blemishes where exposed to view in the finished installation.

.2 Aluminum Handrail and railing system: Component Picket system by Durarail or approved equal.

.3 Colour: White.

2.03 Components:

.1 General: Provide all aluminum components of same alloy.

.2 Posts: Aluminum, sizes indicated on the Drawings; welded bases.

.3 Rails: Aluminum, sizes indicated on approved shop drawings.
- i. Top rails continuous over posts.
- ii. Profile: Standard Square.
- iii. Bottom Rail Profiles: Unspliced lengths between posts.
- iv. Profile. Standard square

.4 Pickets: Aluminum, sizes indicated on the Drawings.

2.04 Accessories:

.1 Screws: Colour matche, stainless steel.

.2 Anchors and inserts: As required to support work specified, in accord with approved shop drwings

.3 Fittings and fasteners: Same basic material as parts being joined, unless otherwise indicated. Do not use metals corrosive or incompatible with materials being fastened.

3 EXECUTION

3.01 FABRICATION

.1 Fabricate handrails and railing systems to comply with manufacturer's printed requirements, project design requirements, details, dimensions, finish and member sizes, including post spacing and anchorage, but not less than the structural requirements to support loading.

.2 Clearly mark component units for site assembly and installation.

.3 Use connections that maintain structural capacity of joined members.

3.02 FINISH

.1 Powder Coated Finish: Factory electrostatically-applied, color as specified.

.2 Premium Wood Finish: Factory applied, color as specified. Conforms to AAMA 2604/2605.

3.03 EXAMINATION

.1 Do not begin installation until substrates have been properly prepared.

.2 If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.04 PREPARATION

.1 Prepare surrounding construction to receive railing system installations to comply with manufacturer's requirements.

.2 Review and coordinate setting drawings, shop drawings, templates, and instructions for assembly and installation of railing system and related items to be embedded in concrete and masonry.

3.05 INSTALLATION

.1 Install railing system and related components in strict accordance with manufacturer's printed installation instructions and approved project shop drawings.

.2 Preassemble railing system, including posts, pickets, and panels where shown, in easy to lift sections whenever possible.

.3 Align rails so that variations from level for horizontal members, and from parallel with rake of steps and ramps for sloping members, do not exceed 6 mm in 305 mm.

.4 Separate aluminum from building materials where electrolytic action may occur by means of asphaltic paint or other approved method.

.5 Adjust, level and securely install railing system components.

.6 Provide for thermal expansion and contraction by use of expansion joints or gaps in rails. Strictly adhere to manufacturer’s instructins for locations of expansion joints and fastening of expansion sleeves.

.7 Install bottom rails in unspliced lengths between posts.

.8 Install post of continuous sections from mounting base to top rail.

3.06 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts acceptable for metal fabrications installation in accordance with manufacturer's written instructions.

3.07 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.08 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by metal fabrications installation.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 06 10 53 – Miscellaneous Rough Carpentry

1.02 REFERENCE STANDARDS

.1 ASTM International
  .1 ASTM A 123-15 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  .2 ASTM F 2329/F 2329M-[15] Standard Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners

.2 CSA Group
  .1 CSA O80 Series-2015, Wood Preservation.

.3 Underwriters Laboratory of Canada (ULC)
  .1 CAN/ULC-S102 Surface Burning Characteristics of Building Materials and Assemblies.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

1.04 DELIVERY, STORAGE AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with product category, manufacturer's name and address.

.3 Waste Management and Disposal:
  .1 Separate waste materials for reuse.
  .2 Store separated reusable treated wood waste convenient to cutting station and work areas.

2 PRODUCTS

2.01 PRESERVATIVE TREATED WOOD MATERIALS AND APPLICATION

.1 Decking, above ground, exterior:
  .1 Use Category: 3.2
  .2 Clause: 9.2 and 9.2.2.5

.2 Deck joists and support posts in ground and fresh water contact:
  .1 Use Category: 4.1

.2 Clause: 9.2 and 9.2.2.5

.3 Furring strips, above ground, exterior, between cladding and weather barrier:
.1 Use Category: 3.2
.2 Clause: 9.2 and 9.2.2.5

.4 Building construction, interior, damp:
.1 Use Category: 2
.2 Clause: 9.

2.02 CORROSION PROTECTION FOR CONNECTORS AND FASTENERS FOR USE WITH TREATED WOOD

.1 Connectors: Fabricated from steel sheet galvanized in accordance with ASTM A 653 to minimum G185.

.2 Fasteners: Hot dip galvanized to ASTM A 153/A 153M Class C and D.

2.03 PRESERVATIVE FOR FIELD TREATMENT

.1 Type recommended by manufacturer to suit specified pressure treated products.

3 EXECUTION

3.01 CONSTRUCTION

.1 Use connectors and fasteners with specified corrosion protection in all construction with treated wood products.

.2 Provide barrier membrane where indicated.

3.02 FIELD TREATMENT

.1 Comply with AWPA M4 and revisions specified in CSA O80 Series, Supplementary Requirements to AWPA M2.

.2 Re-treat surfaces exposed by cutting, trimming or boring with liberal brush application of recommended preservative before installation.

.3 Remove chemical deposits from surfaces of treated wood to receive applied finish.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 06 05 73 – Wood Treatment
.2 Section 06 17 53 - Shop Fabricated Wood Trusses
.3 Section 06 40 00 - Finish Carpentry
.4 Section 06 40 00 - Architectural Woodwork
.5 Section 07 21 16 - Blanket Insulation
.2 Section 07 26 00 - Vapour Retarders
.3 Section 07 27 00 - Air Barriers

1.02 REFERENCE STANDARDS

.1 American National Standards Institute/National Particleboard Association (ANSI/NPA)
  .1 ANSI/NPA A208.1-2009 Particleboard.

.2 ASTM International
  .1 ASTM A 123/A 123M-15, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  .2 ASTM A 307-14 Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60000 PSI Tensile Strength.
  .3 ASTM D 5456-14b, Standard Specification for Evaluation of Structural Composite Lumber Products.
  .4 ASTM F 1667-13 Standard Specification for Driven Fasteners: Nails, Spikes and Staples.

.3 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB-11.3-M87, Hardboard.
  .2 CAN/CGSB-71.26-M88, Adhesive for Field-Gluing Plywood to Lumber Framing for Floor Systems.

.4 Canadian Wood Council
  .1 Wood Design Manual 2010 (R2014) Edition
  .2 Engineering Guide for Wood Frame Construction 2014

.5 CSA International
  .1 CAN/CSA-A123.2-03(R2013), Asphalt Coated Roofing Sheets.
  .2 CSA B111-1974 (R2003), Wire Nails, Spikes and Staples.
  .3 CSA O86-14 Engineered Design in Wood
  .4 CSA O112.9-10, Evaluation of Adhesives for Structural Wood Products.
  .5 CSA O141-05(R2014), Softwood Lumber.
  .6 CSA O151-09(R2014), Canadian Softwood Plywood.
  .7 CSA O325-07(R2012), Construction Sheathing.

.6 Forest Stewardship Council (FSC)
  .1 FSC-STD-01-001-2004, FSC Principle and Criteria for Forest Stewardship.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for wood products and accessories and include product characteristics, performance criteria, physical size, finish and limitations.
.2 Include manufacturer's pre-engineered floor, ceiling and roof joist span charts, and manufacturer's pre-engineered installation details.
.3 Submit certified test reports for prefabricated structural members from approved independent laboratory indicating compliance with specifications for specified performance characteristics and physical properties.
.4 Submit manufacturer's installation instructions.

.3 Shop Drawings:
.1 For structural applications or conditions beyond the scope of the manufacturer's pre-engineered design information, submit drawings stamped and signed by professional engineer registered or licensed in Province of Saskatchewan, Canada.
.2 Include on drawings:
.1 Design data in accordance with CAN/CSA-O86 and CWC Engineering Guide for Wood Frame Construction.
.2 Indicate configuration and spacing of joists, hanger and connector types, fasteners, locations and design values; bearing details.
.3 Submit stress diagrams or print out of computer design indicating design loads for members. Indicate allowable load and stress increase.
.4 Indicate arrangement of webs or other members to accommodate ducts and other specialties.

1.05 DELIVERY, STORAGE, AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
.1 Store materials off ground in dry location and in accordance with manufacturer's recommendations.
.2 Store materials off ground with moisture barrier at both ground level and as a cover forming a well-ventilated enclosure, with drainage to prevent standing water.
.3 Store wood I-beams and I-joists on edge.
.4 Stack, lift, brace, cut and notch engineered lumber products in strict accordance with manufacturer's instructions and recommendations.
.5 Replace defective or damaged materials with new.

2 PRODUCTS

2.02 STRUCTURAL FRAMING

.1 Lumber: softwood, S4S, moisture content 19% (S-dry) or less in accordance with following standards:

.1 CSA O141.
.2 NLGA Standard Grading Rules for Canadian Lumber.

.2 Framing and board lumber: in accordance with NBC.

2.03 FURRING AND BLOCKING

.1 Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers:
.1 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 Where indicated, provide pressure treated materials for furring, blocking, nailing strips, grounds, rough bucks, curbs, fascia backing and sleepers.

2.04 PANEL MATERIALS AND APPLICATION

.1 Roof sheathing:
.1 OSB, 11 mm (7/16”) thick, c/w H-clips.

.2 Exterior wall sheathing:
.1 OSB, 9.5 mm (3/8”) thick.

.3 Subflooring:
.2 OSB, T & G edge, 19 mm (3/4”) thick.

.4 Underlay:
.1 Hardboard, 8 mm.

.6 Electrical equipment mounting boards:
.1 Plywood, square edge 19 mm (3/4”) thick.

2.06 ACCESSORIES

.1 Subflooring adhesive: to CAN/CGSB-71.26, cartridge loaded.

.2 General purpose adhesive: to CSA O112.9.

.3 Nails, spikes and staples: to ASTM F 1667.

.4 Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and washers.

.5 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, explosive actuated fastening devices, recommended for purpose by manufacturer.

.6 Joist hangers, connectors and fasteners: in accordance with accepted shop drawings, minimum 1 mm thick sheet steel, galvanized to minimum ZF001 coating designation.

.7 Nailing discs: flat caps, minimum 25 mm diameter, minimum 0.4 mm thick, fibre, formed to prevent dishing. Bell or cup shapes not acceptable.

.8 Roof sheathing H-Clips: formed "H" shape, thickness to suit panel material, extruded 6063-T6 aluminum alloy type approved by Departmental Representative.

.9 Fastener Finishes:
.1 Galvanizing: to ASTM A 123/A 123M, ASTM A 653, use galvanized fasteners for exterior work

.10 Wood Preservative: as specified in Section 06 05 73 - Wood Treatment.

.11 Sill Plate Gasket: Closed cell polyethylene foam gasket in width to match sill plate width, 6 mm thick.

3 EXECUTION

3.01 EXAMINATION

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

3.02 SYSTEMS INTEGRATION

.1 Install air barrier and vapour retarder sheeting around framing members to ensure continuity of protection and to lap and seal to main sheets.

.2 Install insulation in exterior wall framing cavities that will not be accessible after completion of framing.

.3 Install sill plate gasket in continuous lengths between concrete surfaces and wood framing.

3.03 FRAMING INSTALLATION

.1 Install engineered framing and plant fabricated structural wood components, including all hangers, connectors and fasteners, in accordance with accepted shop drawings and manufacturers' instructions.

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

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

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

.5 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.

.7 Countersink bolts where necessary to provide clearance for other work.

.8 Install specified panel product for each application.

.9 Install subflooring with panel end-joints located on solid bearing, staggered at least 800 mm.

.1 In addition to mechanical fasteners, floor panels secure floor subflooring to floor joists using glue. Place continuous adhesive bead in accordance with manufacturer's instructions, single-bead on each joist and double-bead on joists where panel ends butt.

.10 Install wall sheathing in accordance with manufacturer's printed instructions and accepted shop drawings.

.11 Install roof sheathing in accordance with requirements of NBC and accepted shop drawings.

.12 Use nailing disks for soft sheathing as recommended by sheathing manufacturer.

3.05 FURRING AND BLOCKING

.1 Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding electrical equipment mounting boards, and other work as required.

.2 Install furring to support siding or trims applied vertically, where there is no blocking and where sheathing is not suitable for direct nailing.

.3 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.

.4 Install wood cants, fascia backing, nailers, curbs and other wood supports as required and secure using galvanized fasteners.

3.06 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.07 WASTE MANAGEMENT

.1 Re-use scrap lumber to the greatest extent possible. Separate scrap lumber for use on site as accessory components, including: shims, bracing, and blocking.

.3 Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill. Prevent saw dust and wood shavings from entering the storm drainage system.

.4 Do not burn scrap lumber that has been pressure treated.

3.08 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by rough carpentry installation.

END OF SECTION

Part 1 GENERAL

1.1 GENERAL REQUIREMENTS

.1 The General Conditions of the Contract, Supplementary General Conditions and General Requirements are hereby made part of this section.

1.2 WORK INCLUDED

.1 Supply, fabricate and erect dimensional lumber trusses shown on drawings.

.2 Examine the work upon which the work is this division depends and report any defects to the Departmental Representative. The work of this division shall not commence until all defects have been corrected.

.3 Commencement of the work shall imply acceptance of conditions.

1.3 RELATED WORK

.1 Section 05 12 23 - Structural Steel
.2 Section 06 10 00 – Miscellaneous Rough Carpentry

1.4 QUALITY ASSURANCE

.1 Unless detailed otherwise, all roof trusses to be designed to support all applicable dead loads and snow loads, including drift conditions, in accordance with current NBC.

.2 Unless detailed otherwise, all floor joists to be designed to support all applicable dead loads, partition loads, and all live loads for designated occupancies in accordance with current NBC.

.3 All design in accordance with Part 4 of the National Building Code 2010 and CSA O86 "Engineering Design in Wood".

.4 Complete design calculations showing layout, forces and stress control points to be provided to Departmental Representative for review prior to fabrication.

.5 Design of roof trusses to be under the direct supervision of a Registered Professional Engineer licensed for practice in Saskatchewan.

.6 Unless noted otherwise, all trusses and joists to be designed for maximum liveload deflection of L/360.

1.5 SHOP DRAWINGS

.1 Prepare and check shop drawings including anchorage and erection drawings. Clearly indicate dimensioned profiles, member sizes, connection details, spacing, material grades and other information

pertinent to design. Submit shop drawings in accordance with General Conditions.

.2 Roof truss shop drawings must be reviewed by General Contractor and Mechanical Contractor to ensure that the size and locations of all duct penetrations are identified and co-ordinated. Final roof truss shop drawings must reflect framing to accommodate all such conditions.

.3 Review of drawings to be for size and arrangement of principal and auxiliary members only. Review will not relieve Contractor of responsibility for general and detailed dimensions and fit or any errors or omissions.

Part 2 PRODUCTS

2.1 MATERIALS

.1 Structural wood members to CSA Standard O141-05 (R2014) "Softwood Lumber" graded in accordance with NLGA Grading Rules, or machine stress-rated material, kiln dried to maximum 19% moisture content. All joints to be full strength of section.

.2 Connection may be proprietary systems of steel to minimum ASTM A307. Material and size to requirements of design. Submit data to satisfaction of the Departmental Representative to substantiate connection design.

.3 Pre-manufactured double-grip framing anchors, galvanized, shall be used to tie down trusses at all bearing locations.

.4 Bridging to be horizontal wood members at top and bottom chord as required by design and indicated on shop drawings. Cross-brace as required.

Part 3 EXECUTION

3.1 STORAGE

.1 Store in vertical position and completely protected from weather. Handle in such a manner that no damage will be done to materials or structure.

3.2 FABRICATION

.1 Wood trusses to be custom design Warren, Pratt or Howe Truss with tapered and pitched profiles as detailed.

.2 Wood trusses to be manufactured in a plant subject to the approval of the Departmental Representative.

.3 All connections as detailed on approved shop drawings.

.4 Camber wood trusses for full dead load plus three-eights (⅜) live load.

.5 Supply for erection all pre-cut blocking, bridging and double-grip framing anchors.

3.3 ERECTION

.1 Erect plumb and true; use temporary bracing where required to take care of all loads to which structure may be subjected, including erection equipment, and operation of same.

.2 Wind forces on building permanently carried out by walls and decks. Provide temporary stability struts if required as work progresses and maintain in place until stability is provided by permanent structure.

.3 As erection progresses, securely fasten work by means of double-grip framing anchors to take care of all dead, wind and erection stresses.

.4 Make proper provision for safety carrying piles of material, erection equipment of other loads during erection.

.5 Manufacturer to provide fully qualified representative to ensure conformance with design intent. Manufacturer's representative to inspect completed installation and certify acceptance of work. All shop drawings to be sealed by a professional engineer registered in the Province of Saskatchewan.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 06 10 53 - Miscellaneous Rough Carpentry
.2 Section 06 40 00 – Architectural Woodwork
.3 Section 09 91 23 - Interior Painting
.4 Section 07 44 00 – Cementitious Panels

1.02 REFERENCE STANDARDS

.1 Architectural Woodwork Manufacturers Association of Canada (AWMAC) and Architectural Woodwork Institute (AWI)
  .1 Architectural Woodwork Quality Standards, 2nd edition, 2014.

.2 ASTM F 1667-13 Standard Specification for Driven Fasteners: Nails, Spikes and Staples.

.3 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB-11.3-M87, Hardboard.

.4 CSA International
  .1 CSA O121-08(R2013), Douglas Fir Plywood.
  .2 CSA O151-09(R2014), Canadian Softwood Plywood.

.5 Forest Stewardship Council (FSC)
  .1 FSC-STD-01-001-2004, FSC Principle and Criteria for Forest Stewardship.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
  .1 Submit manufacturer's instructions, printed product literature, data sheets and catalogue pages for specified products. Include product characteristics, performance criteria, dimensions and profiles, finish and limitations on use.

.3 Shop Drawings:
  .1 Prepare and submit shop drawings in general accordance with AWMAC AWS manual.
  .2 Indicate profiles and dimensions, assembly techniques, jointing, methods of fastening, terminations and other related details.
  .3 Indicate materials, thicknesses, finishes and hardware.
  .4 Include schedule or key plan.
  .5 Show profiles, elevations and details at scales recommended by AWMAC AWS.
  .6 Where necessary, show location and type of blocking and backing required within supporting assemblies.

.4 Samples:
  .1 Submit 300 mm long representative samples of each typical item of finish carpentry.
    .1 Standing and running trim: 300 mm long.

.2 Panel materials: 300 mm x 300 mm.

.2 Shop applied coating samples:

.1 For transparent finish, submit triplicate samples of each species and cut of wood veneer to be used, finished to match project sample.

.3 Samples for site applied finish:

.1 Furnish samples of each finish carpentry item and composite panel material to Contractor for preparation of field applied finish samples.

.5 Certifications: submit certificates signed by manufacturer certifying materials comply with specified performance characteristics, physical properties and requirements of referenced standards.

1.04 QUALITY ASSURANCE

.1 Perform Work of this Section by finish carpentry contractor with minimum 5 years of current experience.

1.05 DELIVERY, STORAGE AND HANDLING

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

.2 Deliver finish carpentry materials only when area of work is enclosed, plaster and concrete work is dry, area is broom clean and site environmental conditions are acceptable for installation.

.3 Storage and Handling Requirements:

.1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Maintain indoor temperature and humidity within range recommended by AWS for location of the Work.

.3 Store products on site as specified for minimum 72 hours prior to installation.

.4 Store and protect finish carpentry products from moisture, nicks, scratches, and blemishes.

.5 Replace defective or damaged materials with new.

2 PRODUCTS

2.01 SUSTAINABILITY CHARACTERISTICS

.1 Solid lumber and composite wood products: in accordance with CAN/CSA-Z809 or FSC or SFI.

.2 Composite wood products: formaldehyde free within the following limits when tested in accordance with ASTM E 1333.

.1 Hardwood plywood with veneer core (HWPW-VC): 0.05 ppm.

.2 Hardwood plywood with composite core (HWPW-CC): 0.05 ppm.

.3 Particleboard (PB): 0.09 ppm.

.4 Medium density fibreboard (MDF): 0.11 ppm.

.5 Thin (less than 8 mm) medium density fibreboard (tMDF): 0.13 ppm.

.3 Coatings

.1 Clear Wood Finishes: VOC limit 350 g/L maximum to GS-11.
.2 Paints: VOC limit 50 g/L maximum to GS-11.

2.02 QUALITY GRADE

.1 Provide all materials and perform all work of this Section in accordance with AWMAC AWS Custom Grade.

.2 In case of conflict between Contract Documents and AWMAC AWS grade requirements, Contract Documents govern.

2.03 MATERIALS

.1 Softwood and hardwood lumber: Sound lumber to specified AWS grade requirements, kiln-dried to moisture content recommended for location of the Work.
.1 Machine stress-rated lumber is acceptable for all purposes.

2.04 MANUFACTURED TRIM

.1 Interior Standing and running trim:
.1 Material:
.1 Solid stock for transparent finish: Maple
.2 Door and window casings: Profile: Alexandria moulding #356.
.3 Combination baseboard:
.1 Board: profile Alexandria moulding #356

.2 Exterior Trim:

.1 Material: James Hardie Trim or approved equal, refer to Section 07 44 00 Cementitious Panels

2.05 MANUFACTURED FRAMES

.1 Exterior frames:
.1 25.4 mm to 38.1 mm stock material.
.2 Frames to be solid stock material treated with water repellant preservative as per CSA 0131.1.
.3 Construction:
.1 Jamb and header profile: as detailed, beveled door stile edge.
.2 Joinery: AWS detail, dado head of frame.
.3 Rabbeted water repellant stops treated to meet CSA 0131.1

.2 Interior frames:
.1 15.8 mm thick solid wood stock.
.2 Full width of partitions with planted stops.

.3 Fire rated frames:
.1 Frames to be solid wood stock
.2 Construction: In accordance with certification listing.
.3 Fire rating: 45 minute as indicated on permanently attached metal label.

2.06 MANUFACTURED STAIRS AND HANDRAILS

.1 Stair and handrails:

.1 Treads and nosings: Douglas Fir, #1 grade, 38mm x 285mm ripped to 38mm x 255mm .
.2 Risers: Douglas fir plywood, B1 grade 19mm.
.3 Stringers: Douglas Fir, #1 grade, 38mm x 253 mm.
.4 Handrail: Maple, Species group A.

2.07 MANUFACTURED SHELVING

.1 Softwood and popular plywood DFP or CSP Species Group A, square edge, 19 mm thick.

.2 Nose banding: provide 19 mm thick solid matching wood strip on plywood shelf 1000 mm wide or less, 40 mm thick to shelf greater than 1000 mm wide. Strips same width as plywood.

.3 Coat space and coat closet: Shelf to be 350 mm wide.

.4 Linen and pantry shelves at 500, 875, 1250 and 1625 mm from floor.

.5 All shelves to be mounted on 19 x 64 wood cleats on sides and back.

2.08 FASTENINGS

.1 Provide screws, bolts, expansion shields and other fastening devices required for satisfactory installation.

.2 Exposed fasteners to match finish of hardware.

.3 Nails and staples: to ASTM F 1677, galvanized to ASTM A 153/A 153M for exterior work, interior humid areas; plain finish elsewhere.

.4 Wood screws: to ANSI/ASME 18.6.1, countersunk flush type unless indicated otherwise, in sizes to suit application, galvanized to ASTM A 153/A 153M for exterior work, interior humid areas, stainless steel for other locations.

.5 Splines: metal.

2.09 HARDWARE

.1 Use one manufacturer's product for all similar items.

.2 Shelf Hardware: to ANSI/BHMA A156.16 as listed below:
.1 Closet hanger bar and supports: Metal pole sockets for metal poles, diameter 32 mm, chrome finish.

.3 Miscellaneous Hardware: to ANSI/BHMA A156.16 as listed below:
.1 Handrail brackets: Heavy Duty satin chrome, die-cast construction, 95mm projection from wall, 76 mm in height, three mounting points to wall,two mounting points to handrail.

.4 Hardware fastenings:
.1 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation of hardware.
.2 Exposed fastening devices to match finish of hardware.
.3 Use fasteners compatible with material through which they pass.

3 EXECUTION

3.01 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for wood products installation in accordance with AWS tolerances and requirements of Contract Documents.
  .1 Visually inspect substrate in presence of Departmental Representative.
  .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  .3 Proceed with installation only after unacceptable conditions have been remedied.

3.02 PREPARATION

.1 Back prime woodwork before installation, to AWS.

3.03 INSTALLATION

.1 Install items of finish carpentry in accordance with AWMAC AWS grade specified for respective items.

.2 In case of conflict between Contract Documents and AWS grade requirements, Contract Documents govern.

.3 Install items of finish carpentry at locations shown on drawings.
  .1 Position accurately, level, plumb straight.
  .2 Fasten and anchor securely.

.4 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.

.5 Form joints to conceal shrinkage.

3.04 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 smooth 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 baseboards to make snug, tight, joint. Cut right angle joints of casing and base with mitred joints.
  .2 Fit backs of baseboards and casing snugly to wall surfaces to eliminate cracks at junction of base and casing with walls.
  .3 Make joints in baseboard, where necessary using a [45] degrees scarf

type joint.
.4 Install door and window trim in single lengths without splicing.

.3 Interior and exterior frames:
.1 Set frames with plumb sides and level heads and sills and secure.

.4 Stairs:
.1 Install stairs to location and details as indicated.

.5 Handrails.
.1 Install handrails in locations indicated.
.2 Make joints hair line, dowelled and glued.
.3 Install support brackets as noted in Hardware Section.
.4 Install brackets at ends and at midpoint, minimum. Maximum 1200 mm on centre spacing.
.5 Secure using counter sunk screws plugged with matching wood plugs.

.6 Shelving:
.1 Install shelving on ledgers as indicated.

3.05 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.06 TOUCHUP AND PROTECTION

.1 Fill and retouch all nicks, chips and scratches in factory finishes and substrate materials to AWS standards. Replace damaged items that cannot be repaired to AWS standards.

.2 Protect installed products and components from damage during construction.

.3 Repair damage to adjacent materials caused by finish carpentry installation.

.4 Leave work to be site finished ready for finishing by Section 09 91 23 - Interior Painting.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 07 92 00 - Joint Sealants
.2 Section 09 91 23 - Interior Painting

1.02 REFERENCE STANDARDS

.1 Architectural Woodwork Manufacturers Association of Canada (AWMAC)
  .1 Architectural Woodwork Standards (AWMAC AWS), [2014].

.2 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB-11.3-M87, Hardboard.
  .2 CAN/CGSB-71.20-M88, Adhesive, Contact, Brushable.
  .3 CAN/CGSB-71.19-M88, Adhesive, Contact, Sprayable.

.3 CSA International
  .1 CSA O112-M Series 1977 (R2006) Standards for Wood Adhesives.
  .2 CSA O141-05 (R2014), Softwood Lumber.
  .3 CSA O151-14, Canadian Softwood Plywood.
  .4 CSA O153-M1980 (R2014), Poplar Plywood.

.4 National Electrical Manufacturers Association (NEMA)
  .1 ANSI/NEMA LD-3-05, High-Pressure Decorative Laminates (HPDL).

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
  .1 Prepare and submit material list in accordance with AWMAC AWS, cross-referenced to specifications.
  .2 Include manufacturer's instructions, printed product literature, data sheets and catalogue pages for all materials and products to be incorporated into architectural wood casework and include product characteristics, performance criteria, dimensions and profiles, finish and limitations on use.
  .3 Submit two copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.

.3 Hardware List:
  .1 Submit hardware list cross-referenced to specifications.
  .2 Include manufacturer's specification sheets indicating name, model, material, function, finish, BHMA designations and other pertinent information.

.4 Shop Drawings:
  .1 Prepare and submit shop drawings in accordance with AWMAC AWS and as follows.
  .2 Submit one pdf set of shop drawings for initial review in accordance with requirements of Division 01. Revise as directed.
  .3 Indicate details of construction, profiles, jointing, fastening and other related details.
    .1 Scales: profiles full size, details half 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.
.6 Show location on casework elevations of backing required in supporting structure for attachment of casework.
.7 Indicate AWMAC AWS quality grade where different from predominant grade specified.
.8 Include color schedule of all casework items, including all countertop, exposed, and semi-exposed cabinet finishes, finish material manufacturer, pattern, and color.

.5 Samples:
.1 Prepare and submit samples in accordance with AWMAC AWS and as follows.
.2 Apply sample finishes to specified substrate or core material minimum 300 x 300 mm. For veneers with transparent finish submit three samples to illustrate range and colour of grain expected.
.3 Shop applied coatings:
.1 For transparent finish, submit triplicate samples of each species and cut of wood to be used, finished as specified.
.2 For opaque finish, submit triplicate samples for each colour selection, finished as specified.
.4 Submit duplicate samples of laminated plastic for each specified colour selection.
.5 Furnish four samples of each lumber and composite panel material to Contractor for preparation of field applied finish samples in accordance with Section 09 91 23 Interior Painting.

1.04 DELIVERY, STORAGE AND HANDLING

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

.2 Deliver wood casework only when area of work is enclosed, plaster and concrete work is dry, and area is broom clean and site environmental conditions are acceptable for installation.

.3 Protect millwork against dampness and damage during and after delivery.

.4 Store millwork in ventilated areas, protected from extreme changes of temperature and humidity, and within range recommended by AWMAC AWS for location of project.

.5 Store materials indoors in dry location in clean, dry, well-ventilated area.

.6 Protect architectural woodwork and hardware from nicks, scratches, and blemishes.

.7 Replace defective or damaged materials with new.

2 PRODUCTS

2.01 QUALITY GRADE

.1 Provide all materials and perform all fabrication in accordance with AWMAC

AWS Custom Grade and as follows, except where specified otherwise:
.1 Economy Grade: mechanical rooms and utility areas, storage areas and janitor's closets.

.2 In case of conflict between Contract Documents and AWMAC AWS grade requirements, Contract Documents govern.

2.02 LUMBER

.1 Softwood and Hardwood Lumber: Sound lumber to specified AWMAC AWS quality grade requirements, kiln-dried to moisture content recommended by AWMAC AWS for location of the Work.

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

.3 Face framing, pulls, trims, molding, edge-banding, stiles and rails: Number 1 Maple, in profiles indicated. Cabinet doors and drawer fronts to be shaker style.

2.03 PANEL MATERIALS

.1 Interior mat-formed wood particleboard: to ANSI/NPA A208.1, industrial grade M-2 or M-3, medium density (640-800 kg/m3), thickness 19 mm unless indicated otherwise.
.1 Use moisture resistant grade 2-M-2 or 2-M-3 for countertops and splash-backs to receive plumbing fixtures.

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

2.04 CASEWORK FABRICATION - GENERAL

.1 Fabricate casework of specified core and surface finish materials to specified AWMAC AWS quality grade.
.1 Construction type: Cabinet doors and drawer fronts to be shaker style. Solid maple face frame, solid maple panel inset.
.2 Door-cabinet interface: flush overlay.

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

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

.4 Shelving to cabinetwork to be adjustable unless otherwise noted.

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

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

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

2.05 WOOD CASEWORK FABRICATION

.1 Fabricate casework bodies of 19mm maple plywood panel materials in

accordance with AWMAC AWS requirements for grade specified and as follows.
.1 Exposed interior surfaces: Veneer of same species and cut and grade as exposed exterior surfaces.
.2 Semi-exposed surfaces: Veneer of same species as exposed exterior surfaces.

.2 Fabricate door, drawer and panel surfaces of 19mm maple plywood panel materials.

.3 Drawer construction:
.1 Sides:
.1 AWMAC AWS Premium grade: prefinished seven or nine ply hardwood veneer core with no internal voids, 16mm thickness.
.2 Bottoms: Hardwood plywood of same species as drawer sides, 6mm thick.
.3 Joinery: Meeting requirements of AWMAC AWS for Grade specified.
.1 Sides, front and back: Multiple dovetailed
.2 Drawer bottoms held in place with drawer hardware to sides and mechanically fastened to back and sub front.

2.06 SHOP APPLIED FINISH COATINGS

.1 Finish system: AWMAC AWS System-3,Lacquer, Postcatalyzed.
.1 Include natural stain.

.2 Apply finish system component materials in accordance with manufacturer's instructions.

2.07 CABINET HARDWARE

.1 Cabinet hardware: to AWMAC AWS quality grade specified and to ANSI/BHMA A156.9, designated by letter B and numeral identifiers as listed below.

.2 Finish:
.1 Exposed hardware: Satin Nickel.
.2 Semi-exposed hardware: Manufacturer's standard finish.

.3 Casework door hinges: concealed European style Grade II hinges minimum 170° opening, self-closing type.

.4 Pulls: back mounted pull, arched handle, Satin nickel finish. Amerock BP52997G10 or approved equal.

.5 Shelf rests: shelf rest installed in holes drilled, type B54013 stainless steel.

.6 Drawer slides:
.1 Slide type: bottom edge mounted drawer slides, soft close Richelieu Blum 566H6000B or approved equal.
.2 Extension and capacity: full extension meeting requirements of AWMAC AWS for type and size of drawer.
.3 File drawer slides: full extension.

2.08 ACCESSORIES

.1 Wood screws: stainless steel, type and size to suit application.

.2 Nails and staples: to CSA B111 and ASTM F 1667.

.3 Splines: wood.

.4 Sealant: in accordance with Section 07 92 00 - Joint Sealants.

2.09 LAMINATED PLASTIC COUNTERTOPS

.1 Laminated plastic for flatwork: to NEMA LD3.
.2 Type: general purpose.
.3 Grade: HGL.
.4 Size: 1.0 mm thick.
.5 Colour: integral colour throughout.
.6 Pattern: woodgrain or printed pattern, as selected by Departmental Representative.
.7 Finish: satin.

.1 Laminated plastic for post-forming work: to NEMA LD3.
.1 Type: post-forming.
.2 Grade: HGP.
.3 Size: 0.9 mm thick.
.4 Colour: integral colour throughout.
.5 Pattern: woodgrain or printed pattern, as selected by Departmental Representative.
.6 Finish: satin.

.2 Core material: particleboard.
.1 Countertops to receive plumbing fixtures: Water resistant particle board.

.3 Back splashes: cove 100 mm high.

.4 Front edges: no drip bullnose edge.

3 EXECUTION

3.01 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for architectural woodwork installation in accordance with manufacturer's instructions.
.1 Visually inspect substrate in presence of Departmental Representative.
.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
.3 Proceed with installation only after unacceptable conditions have been remedied.

3.02 INSTALLATION

.1 Install architectural wood casework in accordance with AWMAC AWS grade for respective items.

.2 In case of conflict between Contract Documents and AWMAC AWS grade requirements, Contract Documents govern.

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

.4 Fasten and anchor millwork securely.
.1 Supply and install heavy duty fixture attachments for wall mounted cabinets.

.5 Countersink mechanical fasteners at exposed and semi-exposed surfaces, excluding installation attachment screws and screws securing cabinets end to end.

.6 Use draw bolts in countertop joints.

.7 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.

.8 At junction of plastic laminate counter back splash and adjacent wall finish, apply small bead of sealant in accordance with Section 07 92 00 - Joint Sealants.

.9 Fit hardware accurately and securely in accordance with manufacturer's written instructions.

.10 Make cutouts for inset equipment and fixtures using templates provided.

3.03 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
.1 Clean millwork, inside cupboards and drawers and outside surfaces.
.2 Remove excess glue, pencil and ink marks from surfaces.

3.04 PROTECTION

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

.2 Protect installed products and components from damage during construction.

.3 Repair damage to adjacent materials caused by architectural woodwork installation.

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

.1 ASTM International
.1 ASTM C 665-12, Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

.2 CSA Group
.1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.

.3 Underwriters Laboratories of Canada (ULC)
.1 CAN/ULC-S702-[2012], Standard for Mineral Fibre Insulation for Buildings.

1.02 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for blanket insulation and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Certificates:
.1 Submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.03 DELIVERY, STORAGE AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
.1 Store materials off ground, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

2 PRODUCTS

2.01 INSULATION

.1 Batt and blanket mineral fibre: to CAN/ULC-S702.
.1 Type: 1.
.2 Thickness: as indicated.

2.02 ACCESSORIES

.1 Insulation clips:
  .1 Impale type, perforated 50 x 50 mm cold rolled carbon steel 0.8 mm thick, adhesive back, spindle of 2.5 mm diameter annealed steel, length to suit insulation, 25 mm diameter washers of self locking type.

.2 Nails: galvanized steel, length to suit insulation plus 25 mm, to CSA B111.

.3 Staples: 12 mm minimum leg.

.4 Tape: as recommended by manufacturer.

3 EXECUTION

3.01 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for blanket insulation application in accordance with manufacturer's written instructions.
  .1 Visually inspect substrate in presence of Departmental Representative.
  .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  .3 Proceed with installation only after unacceptable conditions have been remedied.

3.02 INSULATION INSTALLATION

.1 Install insulation to maintain continuity of thermal protection to building elements and spaces.

.2 Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.

.3 Do not compress insulation to fit into spaces.

.4 Keep insulation minimum 75 mm from heat emitting devices such as recessed light fixtures, and minimum 50 mm from sidewalls of CAN/ULC-S604 Type A chimneys and Type B vents.

.5 Do not enclose insulation until it has been inspected and approved by Departmental Representative.

3.03 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  .1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

.1 ASTM International
.1 ASTM C 739-11, Standard Specification for Cellulosic Fiber Loose-Fill Thermal Insulation.

.2 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-51.34-M86(R1988), Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

.3 Underwriters Laboratories of Canada (ULC)
.1 CAN/ULC-S703-2009, Standard for Cellulose Fibre Insulation (CFI) for Buildings.

1.02 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for loose fill insulation and include product characteristics, performance criteria, physical size, finish and limitations.

1.03 QUALITY ASSURANCE

.1 Provide 1 copy of Certification of Coverage and Application Chart in accordance with CAN/ULC-S702 to Departmental Representative, certified by Applicator's signature that the information is correct.

1.04 DELIVERY, STORAGE AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
.1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

1.05 SITE CONDITIONS

.1 Apply insulation only when surfaces and ambient temperatures are within manufacturers' prescribed limits.

.2 Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of insulation materials.

.3 Protection:

.1 Provide temporary enclosures to prevent dust from contaminating air beyond application area.
.2 Protect adjacent surfaces and equipment from damage by fall-out, and dust.

2 PRODUCTS

2.01 MATERIALS

.1 Cellulose fibre insulation: to CAN/ULC-S703, pure cellulose fibres, chemically impregnated to resist mould, mildew and fire.

.2 Vapour retarder: in accordance with Section 07 26 00 - Vapor Retarders.

3 EXECUTION

3.01 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for loose fill insulation application in accordance with manufacturer's written instructions.
.1 Visually inspect substrate in presence of Departmental Representative.
.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
.3 Proceed with installation only after unacceptable conditions have been remedied.

3.02 LOOSE FIBRE INSTALLATION

.1 Pneumatically place loose fibre insulation above ceiling between joists to provide minimum thermal resistance value as indicated.

.2 Ensure ceiling/roof areas exposed to outside air are insulated.

.3 Ensure unobstructed air circulation to eave vents.

.4 Install baffles at every rafter space to prevent insulation from spilling over top of exterior wall and causing blockage of soffit vents, and to prevent displacement of insulation by wind entering vents.

.5 Keep insulation minimum 75 mm from heat emitting devices and recessed light fixtures, and minimum 50 mm from sidewalls of CAN/ULC-S604 chimneys and CSA B149.2 type B vents.

3.03 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

.1 Remove insulation material spilled during installation and leave work area ready for application of wall board.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 06 10 53 Rough Carpentry
.2 Section 07 21 16 Blanket Insulation
.3 Section 07 21 23 Loose Fill Insulation

1.02 REFERENCE STANDARDS

.1 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet, for Use in Building Construction.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
  .1 Submit manufacturer's instructions, printed product literature and data sheets for vapour retarders and include product characteristics, performance criteria, physical size, finish and limitations.

1.04 DELIVERY, STORAGE AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
  .1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

2 PRODUCTS

2.01 SHEET VAPOUR BARRIER

.1 Polyethylene film: to CAN/CGSB-51.34, 0.15 mm thick.

2.02 ACCESSORIES

.1 Joint sealing tape: air resistant pressure sensitive adhesive tape, type recommended by vapour barrier manufacturer, 50 mm wide for lap joints and perimeter seals, 25 mm wide elsewhere.

.2 Sealant: compatible with vapour retarder materials, recommended by vapour retarder manufacturer. To Section 07 92 00 - Joint Sealants.

.3 Staples: minimum 6 mm leg.

.4 Moulded box vapour barrier: factory-moulded polyethylene box for use with

recessed electric switch and outlet device boxes.

3 EXECUTION

3.01 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for vapour retarder installation in accordance with manufacturer's written instructions.
- .1 Visually inspect substrate in presence of Departmental Representative.
- .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
- .3 Proceed with installation only after unacceptable conditions have been remedied.

3.02 INSTALLATION

.1 Ensure services are installed and inspected prior to installation of retarder.

.2 Install sheet vapour retarder on warm side of exterior wall, ceiling and concrete floor assemblies prior to installation of gypsum board to form continuous retarder.

.3 Use sheets of largest practical size to minimize joints.

.4 Inspect for continuity. Repair punctures and tears with sealing tape before work is concealed.

3.03 EXTERIOR SURFACE OPENINGS

.1 Cut sheet vapour retarder to form openings and ensure material is lapped and sealed to frame.

3.04 PERIMETER SEALS

.1 Seal perimeter of sheet vapour barrier as follows:
- .1 Apply continuous bead of sealant to substrate at perimeter of sheets.
- .2 Lap sheet over sealant and press into sealant bead.
- .3 Install staples through lapped sheets at sealant bead into wood substrate.
- .4 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

3.05 LAP JOINT SEALS

.1 Seal lap joints of sheet vapour barrier as follows:
- .1 Attach first sheet to substrate.
- .2 Apply continuous bead of sealant over solid backing at joint.
- .3 Lap adjoining sheet minimum 150 mm and press into sealant bead.
- .4 Install staples through lapped sheets at sealant bead into wood substrate.

.5 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

3.06 ELECTRICAL BOXES

.1 Seal electrical switch and outlet device boxes that penetrate vapour barrier as follows:
.1 Install moulded box vapour barrier.
.2 Apply sealant to seal edges of flange to main vapour barrier and seal wiring penetrations through box cover.

3.07 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.

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

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 06 10 53 – Miscellaneous Rough Carpentry

.2 Section 07 44 00 – Cementitious Panels

1.02 REFERENCE STANDARDS

.1 Sealant and Waterproofer's Institute - Sealant and Caulking Guide Specification.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
.1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Quality Assurance Submittals: submit following in accordance with Section 01 45 00 - Quality Control.
.1 Existing Substrate Condition: report deviations, as described in PART 3 -EXAMINATION in writing to Departmental Representative.
.2 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence and cleaning procedures.

1.04 DELIVERY, STORAGE AND HANDLING

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

.2 Deliver, store and handle materials in accordance with manufacturer's written instructions.

1.05 AMBIENT CONDITIONS

.1 Install solvent curing sealants and vapour release adhesive materials in open spaces with ventilation.

.2 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities.

.3 Maintain temperature and humidity recommended by materials manufactures before, during and after installation.

1.06 SEQUENCING

.1 Sequence work in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Charts.

.2 Sequence work to permit installation of materials in conjunction with related materials and seals.

2 PRODUCTS

2.01 SHEET MATERIALS

.1 Sheet Seal Type 1: thermofusable elastomeric bitumen membrane reinforced with a non-woven polyester. Dupont “Tyvek” or approved equal.

2.02 SEALANTS

.1 Sealants in accordance with Section 07 92 00 - Joint Sealants.

.2 Butyl Sealant Type A: CGSB 19-GP-14M, butyl rubber base, single component, solvent release, non-skinning, black colour.

.3 Substrate Cleaner: non-corrosive type recommended by sealant manufacturer].

2.03 ACCESSORIES

.1 Thinner and cleaner for Butyl Sheet: as recommended by sheet material manufacturer.

3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

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

3.02 GENERAL

.1 Perform Work in accordance with Sealant and Waterproofer's Institute - Sealant and Caulking Guide Specification requirements for materials and installation.

.2 Perform Work in accordance with National Air Barrier Association - Professional Contractor Quality Assurance Program and requirements for materials and installation.

3.03 EXAMINATION

.1 Verify that surfaces and conditions are ready to accept work of this section.

.2 Ensure surfaces are clean, dry, sound,smooth continuous and comply with

air barrier manufacturer's requirements.

.3 Report unsatisfactory conditions to Departmental Representative in writing.

.4 Do not start work until deficiencies have been corrected.
.1 Beginning of Work implies acceptance of conditions.

3.04 PREPARATION

.1 Remove loose or foreign matter, which might impair adhesion of materials.

.2 Ensure substrates are clean of oil or excess dust.

.3 Ensure substrates are free of surface moisture prior to application of membrane and primer.

.4 Ensure metal closures are free of sharp edges and burrs.

.5 Prime substrate surfaces to receive adhesive and sealants in accordance with manufacturer's instructions.

3.05 INSTALLATION

.1 Install materials in accordance with manufacturer's instructions.

.2 Secure sheet seal to sheathing materials with self-adhesive and staples.
.1 Caulk with Type A sealant to ensure complete seal.
.2 Position lap seal over firm bearing.

.3 Lap sheet seal onto roof vapour retarder and seal with sealant Type A.
.1 Caulk to ensure complete air seal.
.2 Position lap seal over firm bearing.

.4 Install sheet seal between window and door frames and adjacent wall seal materials with sealant Type A.
.1 Caulk to ensure complete seal.
.2 Position lap seal over firm bearing.

.5 Apply sealant within recommended application temperature ranges.
.1 Consult manufacturer when sealant cannot be applied within these temperature ranges.

3.06 CLEANING

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

.2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

3.07 PROTECTION OF WORK

.1 Protect finished work in accordance with Section 01 61 00 - Common Product Requirements.

.2 Do not permit adjacent work to damage work of this section.

.3 Ensure finished work is protected from climatic conditions.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 06 10 53 – Miscellaneous Rough Carpentry

.2 Section 07 21 23 – Loose Fill Insulation

1.02 REFERENCE STANDARDS

.1 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-37.5-M89, Cutback Asphalt Plastic Cement.
- .2 CAN/CGSB-51.34-M86, Vapour Barrier Polyethylene Sheet, for Use in Building Construction.

.2 Canadian Roofing Contractors' Association (CRCA)
- .1 CRCA Roofing Specification Manual - 1997.

.3 CSA International
- .1 CSA A123.1/A123.5-05(R2010), Asphalt Shingles Made From Organic Felt and Surfaced With Mineral.
- .2 CSA A123.3-05(2010), Asphalt Saturated Organic Roofing Felt.
- .3 CAN3-A123.51-M85(R2006), Asphalt Shingle Application on Roof Slopes 1:3 and Steeper.
- .4 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.

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

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
- .1 Submit manufacturer's instructions, printed product literature and data sheets for asphalt shingles and include product characteristics, performance criteria, physical size, finish and limitations.
- .2 Submit proof of manufacturer's CCMC listing and listing number.

.3 Samples:
- .1 Submit duplicate samples of full size specified shingles.

1.04 DELIVERY, STORAGE AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
- .1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
- .2 Remove only in quantities required for same day use.

.3 Replace defective or damaged materials with new.

1.05 EXTRA STOCK MATERIALS

.1 Submit maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

.2 All unused shingles remain property of Departmental Representative.

2 PRODUCTS

2.01 MATERIALS

.1 Asphalt shingles: to CSA A123.1/A123.5.
- .1 Type: standard, rectangular pattern.
- .2 Mass: minimum 12 kg/sq. m.
- .3 Colours: as selected from manufacturer's standard range by Departmental Representative.
- .4 Texture: as selected from manufacturer's standard range by Departmental Representative.

.2 Roofing felt: to CSA A123.3 (27.2 kg), organic felt No. 15.

.3 Polyethylene film: to CAN/CGSB-51.34, 0.15 mm thick, Type 2 - Standard Permeance, self-adhering. Dupont RoofLiner or approved equal. Install to bottom 1200 mm of entire eave.

.4 Asphaltic Cement:
- .1 Lap cement: to CAN/CGSB-37. Fibergum or approved equal. Tab all shingles immediately after installation.

.5 PVC drip edge: extruded profile of unplasticized polyvinyl chloride of minimum thickness of 0.8 mm to full perimeter of roof.

.6 Nails: to CSA B111, of galvanized steel, sufficient length to penetrate 19 mm into deck.

.7 Staples: chisel point galvanized steel 25 mm crown 1.5 mm thick, sufficient length to penetrate 20 mm into deck.

3 EXECUTION

3.01 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for asphalt shingles installation in accordance with manufacturer's written instructions.
- .1 Visually inspect substrate in presence of Departmental Representative.
- .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
- .3 Proceed with installation only after unacceptable conditions have been remedied.

3.02 APPLICATION

.1 Do asphalt shingle work to CAN3-A123.52 except where specified otherwise.

.2 Install drip edge along eaves, overhanging 12 mm, with minimum 50 mm flange extending onto roof decking.
.1 Nail to deck at 400 mm on centre.

.3 Install bottom step flashing interleafed between shingles at vertical junctions.

3.03 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.04 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by asphalt shingles installation.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 06 10 53 – Miscellaneous Rough Carpentry

.2 Section 07 26 00 – Air Barriers

1.02 REFERENCE STANDARDS

.1 ASTM International (ASTM)
  .4 ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
  .5 ASTM C1186 - Standard Specification for Flat Non-Asbestos Fiber-Cement Sheets.
.2 AATCC127 - Water Resistance: Hydrostatic Pressure Test.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
  .1 Submit manufacturer's instructions, printed product literature and data sheets, including product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:
  .1 Indicate dimensions, thickness, siding and trim profiles, attachment methods, and related work.

.4 Selection Samples:
  .1 For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

.5 Verification Samples:
  .1 For each finish product specified, two samples, minimum size 100 mm x 150 mm, representing actual product, color, and patterns.

1.04 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: submit operation and maintenance data for siding and trim for incorporation into manual.

.3 Warranty Documentation: submit standard manufacturer warranty documents.

1.05 DELIVERY, STORAGE AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
.1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Store siding flat on a smooth level surface. Protect edges and corners from chipping.
.3 Replace defective or damaged materials with new.

1.06 SITE CONDITIONS

.1 Execute work of this Section within environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer.

1.07 WARRANTY

.1 Manufacturer's warranty: Submit, for Departmental Representative acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty in addition to and not limit other rights Owner may have under Contract Documents.

2 PRODUCTS

2.01 MATERIALS

.1 Lap Siding: 184mm wide x 8mm thickness, factory-applied cedar texture, solid colour finish, as manufactured by James Hardie Commercial, Allura, or approved equal. Colour: James Hardie, Aged Pewter (or approved equal).

.3 Trims: 100mm, 11mm and 8mm thickness, wood grain finish at lap siding and smooth finish at panels, factory applied, solid colour finish, from the same manufacturer as siding and panels. Colour: James Hardie, Aged Pewter (or approved equal).

.5 Panel joints: Provide Easytrim Reveals Panel Trim Series (or equal) aluminum trims at fibre-cement panels, as detailed. Rounded Outside Corner at corners, Z-trim at horizontal joints, General ‘J’ Trim at window and door jambs, and Soffit ‘J’ at window sills.

2 EXECUTION

3.01 EXAMINATION

.1 Verification of Conditions: verify conditions of substrate previously installed under other Sections or Contracts acceptable in accordance with manufacturer's written instructions.
.1 Inform the Departmental Representative of unacceptable conditions immediately upon discovery.
.2 Proceed with installation only after unacceptable conditions remedied and after receipt of written approval to proceed from the Departmental Representative.

3.02 PREPARATION

.1 Clean surfaces thoroughly prior to installation.

.2 Prepare surfaces using methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

.3 Ensure that the drainage plane is intact and all penetrations are sealed.

3.03 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.04 INSTALLATION

.1 Install cementitious panels as detailed.

.2 Fastening Method: Countersunk and filled.

.3 Place fasteners no closer than 10 mm from panel edges and 50 mm from panel corners.

.4 Install panel using 13 mm spacers at horizontal joints. Leave bottom edge of panel above all horizontal trims exposed, no caulking shall be placed at this overlap of Horizontal Reveal Trim. Factory primed edge shall always be used.

.5 Install a kickout flashing to deflect water away from the siding at the roof intersection.

.6 Install a self-adhering membrane on the wall before the subfascia and trim boards are nailed in place, and then install the kickout.

.7 Maintain clearance between siding and adjacent roof.

.8 Seal junctions with dissimilar materials with sealant. Do work in accordance with Section 07 92 00 - Joint Sealants. Colour to match panel finish.

3.05 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.06 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by plastic siding and soffit installation.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 06 10 53 – Miscellaneous Rough Carpentry

.2 Section 09 21 16 – Gypsum Board Assemblies

1.02 REFERENCE STANDARDS

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

1.03 DEFINITIONS

.1 Fire Stop Material: device intended to close off opening or penetration during fire or materials that fill openings in wall or floor assembly where penetration is by cables, conduits, ducts and pipes and poke-through termination devices, including electrical outlet boxes along with their means of support through wall or floor openings.

.2 Single Component Fire Stop System: fire stop material that has Listed Systems Design and is used individually without use of high temperature insulation or other materials to create fire stop system.

.3 Tightly Fitted; (ref: NBC Part 3.1.9.1(1) and 9.10.9.6(1)): penetrating items that are cast in place in buildings of noncombustible construction or have "0" annular space in buildings of combustible construction.
  .1 Words "tightly fitted" should ensure that integrity of fire separation is such that it prevents passage of smoke and hot gases to unexposed side of fire separation.

1.04 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
  .1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
  .2 Submit copy of WHMIS MSDS - Material Safety Data Sheets in accordance

.3 Quality assurance submittals: submit following in accordance with Section 01 45 00 - Quality Control.
  .1 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence and cleaning procedures.

1.05 DELIVERY, STORAGE AND HANDLING

  .2 Packing, shipping, handling and unloading:
  .3 Deliver, store and handle materials in accordance with Section

01 61 00 - Common Product Requirements.

.4 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.5 Deliver materials to the site in undamaged condition and in original unopened containers, marked to indicate brand name, manufacturer, ULC markings.

.1 Storage and Protection:

.1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Replace defective or damaged materials with new.

2 PRODUCTS

2.01 MATERIALS

.1 Fire stopping and smoke seal systems: in accordance with CAN-ULC-S115.

.1 Asbestos-free materials and systems capable of maintaining effective barrier against flame, smoke and gases in compliance with requirements of CAN-ULC-S115 and not to exceed opening sizes for which they are intended.

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

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

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

.5 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.

.6 Sealants for vertical joints: non-sagging.

3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

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

3.02 PREPARATION

.1 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials.

.1 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 without interruption to vapour barrier.

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

3.03 INSTALLATION

.1 Install fire stopping and smoke seal material and components in accordance with manufacturer's certified tested system listing.

.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 neat finish.

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

3.04 SEQUENCES OF OPERATION

.1 Install floor fire stopping before interior partition erections.

.2 Mechanical pipe insulation: certified fire stop system component.
.1 Ensure pipe insulation installation precedes fire stopping.

3.05 FIELD QUALITY CONTROL

.1 Inspections: notify Departmental Representative when ready for inspection and prior to concealing or enclosing fire stopping materials and service penetration assemblies.

3.06 CLEANING

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

.2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

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

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 06 10 53 – Miscellaneous Rough Carpentry

.2 Section 06 40 00 – Architectural Woodwork

.3 Section 10 28 10 – Toilet and Bath Accessories

1.02 REFERENCE STANDARDS

.1 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB-19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.

1.03 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: submit operation and maintenance data for incorporation into manual.

1.04 DELIVERY, STORAGE AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
  .1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

1.05 SITE CONDITIONS

.1 Ambient Conditions:
  .1 Proceed with installation of joint sealants only when:
    .1 Ambient and substrate temperature conditions are within limits permitted by joint sealant manufacturer or are above 4.4 degrees C.
    .2 Joint substrates are dry.
    .3 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

.2 Joint-Width Conditions:
  .1 Proceed with installation of joint sealants only where joint widths are more than those allowed by joint sealant manufacturer for applications indicated.

.3 Joint-Substrate Conditions:
  .1 Proceed with installation of joint sealants only after contaminants

capable of interfering with adhesion are removed from joint substrates.

2 PRODUCTS

2.01 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 off gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off gas time.

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

.4 Colours:

.1 Exposed areas: to match adjacent surfaces

.2 Concealed areas: black may be used

2.02 SEALANT MATERIAL DESIGNATIONS

.1 Silicone one part: to CAN/CGSB-19.9Ma.

.2 Butyl: to CGSB 19-GP-13-M82.

.3 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.

2.03 SEALANT SELECTION

.1 Butyl sealant to be used at edges and joints of PWF plywood. All other locations to be silicone.

2.04 JOINT CLEANER

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

.2 Primer: in accordance with sealant manufacturer's written recommendations.

3 EXECUTION

3.01 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.

3.02 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.

3.03 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.

3.04 APPLICATION

.1 Sealant:
- .1 Apply sealant in accordance with manufacturer's written instructions.
- .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
- .3 Apply sealant in continuous beads.
- .4 Apply sealant using gun with proper size nozzle.
- .5 Use sufficient pressure to fill voids and joints solid.
- .6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
- .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
- .8 Remove excess compound promptly as work progresses and upon completion.

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

3.05 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
- .1 Leave Work area clean at end of each day.
- .2 Clean adjacent surfaces immediately.
- .3 Remove excess and droppings, using recommended cleaners as work progresses.
- .4 Remove masking tape after initial set of sealant.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.06 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by joint sealants installation.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 06 20 00 – Miscellaneous Rough Carpentry.
.2 Section 07 92 00 – Joint Sealants
.3 Section 08 80 00 – Door Hardware
.4 Section 09 90 00 – Painting and Coating

1.02 REFERENCE STANDARDS

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

.2 Canadian General Standards Board (CGSB).
.1 CAN/CGSB-71.19-M88, Adhesive, Contact, Sprayable.
.2 CAN/CGSB-71.20-M88, Adhesive, Contact, Brushable.

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

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

.5 Underwriters' Laboratories of Canada (ULC).
.1 CAN-4S104M-80(R1985), Fire Tests of Door Assemblies.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

.1 Product Data:
.2 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.1 Shop Drawings:
.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
.2 Indicate door types and cutouts for lights, sizes, core construction, transom panel construction and cutouts.

1.04 QUALITY ASSURANCE

.1 Regulatory Requirements:
.2 Wood fire rated doors: labelled and listed by an organization accredited by Standards Council of Canada.

.1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

.2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.05 DELIVERY, STORAGE, AND HANDLING

.1 Storage and Protection:
.2 Protect doors from dampness. Arrange for delivery after work causing abnormal humidity has been completed.

.3 Store doors in well ventilated room, off floor, in accordance with manufacturer's recommendations.
.4 Protect doors from scratches, handling marks and other damage. Wrap doors.
.5 Store doors away from direct sunlight.

1.06 WARRANTY

.1 Doors to be guaranteed for three years against warping.

2 PRODUCTS

2.01 FIRE RATED WOOD DOORS

.1 Wood doors: tested in accordance with CAN4-S104 to achieve rating as scheduled.
.1 Face panels: paint grade, Maple.

2.02 WOOD FLUSH DOORS

.1 Solid core: to CAN/CSA-O132.2.1.
.1 Construction:
.1 Solid particleboard core: stile and rail frame bonded to particleboard core with wood lock blocks, 7-ply construction.
.2 Face Panels:
.1 Laminated plastic: with hardwood plywood subface.
.2 Acceptable product: Premdor – Six Panel Textured door or approved equal.

2.03 FABRICATION

.1 Vertical edge strips to match face veneer.

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

.3 Radius vertical edges of double acting doors to 60 mm radius.

3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.02 INSTALLATION

.1 Unwrap and protect doors in accordance with CAN/CSA-O132.2 Series, Appendix A.

.2 Install labelled fire rated doors to NFPA 80.

.3 Install doors and hardware in accordance with manufacturer's printed instructions and CAN/CSA-O132.2 Series, Appendix A.

.4 Adjust hardware for correct function.

3.03 ADJUSTMENT

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

3.04 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 Clean glass and glazing materials with approved non-abrasive cleaner.

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

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

1. Fiberglass Entry Doors

1.2 RELATED SECTIONS

.1 06 40 00 - Architectural Woodwork
.2 07 27 00 – Air Barriers
.3 07 92 00 – Joint Sealants
.4 08 80 00 - Glazing
.5 08 71 00 – Door Hardware
.6 09 90 00 - Painting and Coating

1.3 REFERENCES

.1 American Society for Testing and Materials (ASTM):
.2 ASTM E283: Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
.3 .1 ASTM E 330 – Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Pressure Difference.

.4 .1 ASTM E 331 – Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
.5 ASTM E 547 – Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference.

.1 Canadian Standard:
1. CAN4-S104 – Standard Method for Fire Tests of Door Assemblies.

1.4 PERFORMANCE REQUIREMENTS

.1 Doors shall have a driving rain wind pressure of 200 Pa.

.2 Doors shall have an Hourly Wind Pressure of 420 Pa.

.3 Door Unit Air Leakage, NFRC 400, 1.57 psf (25 mph): 0.50 cfm per square foot of frame or less.

.4 Door Unit Water Penetration: No water penetration through door unit when tested in accordance with ASTM E 331or ASTM E 547 with water applied at rate of 5 gallons per hour per square foot at 0 psf.

.5 Doors shall have a minimum/maximum U-Value of 0.15 and a minimum/maximum SHGC of 0.01.

1.5 SUBMITTALS

.1 Refer to Division 01 33 00 Submittal Procedures.

.2 Product Data: Submit door manufacturer current product literature, including installation instructions.

.3 Shop Drawings: Submit manufacturer's shop drawings, indicating dimensions, construction, component connections, anchorage methods and locations, accessories, hardware locations, and installation details.

.4 Samples: Submit full-size or partial full-size verification sample of door illustrating glazing system, quality of construction, texture, and color of finish.

1.6 QUALITY ASSURANCE

.1 Quality Assurance Submittals:
.2 Provide documentation for specified performance as required.
.3 Manufacturers' installation instructions.
.4 Manufacturer Qualifications: Manufacturer shall have successful experience in producing the type of product required for project applications equivalent to the requirements for this project.

1.7 DELIVERY, STORAGE, AND HANDLING

.1 Refer to Division 01 60 00 Product Requirements.

.2 Delivery: Deliver materials to site undamaged with labels clearly identifying manufacturer, product name, and installation instructions

.3 Storage: Store materials in an upright position, off ground, under cover, and protected from weather, direct sunlight, and construction activities.

.4 Handling: protect materials and finish during handling and installation to prevent damage.

1.8 WARRANTY

.1 Standard limited warranty for fiberglass product and components, including rot-resistant frames, mullions, and brickmould used in commercial and multi-residential projects will be free from material and workmanship defects for a period of three years subject to certain limitations and restrictions.

PART 2 PRODUCTS

2.1 FIBERGLASS ENTRY DOORS

1. Fiberglass Entry Doors: All fiberglass doors manufactured for complete entry systems with components manufactured by Therma-Tru (or approved equal).

.1 Select: Classic –Craft (Therma-Tru or approved equal)

.2 Construction:
.1 3 mm minimum thickness, proprietary fiberglass-reinforced thermoset composite, embossed face, wood-grained in natural hardwood patterns, stainable and paintable. Door edges machinable kiln-dried pine, primed, lock edge reinforced with engineered lumber core, lockset area reinforced with solid blocking for hardware backup. Door bottom edge to be moisture and decay-resistant composite. Core to be foamed-in-place polyurethane, density 1.9 pcf minimum.
.2 Frames: milled from 5/4 kiln-dried material with profiled 13 mm stop and 6 degree sill gain prep.
.3 Jamb width: standard 116 mm
.4 Rot resistant – frames, mullions and brickmould
.5 Sills: aluminum clad with vinyl thermal break

2.2 HARDWARE

1. Hinges: Steel, 100 x 100 x 2.4 inches finished to match hardware, plated screws to match

1. Finish: brushed nickel

2. Locking Hardware:
1. Weiser, Grade 2 cylindrical passage set (ANSI 75) complete with lever handle. Weiser or approved equal, Grade 2 keyed auxiliary deadbolt with 5-pin keyway and minimum 25 mm throw.
2. Finish: brushed nickel
3. Provide three keys per door.

2.3 GLAZING

1. Factory glazed with double-pane construction.

2.4 INSTALLATION ACCESSORIES

1. Sill pan

2. Corner seal pad

3. Rain deflector

4. Rain Guard

PART 3 EXECUTION

3.1 EXAMINATION

1. Examine areas to receive doors. Notify Architect in writing any unacceptable conditions that would adversely affect installation or subsequent performance of the product. Do not proceed with installation until unsatisfactory conditions are corrected.

3.2 INSTALLATION

1. Install fiberglass doors in full compliance with written instructions and approved shop drawings.

2. Maintain alignment and compatibility with adjacent work.

3.3 FINISHING

1. Finish in compliance with written recommendations

3.3 Protection

1. Protect installed products until completion of project.
2. Touch-up, repair or replace damaged products prior to Substantial Completion in accordance with written recommendations.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 06 20 00 - Finish Carpentry.
.2 Section 07 27 00 – Air Barrier
.3 Section 07 92 00 – Joint Sealants
.4 Section 08 80 50 - Glazing

1.02 REFERENCE STANDARDS

.4 CSA Group (CSA)
  .2 CSA A440S1-09, Canadian Supplement to CSA 101/1.S.2/A440, NAFS - North American Fenestration Standard for Windows, Doors, and Skylights.
  .3 CAN/CSA-A440.2-14/A440.3-14, Fenestration energy performance/User guide to CSA A440.2, Fenestration energy performance.
  .4 CAN/CSA-A440.4-07(R2016), Window, Door, and Skylight Installation
.1 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB-79.1, Insect Screens.

1.04 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
  .1 Submit manufacturer's instructions, printed product literature and data sheets for windows and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:
  .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Saskatchewan, Canada.
  .2 Indicate materials and details in full size scale for head, jamb and sill, profiles of components, interior and exterior trim, junction between combination units elevations of unit, anchorage details, and caulking. Indicate location of manufacturer's nameplates.
  .3 Indicate locations, dimensions, openings and requirements of related work.

.4 Samples:
  .1 Submit for review and acceptance of each unit.
  .2 Samples returned for inclusion into work.
  .3 Submit one 150 mm long samples of head, jamb, sill, meeting rail and mullions to indicate profile.

.5 Test and Evaluation Reports:
  .1 Submit test reports from approved independent testing laboratories, certifying compliance with specifications.
  .2 All test reports that reference the NAFS must include, on the first page, a summary of the results including, at minimum:
    .1 The product manufacturer.
    .2 The type of product.
    .3 The model number/series number.

.4 The primary product designation.
.5 The secondary product designation.
.1 Positive design pressure.
.2 Negative design pressure.
.3 Water penetration resistance test pressure.
.4 Canadian air infiltration and exfiltration levels.
.6 The test completion date.

1.05 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: submit operation and maintenance data for windows for incorporation into manual.

.3 Warranty Documentation: submit warranty documents specified.

1.07 DELIVERY, STORAGE AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
.1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Store and protect windows from nicks, scratches, and blemishes.
.3 Replace defective or damaged materials with new.

1.08 WARRANTY

.1 Provide a written warranty for work under this Section from Manufacturer for failure due to defective materials and from Contractor for failure due to defective installation, workmanship for twenty (20) years respectively from the date of Substantial Completion.

2 PRODUCTS

2.01 MATERIALS

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

.2 All PVC windows by same manufacturer, All-Weather Windows or approved equal.

.3 Sash: extruded, PVC, nominal wall thickness 2.3 mm.

.4 Main frame: extruded, PVC with fusion welded mitred corners, nominal wall thickness 2.3 mm, 15 mm jamb dimension with extension to suit wall assembly.

.5 Glass: in accordance with Section 08 80 50 - Glazing.

.6 Screens: to CAN/CGSB-79.1.

.1 Insect screening mesh: count 18 x 14

.2 Fasteners: tamper proof

.3 Screen frames: aluminum, colour to match window frames

.4 Mount screen frames for exterior replacement.

.5 Provide full insect screens to cover entire window

2.02 WINDOW TYPE AND CLASSIFICATION

.1 Product types:

.1 AP - Awning hopper projected windows, insulating glass.

.3 C - Casement window, insulating

.5 FW- Fixed window, insulating glass

.1 Classification rating: to CSA-A440/A440.1 for various regions of Saskatchewan new facility to be constructed in. Minimum rating as follows: A3, B6, C4, I40, F1, S1

.2 Energy ratings: windows to be Energy Star certified to Natural Resources Canada Climate Zones for various regions of Saskatchewan.

2.03 FABRICATION

.1 Fabricate in accordance with CSA 101/I.S.2/A440.

.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 maximum permissible sizes.

.4 Brace frames to maintain squareness and rigidity during shipment and installation.

2.04 GLAZING

.1 Glaze windows in accordance with CSA 101/I.S.2/A440 AND Section 08 80 50 – Glazing.

2.05 HARDWARE

.1 Hardware: stainless steel or white bronze sash locks and aluminum handles to provide security and permit easy operation of units.

.2 Locks: provide operating sash with spring loading locking device, to provide automatic locking in closed position. Provide each unit with three (3) additional operators and locking mechanisms each.

.4 Where windows latching devices located in excess of 1900 mm above floor level:

.2 Equip casement units with roto operators with locking handle.

2.06 AIR BARRIER AND VAPOUR RETARDER

.1 Provide low expanding, single component polyurethane foam sealant installed

at head, jamb and sill perimeter of window for sealing to building air barrier, vapour retarder and window frame. Foam sealant width to be adequate to provide required air tightness and vapour diffusion control to building air barrier and vapour retarder foam interior.

3 EXECUTION

3.02 INSTALLATION

.1 Window installation:
- .1 Install in accordance with CSA 101/I.S.2/A440.
- .2 Arrange components to prevent abrupt variation in colour.

.1 Install shims between windows and building frame at each installation screw location. Shim and fasten windows in accordance with manufacturer's recommendations and CAN/CSA A440.4.

.3 Caulking:
- .1 Seal joints between windows and window sills with sealant. Caulk between sill upstand and window-frame. Caulk butt joints in continuous sills.
- .2 Apply sealant in accordance with Section 07 92 00 - Joint Sealants. Conceal sealant within window units except where exposed use is permitted by Departmental Representative.

3.04 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
- .1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.05 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by window installation.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 06 10 53 – Miscellaneous Rough Carpentry

.2 Section 08 14 16 – Flush Wood Doors

.3 Section 08 16 13 - Fibreglass Doors

1.02 REFERENCE STANDARDS

.1 American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA)
- .1 ANSI/BHMA A156.1-[2000], American National Standard for Butts and Hinges.
- .2 ANSI/BHMA A156.2-[2003], Bored and Preassembled Locks and Latches.
- .3 ANSI/BHMA A156.4-[2000], Door Controls - Closers.
- .4 ANSI/BHMA A156.5-[2001], Auxiliary Locks and Associated Products.
- .5 ANSI/BHMA A156.6-[2005], Architectural Door Trim.
- .6 ANSI/BHMA A156.16-[2002], Auxiliary Hardware.
- .7 ANSI/BHMA A156.17-[2004], Self-closing Hinges and Pivots.
- .8 ANSI/BHMA A156.18-[2006], Materials and Finishes.

.2 Canadian Steel Door and Frame Manufacturers' Association (CSDMA)
- .1 CSDMA Recommended Dimensional Standards for Commercial Steel Doors and Frames - 2009.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
- .1 Submit manufacturer's instructions, printed product literature and data sheets for door hardware and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Samples:
- .1 Submit for review and acceptance of each unit.
- .2 Samples will be returned for inclusion into work.
- .3 Identify each sample by label indicating applicable specification paragraph number, brand name and number, finish and hardware package number.
- .4 After approval samples will be returned for incorporation in Work.

.4 Hardware List:
- .1 Submit contract hardware list.
- .2 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.

.5 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

.6 Manufacturer's Instructions: submit manufacturer's installation

instructions.

1.04 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: submit operation and maintenance data for door hardware for incorporation into manual.

1.05 QUALITY ASSURANCE

.1 Regulatory Requirements:
  .1 Hardware for doors in fire separations and exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada.

.2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.06 DELIVERY, STORAGE AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Package items of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.

.4 Storage and Handling Requirements:
  .1 Store materials off ground indoors in dry location and in accordance with manufacturer's.
  .2 Protect prefinished surfaces with strippable coating.
  .3 Replace defective or damaged materials with new.

2 PRODUCTS

2.01 HARDWARE ITEMS

.1 Use one manufacturer's products only for similar items.

2.02 DOOR HARDWARE

.1 Locks and latches:
  .1 Bored and preassembled locks and latches: to CGSB69-GP-4M, bored, standard duty, wrought brass, satin nickel finish.
    - Master bedroom and bathrooms to have privacy lock
    - Exterior doors to have Weiser Grade 2 cylindrical passage hardware with a lever handle plus Weiser, or approved equal, Grade 2 auxiliary deadbolt with 5 pin keyway and minimum 25 mm throw. Storm doors shall be keyed lockset to match.
  .2 Knobs: 57.2 mm diameter screwless plain design.

.3 Roses and Escutcheons: round, 63.5 mm.
.4 Normal strikes: box type, lip projection not beyond jamb.
.5 Cylinders: key as directed.
.6 Finished to Satin Nickel.

.2 Butts and hinges:
.1 Butts and hinges: to ANSI/BHMA A156.1, 89 mm stainless steel, square corners, non-removable pin, full mortise, five knuckle, countersunk screws, heavy gauge.

.3 Door Closers and Accessories:
.1 Door controls (closers): to ANSI/BHMA A156.4, Grade 3, adjustable latch and closing speed, c/w parallel arm bracket, Satin Nickel finish. 10 year warranty. ULC rated to 1 hour for mechanical room. Install on mechanical room doors and exterior storm doors. Acceptable product: Weiser Lock Commercial Door Closer or approved equal.

.4 Auxiliary hardware: to ANSI/BHMA A156.16, as listed below, finished to Satin Nickel.
.1 Combination chain stop and holder, wall/door mounted: Two solid brass end brackets each attach to a spring, connected by heavy duty solid steel welded chain approximately 635 mm long. Chain covered in grey vinyl covering. Required on storm doors.
.2 Door viewer: 160 degree view, solid brass construction, Satin Nickel finish.

.5 Door bottom seal: door seal of extruded aluminum frame and with adjustable vinyl sweep, surface mounted with drip cap, closed ends, clear anodized finish.

.6 Thresholds: 125 mm wide x full width of door opening, extruded aluminum mill finish, serrated surface, with thermal break of rigid PVC, with vinyl door seal insert.

.7 Door stop: 100 mm flexible, rubber tip, Satin Nickel finish. Required at all doors that open against a wall.

.8 Weatherstripping:
.1 Head and jamb seal:
.1 Adhesive backed vinyl covered polyurethane foam material.
.2 Door bottom seal:
.1 Extruded aluminum frame and vinyl sweep, clear anodized finish.

2.03 FASTENINGS

.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 Where pull is scheduled on one side of door and push plate on other side, supply fastening devices, and install so pull can be secured through door from reverse side. Install push plate to cover fasteners.

.5 Use fasteners compatible with material through which they pass.

2.04 KEYING

.1 Doors locks to be keyed alike in groups as directed. Prepare detailed keying schedule in conjunction with Departmental Representative.

.2 Supply keys in triplicate for every lock in this Contract.

.3 Stamp keying code numbers on keys and cylinders.

.4 Hand over permanent keys to Departmental Representative.

3 EXECUTION

3.01 INSTALLATION

.1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

.2 Supply metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.

.3 Supply manufacturers' instructions for proper installation of each hardware component.

.4 Where door stop contacts door pulls, mount stop to strike bottom of pull.

.5 Use only manufacturer's supplied fasteners.
.1 Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.
.2 Install permanent cores and ensure locks operate correctly.

3.02 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 ensure tight fit at contact points with frames.

3.03 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.
.2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturer's instructions.
.3 Remove protective material from hardware items where present.
.4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.04 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by door hardware installation.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 07 82 00 – Joint Sealants.

.2 Section 08 14 16 – Fibreglass Doors.

.3 Section 08 54 13 – Windows.

1.02 REFERENCE STANDARDS

.1 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-12.8-97, Insulating Glass Units.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for glass, sealants, and glazing accessories and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:
.1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Saskatchewan, Canada.

1.04 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: submit operation and maintenance data for glazing for incorporation into manual.

1.05 QUALITY ASSURANCE

.1 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.06 DELIVERY, STORAGE AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Store and protect glazing and frames from nicks, scratches, and blemishes.
.3 Protect prefinished aluminum surfaces with wrapping.
.4 Replace defective or damaged materials with new.

1.07 AMBIENT CONDITIONS

.1 Ambient Requirements:
.1 Install glazing when ambient temperature is [10] degrees C minimum. Maintain ventilated environment for 24 hours after application.
.2 Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

2 PRODUCTS

2.01 MATERIALS

.1 Design Criteria:
.1 Ensure continuity of building enclosure vapour and air barrier using glass and glazing materials as follow:
.1 Utilize inner light of multiple light sealed units for continuity of air and vapour seal.
.2 Size glass to withstand wind loads, dead loads and positive and negative live loads acting normal to plane of glass to design pressure of 0.55 kPa to ASTM E330.
.3 Limit glass deflection to 1/200with full recovery of glazing materials.

.2 Silvered mirror glass: 5 mm thick, 900 mm x 900 mm
.1 Type 1B-float glass for high humidity use.

.3 Insulating Glass Units:
.1 Insulating glass units: to CAN/CGSB-12.8, double units for exterior doors, triple unit for glazed windows and screens, 4.76 mm sheet glass separated by 12.5 mm air space.
.1 Glass: to [CAN/CGSB-12.3] [CAN/CGSB-12.1] [CAN/CGSB-12.2] [CAN/CGSB-12.4] [CAN/CGSB-12.10].
.2 Glass thickness: 4.76 mm each light.
.3 Inter-cavity space thickness: 12.7 mm, 12.7 mm between inner and middle lights, 12.7 mm between middle and outer lights with low conductivity spacers.
.4 Inert gas fill: argon.

.4 Sealant: in accordance with Section 07 92 00 - Joint Sealants.

2.02 ACCESSORIES

.1 Setting blocks: Neoprene, 80-90 Shore A durometer hardness to ASTM D2240, minimum 100 mm x width of glazing rabbet space minus 1.5 mm x height.

.2 Spacer shims: Neoprene, 50-60 Shore A durometer hardness to ASTM D2240, 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 D2240; coiled on release paper; black colour.

.4 Glazing splines: resilient polyvinyl chloride, extruded shape to suit glazing channel retaining slot, colour as selected.

.5 Glazing clips: manufacturer's standard type.

.6 Lock-strip gaskets: to ASTM C542.

.1 Mirror attachment accessories:
.1 Mirror adhesive, chemically compatible with mirror coating and wall substrate.

3 EXECUTION

3.01 PREPARATION

.1 Clean contact surfaces with solvent and wipe dry.

.2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.

.3 Prime surfaces scheduled to receive sealant.

3.03 INSTALLATION: EXTERIOR – WET/DRY METHOD (PREFORMED TAPE AND SEALANT)

.7 Perform work in accordance with GANA Glazing Manual and GANA Laminated Glazing Reference Manual for glazing installation methods.

.8 Cut glazing tape to length and set against permanent stops, 6 mm below sight line. Seal corners by butting tape and dabbing with sealant.

.9 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.

.10 Place setting blocks at 1/4 points, with edge block maximum 150 mm from corners.

.11 Rest glazing on setting blocks and push against tape and heel of sealant with sufficient pressure to attain full contact at perimeter of light or glass unit.

.12 Install removable stops with spacer strips inserted between glazing and applied stops 6 mm below sight line.

.13 Fill gap between glazing and stop with sealant to depth equal to bite of frame on glazing, maximum 9 mm below sight line.

.14 Apply cap head of sealant along void between stop and glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

1.2 INSTALLATION: INTERIOR DRY METHOD (TAPE AND TAPE)

.1 Perform work in accordance with GANA Glazing Manual and GANA Laminated Glazing Reference 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 with edge block maximum 150 mm from corners.

.4 Rest glazing on setting blocks and push against tape with sufficient pressure to attain full contact at perimeter of light or glass unit.

.5 Place glazing tape on free perimeter of glazing in same manner described in 3.4.3. 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.

.6 Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.

.7 Knife trim protruding tape.

3.02 INSTALLATION: MIRRORS

.1 Set mirrors with adhesive, applied in accordance with adhesive manufacturer's instructions.

.2 Place plumb and level.

3.03 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
- .1 Leave Work area clean at end of each day.
  - .1 Remove traces of primer, caulking.
  - .2 Remove glazing materials from finish surfaces.
  - .3 Remove labels.
  - .4 Clean glass and mirrors using approved non-abrasive cleaner in accordance with manufacturer's instructions.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.04 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 After installation, mark each light with an "X" by using removable plastic tape or paste.
- .1 Do not mark heat absorbing or reflective glass units.

.3 Repair damage to adjacent materials caused by glazing installation.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 06 10 53 – Miscellaneous Rough Carpentry

.2 Section 07 21 16 – Blanket Insulation

.3 Section 07 26 00 – Vapour Retarders

.4 Section 07 84 00 – Fire Stopping

1.02 REFERENCE STANDARDS

.1 American Society for Testing and Materials (ASTM)
- .1 ASTM C 475-02(2015), Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
- .2 ASTM C 840-16, Standard Specification for Application and Finishing of Gypsum Board.
- .3 ASTM C 1002-14, Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
- .4 ASTM C 1047-14a, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
- .5 ASTM C 1178/C 1178M-13, Standard Specification for Glass Mat Water-Resistant Gypsum Backing Board.
- .6 ASTM C 1280-13a, Standard Specification for Application of Gypsum Sheathing.
- .7 ASTM C1396/C1396M-14a, Standard Specification for Gypsum board.

.2 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-51.34-M86(R1988), Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
- .2 CAN/CGSB-71.25-M88, Adhesive, for Bonding Drywall to Wood Framing and Metal Studs.

.3 Underwriters' Laboratories of Canada (ULC)
- .1 CAN/ULC-S102-10, Standard Method of Test of Surface Burning Characteristics of Building Materials and Assemblies.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
- .1 Submit manufacturer's instructions, printed product literature and data sheets for Gypsum board assemblies and include product characteristics, performance criteria, physical size, finish and limitations.

1.04 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00

- Common Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address and applicable standard designation.

.3 Exercise care in unloading gypsum board materials shipment to prevent damage.

.4 Storage and Handling Requirements in accordance with ASTM C 840-16:
.1 Store gypsum board assemblies materials level flat off ground indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Store and protect gypsum board assemblies from nicks, scratches, and blemishes.
.3 Protect gypsum board from direct exposure to rain, snow, sunlight, or other excessive weather conditions.
.4 Protect ready mix joint compounds from freezing, exposure to extreme heat and direct sunlight.
.5 Protect from weather, elements and damage from construction operations.
.6 Handle gypsum boards to prevent damage to edges, ends or surfaces.

1.05 AMBIENT CONDITIONS

.1 Maintain temperature 10 °C minimum, 21 °C maximum for 48 hours prior to and during application of gypsum boards and joint treatment, and for 48 hours minimumafter completion of joint treatment.

.2 Apply board and joint treatment to dry, clean, frost free surfaces.

.3 Ventilation: ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

2 PRODUCTS

2.01 MATERIALS

.1 Gypsum sheathing board: to ASTM C1396/C1396M-14 regular and Type X, thickness as indicated on drawings, 1200 mm wide x maximum practical length, ends square cut, edges squared.

.2 Water-resistant board: to ASTM C1396/C1396M-14 regular and Type X, thickness as indicated on drawings, 1200 mm wide x maximum practical length, ends square cut, edges squared. Refer to clause 3.02.3 for locations.

.3 Metal furring runners, hangers, tie wires, inserts, and anchors: to CAN/CSA S136-12.

.4 Drywall furring channels: 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board.

.5 Resilient drywall furring: 0.5 mm base steel thickness galvanized steel for resilient attachment of gypsum board.

.6 Steel drill screws: to ASTM C 1002-14.

.7 Stud adhesive: to CAN/CGSB-71.25.

.8 Casing beads, corner beads, control joints and edge trim: to ASTM C 1047, metal, 0.5 mm base thickness, perforated flanges, one piece length per location.

.9 Sealants: in accordance with Section 07 92 00 - Joint Sealants.

.10 Joint compound: to ASTM C 475, asbestos-free.

3 EXECUTION

3.01 ERECTION

.1 Do application and finishing of gypsum board to ASTM C 840-16 except where specified otherwise.

.2 Do application of gypsum sheathing to ASTM C 1280-13a.

.3 Erect hangers and runner channels for suspended gypsum board ceilings to ASTM C 840-16 except where specified otherwise.

.4 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.

.5 Install work level to tolerance of 1:1200.

.6 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles and all like conditions.

.7 Install 19 x 64 mm furring channels parallel to, and at exact locations of steel stud partition header track.

.8 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.

.9 Install wall furring for gypsum board wall finishes to ASTM C 840-16, except where specified otherwise.

.10 Furr duct shafts, beams, columns, pipes and exposed services where indicated.

.11 Erect drywall resilient furring transversely across studs and joists, spaced maximum 400 mm on centre and not more than 150 mm from ceiling/wall juncture. Secure to each support with 25 mm drywall screw.

.12 Install 150 mm continuous strip of 12.7 mm gypsum board along base of partitions where resilient furring installed.

3.02 APPLICATION

.1 Apply gypsum board after bucks, anchors, blocking, sound attenuation, electrical and mechanical work have been approved.

.2 Apply single or double layer gypsum board to wood or metal furring using screw fasteners for first layer, screw fasteners for second layer. Refer to drawings for locations of each application. Maximum spacing of screws 300 mm on centre.

.1 Single-Layer Application:

.1 Apply gypsum board on ceilings prior to application of walls to ASTM C 840-16.

.2 Apply gypsum board on walls vertically or horizontally, providing sheet lengths that will minimize number of board edges or end joints.

.2 Double-Layer Application:

.1 Install gypsum board for base layer and exposed gypsum board for face layer.

.2 Apply base layer to ceilings prior to base layer application on walls; apply face layers in same sequence. Offset joints between layers at least 250 mm.

.3 Apply base layers at right angles to supports unless otherwise indicated.

.4 Apply base layer on walls and face layers vertically with joints of base layer over supports and face layer joints offset at least 250 mm with base layer joints.

.3 Apply water-resistant gypsum board to interior of bathroom and ensuite, all walls and ceiling. Apply water-resistant sealant to edges, ends, cut-outs which expose gypsum core and to fastener heads. Do not apply joint treatment on areas to receive tile finish.

.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.

3.03 INSTALLATION

.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 on centre using contact adhesive for full length.

.2 Install casing beads around perimeter of suspended ceilings.

.3 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.

.4 Install insulating strips continuously at edges of gypsum board and casing beads abutting exterior window and exterior door frames, to provide thermal break.

.5 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.

.6 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with AWCI Levels of Gypsum Board Finish:

.5 Level 4: embed tape for joints and interior angles in joint

compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges.

.7 Finish corner beads, control joints and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.

.8 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board, invisible after surface finish is completed.

.9 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.

.10 Completed installation smooth, level or plumb, free from waves and other defects and ready for surface finish.

.11 Apply one coat of white primer sealer over surface to be textured. When dry apply textured finish in accordance with manufacturer's instructions.

.12 Mix joint compound slightly thinner than for joint taping.

.13 Apply thin coat to entire surface using trowel or drywall broad knife to fill surface texture differences, variations or tool marks.

.14 Allow skim coat to dry completely.

.15 Remove ridges by light sanding or wiping with damp cloth.

3.04 CLEANING

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

3.05 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by gypsum board assemblies installation.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 06 10 53 – Miscellaneous Rough Carpentry

.2 Section 06 20 00 – Finish Carpentry

1.02 REFERENCE STANDARDS

.1 ASTM International
  .1 ASTM F 1066-04(2010)e1, Standard Specification for Vinyl Composition Floor Tile.

.3 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB-25.20-95, Surface Sealer for Floors.
  .1 SCAQMD Rule 1168-[A2011], Adhesive and Sealant Applications.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
  .1 Submit manufacturer's instructions, printed product literature and data sheets for resilient tile flooring and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Samples:
  .1 Submit duplicate tile in size specified, 300 mm long.

1.04 MAINTENANCE MATERIAL SUBMITTALS

.1 Extra Materials:
  .1 Provide extra materials of laminate flooring and adhesives in accordance with Section 01 78 00 - Closeout Submittals.
  .2 Leave one complete package of tile on site for maintenance use.
  .6 Store where directed by Departmental Representative.

1.05 DELIVERY, STORAGE AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
  .1 Store materials off ground indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  .3 Replace defective or damaged materials with new.

1.06 SITE CONDITIONS

.1 Ambient Conditions:
.1 Maintain air temperature and structural base temperature at flooring installation area above 20 degrees C for 48 hours before, during and for 48 hours after installation.

2 PRODUCTS

2.01 MATERIALS

.1 Provide Commercial Laminate consisting of four layered construction, 192 mm x 1286 x 8 mm thick, four layered thermal fused process includes a smooth, AC5 abrasion resistant wear surface
.2 Acceptable product: Mannington Natural Centerville Oak, #65001M or approved equal.
.3 Provide all available coordinating transitions and moulding pieces designated to meet installation application for finishing and transitioning to other flooring products. Install in accordance with manufacturer’s guidelines and intended use.
.4 To be installed in living room, hallways and bedrooms.

3 EXECUTION

3.03 WOOD SUB-FLOOR / UNDERLAYMENT

3.04 APPLICATION

1. Must be dry, clean, structurally sound, flat to within 4.8 mm in 3048 mm and slope should not exceed 15 mm in 1800 mm, well nailed and/or glued, free of voids and with flat joint alignment.

2. Use Patch, Underlayment and Embossing Leveler with S-195 Latex Underlayment Additive to patch cracks, holes and level depressions of small areas. Ensure that patching underlayment is sanded smooth prior to installation.
3. Suspended applications must have a minimum of 457 mm well ventilated space below the installation.
4. Ensure that when screws /fasteners are used to set heads flush with or below surface.
5. Must be sanded smooth to remove varnish, high edges, chips, or other contaminants. Use minimum thick 16mm or 19mm APA-CDX grade underlayment plywood or equivalent. For overlay type underlayment sheeting see the latest edition of F-5061 of the AGIS for approved structures. For all subfloor panel/ underlayment installation follow the manufacturer’s requirements of that system.

3.07 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
.1 Clean flooring surfaces to flooring manufacturer's printed instructions.

3.08 PROTECTION

.1 Protect new floors from time of final set of adhesive until final inspection.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 06 10 53 – Miscellaneous Rough Carpentry

.2 Section 06 20 00 – Finish Carpentry

1.02 REFERENCE STANDARDS

.1 ASTM International
  .1 ASTM F 1303-04(2014), Standard Specification for Sheet Vinyl Floor Covering with Backing.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
  .1 Submit manufacturer's instructions, printed product literature and data sheets for resilient sheet flooring and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Samples:
  .1 Submit duplicate 300 x 300 mm sample pieces of sheet material.

1.04 MAINTENANCE MATERIAL SUBMITTALS

.1 Extra Materials:
  .1 Provide extra materials of resilient sheet flooring and adhesives in accordance with Section 01 78 00 - Closeout Submittals.
  .2 Leave all usable remnants of linoleum on site for maintenance use.
  .3 Identify each roll of sheet flooring and each container of adhesive.
  .4 Store where directed by Departmental Representative.

1.05 DELIVERY, STORAGE AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
  .1 Store materials off ground indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  .2 Replace defective or damaged materials with new.

1.06 SITE CONDITIONS

.1 Ambient Conditions:
  .1 Maintain air temperature and structural base temperature at flooring

installation area above 20 degrees for 48 hours before, during and 48 hours after installation.

2 PRODUCTS

2.01 MATERIALS

.1 Resilient Sheet vinyl with backing. Mannington Aurora-Canyon Ridge #41223 or approved equal. Installed in bathroom, laundry room, entrances and stairways.
- .1 Type: 1
- .2 Grade: 1
- .3 Backing: inorganic .
- .4 Pattern: embossed.
- .5 Texture: printed to simulate natural slate.
- .6 Colour: selected by Departmental Representative.
- .7 Thickness: 2 mm.

.2 Resilient sheet plank to be installed in living room, hallways, bedrooms, kitchen, and dining room. Moduleo Classic Oak 24844, or approved equal. Size: 196 mm x 1320 mm

.2 Resilient stair nosing: square nose, 5 mm thick, 30 mm vertical face, 40 mm horizontal face ribbed, one-piece length for stair nosing, colour selected by Departmental Representative.

.3 Primers and adhesives: of types recommended by resilient flooring manufacturer for specific material on applicable substrate, above, on or below grade.
- .1 Rubber floor adhesives:

.4 Sub-floor filler and leveller: white premix latex requiring water only to produce cementitious paste as recommended by flooring manufacturer for use with their product.

.5 Metal edge strips:
- .1 Aluminum extruded, smooth, mill finish stainless steel with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.

.6 Edging to floor penetrations: stainless steel, type recommended by flooring manufacturer.

.7 Sealer and wax: type recommended by resilient flooring material manufacturer for material type and location.

3 EXECUTION

3.01 SITE VERIFICATION OF CONDITIONS

.1 Ensure concrete floors are clean and dry by using test methods recommended by flooring manufacturer.

3.02 PREPARATION

3.03 APPLICATION: FLOORING

.1 Provide high ventilation rate, with maximum outside air, during installation, and for 48 hours after installation. If possible, vent directly to outside.

.2 Apply adhesive uniformly using recommended trowel. Do not spread more adhesive than can be covered by flooring before initial set takes place.

.3 Lay flooring with seams parallel to building lines to produce a minimum number of seams. Border widths minimum 1/3 width of full material.

.4 Heat weld seams of linoleum sheet flooring in accordance with manufacturer's printed instructions.

.5 As installation progresses, and after installation roll flooring with 45 kg minimum roller to ensure full adhesion.

.6 Cut flooring around fixed objects.

.7 Terminate flooring at centreline of door in openings where adjacent floor finish or colour is dissimilar.

.8 Install metal edge strips at unprotected or exposed edges where flooring terminates.

3.04 APPLICATION: STAIRS

.1 Finish stair risers and stair stringers with resilient sheet and install prior to tread material.

.2 Install stair nosingsone piece for full width of stair. Adhere over entire surface and fit accurately.

3.05 CLEANING

.1 Progress Cleaning: clean in accordance with Section [01 74 11 - Cleaning].
.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section [01 74 11 - Cleaning].
.1 Clean flooring [and][base] surfaces to flooring manufacturer's printed instructions.

.3 Waste Management: separate waste materials for [reuse][and][recycling] in accordance with Section [01 74 21 - Construction/Demolition Waste Management and Disposal][01 35 21 - LEED Requirements].
.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.06 PROTECTION

.1 Protect new floors from time of final set of adhesive until final inspection.

.2 Prohibit traffic on floor for 48 hours after installation.

.3 Use only water-based coating for linoleum.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 06 10 53 – Miscellaneous Rough Carpentry

.2 Section 06 20 00 – Finish Carpentry

.3 Section 06 40 00 – Architectural Woodwork

.4 Section 08 14 16 – Flush Wood Doors

.5 Section 08 16 13 – Fibreglass Doors

.6 Section 09 21 16 – Gypsum Board Assemblies

1.02 REFERENCE STANDARDS

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

.2 Master Painters Institute (MPI)
  .1 Architectural Painting Specification Manual - current edition.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
  .1 Provide manufacturer's instructions, printed product literature and data sheets for paint and paint products and include product characteristics, performance criteria, physical size, finish and limitations.
  .2 Submit 2 copies of WHMIS MSDS in accordance with Section [1 35 29.06 - Health and Safety Requirements.
  .3 Confirm products to be used are in MPI's approved product list.
  .4 Upon completion, provide 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 number s.
    .4 MPI Environmentally Friendly classification system rating.
    .5 Manufacturer's Material Safety Data Sheets (MSDS).
    .6 MPI #

.3 Samples:
  .1 Provide 200 mm x 300 mm sample panels of each paint with specified paint or coating in colours, gloss/sheen and textures required to MPI Architectural Painting Specification Manual.
  .2 When approved, samples shall become acceptable standard of quality for appropriate on-site surface with one of each sample retained on-site.
  .3 Provide full range of available colours where colour availability is restricted.

1.04 CLOSEOUT SUBMITTALS

.1 Provide in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: Provide operation and maintenance data for painting materials for incorporation into manual.

.3 Include :
- .1 Product name, type and use.
- .2 Manufacturer's product number.
- .3 Colour numbers.

1.05 MAINTENANCE MATERIAL SUBMITTALS

- .4 Extra Stock Materials:
- .5 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
- .6 Submit 1 four litre can of each type and colour of finish coating. Identify colour and paint type in relation to established colour schedule and finish system.

1.06 DELIVERY, STORAGE AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .1 Labels: to indicate:
  - .1 Type of paint or coating.
  - .2 Compliance with applicable standard.
  - .3 Colour number in accordance with established colour schedule.

.3 Storage and Handling Requirements:
- .1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
- .2 Observe manufacturer's recommendations for storage and handling.
- .3 Store materials and supplies away from heat generating devices.
- .4 Store materials and equipment in well ventilated area with temperature range 7 degrees C to 30 degrees C.

1.07 SITE CONDITIONS

.1 Ambient Conditions:
- .1 Heating, Ventilation and Lighting:
  - .1 Where required, provide continuous ventilation for seven days after completion of application of paint.
  - .2 Co-ordinate use of existing ventilation system with Departmental Representative and ensure its operation during and after application of paint as required.
  - .3 Provide temporary ventilating and heating equipment where permanent facilities are not available or supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.
  - .4 Perform no painting work unless a minimum lighting level of

323 Lux is provided on surfaces to be painted. Adequate lighting facilities to be provided by General Contractor.

.2 Temperature, Humidity and Substrate Moisture Content Levels:

.1 Unless specifically pre-approved by specifying body, Paint Inspection Agency and, applied product manufacturer, perform no painting work when:

.1 Ambient air and substrate temperatures are below 10 degrees C.

.2 Substrate temperature is over 32 degrees 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 Relative humidity is above 85 % or when dew point is less than 3 degrees C variance between air/surface temperature.

.5 Rain or snow are forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.

2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

.3 Environmental Performance Requirements:

.4 Provide paint products meeting MPI "Environmentally Friendly" ratings based on VOC (EPA Method 24) content levels.

2.02 MATERIALS

.1 Only paint materials listed in latest edition of MPI Approved Products List (APL) are acceptable for use on this project.

.2 Paint materials for paint systems: to be products of single manufacturer.

2.03 COLOURS

.1 Departmental Representative will provide Colour Schedule after Contract award for approval.

.2 Colour schedule will be based upon selection of two base colours and one accent colour. No more than 3 colours will be selected for entire project.

.3 Selection of colours will be from manufacturers' full range of colours.

.4 Where specific products are available in restricted range of colours, selection will be based on limited range.

.5 Second coat in three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats if requested by Departmental Representative.

2.04 GLOSS/SHEEN RATINGS

.1 Paint gloss: defined as sheen rating of applied paint, in accordance with following values:

Gloss Level Category/	Units @ 60 Degrees/	Units @ 85 Degrees/
G1 - matte finish	0 to 5	max. 10
G2 - velvet finish	0 to 10	10 to 35
G3 - eggshell finish	10 to 25	10 to 35
G4 - satin finish	20 to 35	min. 35
G5 - semi-gloss finish	35 to 70	
G6 - gloss finish	70 to 85	
G7 - high gloss finish	> 85	

.2 Gloss level ratings of painted surfaces as noted.

2.05 EXTERIOR PAINTING SYSTEMS

.1 Dimension Lumber: columns, beams, exposed joists, underside of decking, siding, fencing, etc.
.1 EXT 6.2C - Alkyd egg shell finish over alkyd primer sealer.

.2 Dressed Lumber: doors, door and window frames, casings, battens, smooth facias, etc.
.1 EXT 6.3B - Alkyd egg shell finish over alkyd primer sealer

.3 Wood Decks and Stairs/Steps: using spaced lumber
.1 EXT 6.5D - Deck stain over wood preservative.

.4 Fibreglass: doors, panels, trims, fabrications, etc.
.1 EXT 6.7B - Alkyd egg shell finish over S.B. bonding primer.

2.06 INTERIOR PAINTING SYSTEMS

.1 Dressed lumber: including doors, door and window frames, casings, mouldings:
.1 INT 6.3B - Alkyd egg shell finish over alkyd primer sealer.
.2 Plaster and gypsum board: gypsum wallboard, drywall, "sheet rock type material", and textured finishes:
.1 INT 9.2C - Alkyd egg shell finish alkyd primer/sealer.

3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

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

3.02 GENERAL

.1 Perform preparation and operations for interior painting in accordance with MPI Architectural Painting Specifications Manual except where specified otherwise.

.2 Apply paint materials in accordance with paint manufacturer's written

application instructions.

3.03 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable to be painted in accordance with manufacturer's written instructions:
  .1 Visually inspect substrate in presence of Departmental Representative.

3.04 PREPARATION

.1 Perform preparation and operations for exterior painting in accordance with MPI Maintenance Painting Manual except where specified otherwise.

.2 Apply paint materials in accordance with paint manufacturer's written application instructions.

.3 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].

3.05 PROTECTION

.1 Protect items that are permanently attached such as Fire Labels on doors and frames.

.2 Protect factory finished products and equipment.

.3 Remove light fixtures, surface hardware on doors, and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations.Store items and re-install after painting is completed.

3.06 APPLICATION

.1 Method of application to be as approved by Departmental Representative. Apply paint by brush, roller or airless sprayer. 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. 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 to be free of roller tracking and heavy stipple unless approved by Departmental Representative.
  .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 runs and sags.
.5 Use brushes to work paint into cracks, crevices and places which are not adequately painted by spray.
.6 Wood; if sprayed, must be back rolled.

.4 Use dipping, sheepskins or daubers when no other method is practical in places of difficult access and when specifically authorized by Departmental Representative.

.5 Apply coats of paint as 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 projecting ledges.

.9 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

3.07 MECHANICAL/ ELECTRICAL EQUIPMENT

.1 Unless otherwise specified, paint exterior exposed conduits, piping, hangers, duct work and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as noted otherwise.

.2 Do not paint over nameplates.

.3 Paint natural gas piping yellow.

3.08 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning:
.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.09 RESTORATION

.1 Clean and re-install hardware items removed before undertaken 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. Avoid scuffing

newly applied paint.

.5 Restore areas used for storage, cleaning, mixing and handling of paint to clean.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 06 10 53 – Miscellaneous Rough Carpentry

.2 Section 08 80 50 - Glazing

1.02 REFERENCE STANDARDS

.1 CSA International
  .1 CAN/CSA-B651-04, Accessible Design for the Built Environment.

1.03 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 data sheets and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:
  .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Saskatchewan of Canada.
  .2 Indicate size and description of components, base material, surface finish inside and out, hardware and locks, attachment devices, description of rough-in-frame, building-in details of anchors for grab bars.

1.04 CLOSEOUT SUBMITTALS

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

1.05 MAINTENANCE MATERIAL SUBMITTALS

  .1 Tools:
  .2 Provide special tools required for assembly, disassembly or removal for toilet and bath accessories in accordance with requirements specified in Section 01 78 00 - Closeout Submittals.

1.06 DELIVERY, STORAGE AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
  .1 Store materials indoors in dry location and in accordance with manufacturer's recommendations.

.2 Store and protect toilet and bathroom accessories from nicks, scratches, and blemishes.

2 PRODUCTS

2.01 MATERIALS

.1 Stainless steel sheet metal: to ASTM A 167, Type 302, with chrome plated finish.

.2 Stainless steel tubing: Type 302, commercial grade, seamless welded, 1.2 mm wall thickness.

.3 Fasteners: concealed screws and bolts hot dip galvanized, exposed fasteners to match face of unit. Expansion shields fibre, lead or rubber as recommended by accessory manufacturer for component and its intended use.

2.02 COMPONENTS

.1 Toilet tissue dispenser: single, recess mounted, chrome plated steel frame, capacity of 500 double ply roll, roll under spring tension for controlled delivery.

.2 Shower curtain: 225 g white duck shower curtain. Provide curtain hold-back hook and chain at each curtain.

.3 Shower rods: 25 mm diameter x 1.2 mm wall thickness, chrome plated curved steel tubing of required length with satin chrome finished flanges, 12 shower curtain hooks and curtain hold-back hook and chain. Shower rod material and anchorage to withstand downward pull of 0.9 kN.

.4 Closet rod: 25 mm diameter x 1.6 mm wall thickness, chrome plated steel tubing with satin chrome finished flanges at each enc. Provide centre supports for lengths over 1200 mm. Length to run full width of closet.

.5 Towel bar: 19 mm square chrome plated steel tubing, end brackets, concealed fasteners, 600 mm long. Two required in total. One adjacent tub, one adjacent lavatory.

.6 Recessed soap holder: recessed stainless steel 158 x 158 mm soap tray with integral grab bar, extended lip and steel backplate. Mount in tub in location as directed by Departmental Representative.

.7 Robe hook: chrome plated cast Zamak with 75 mm projection. Install behind door, 1800 mm above floor.

.8 Medicine cabinet: swing door cabinet, recessed, two glass adjustable shelves. Cabinet completely reversible.
- .1 Size: 355 x 460 x 90 mm.
- .2 Cabinet: 13 mm thick wood
- .3 Cabinet door: to be face framed to match vanity doors.
- .4 Hinges: 1 mm stainless steel piano type, with 105 degrees internal stop.
- .5 Latch: magnetic.
- .6 Shelves: 5 mm glass, rolled edges.

2.03 FABRICATION

.1 Weld and grind joints of fabricated components flush and smooth. Use mechanical fasteners only where approved.

.2 Wherever possible form exposed surfaces from one sheet of stock, free of joints.

.3 Brake form sheet metal work with 1.5 mm radius bends.

.4 Form surfaces flat without distortion. Maintain flat surfaces without scratches or dents.

.5 Back paint components where contact is made with building finishes to prevent electrolysis.

.6 Hot dip galvanize concealed ferrous metal anchors and fastening devices to CAN/CSA-G164.

.7 Shop assemble components and package complete with anchors and fittings.

.8 Deliver inserts and rough-in frames to job site at appropriate time for building-in. Provide templates, details and instructions for building in anchors and inserts.

.9 Provide steel anchor plates and components for installation on studding and building framing.

2.04 FINISHES

.1 Chrome and nickel plating: to ASTM B 456, satin finish.

.2 Manufacturer's or brand names on face of units not acceptable.

3 EXECUTION

3.01 INSTALLATION

.1 Install and secure accessories rigidly in place as follows:
  .1 Stud walls: install steel back-plate to stud prior to drywall finish. Provide plate with threaded studs or plugs.

.2 Install grab bars on built-in anchors provided by bar manufacturer.

.3 Use tamper proof screws/bolts for fasteners.

.4 Fill units with necessary supplies shortly before final acceptance of building.

.5 Install mirrors in accordance with Section 08 80 50 - Glazing.

3.02 ADJUSTING

.1 Adjust toilet and bathroom accessories components and systems for correct function and operation in accordance with manufacturer's written instructions.

.2 Lubricate moving parts to operate smoothly and fit accurately.

3.03 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.04 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by toilet and bathroom accessories installation.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 06 10 53 – Miscellaneous Rough Carpentry

1.02 REFERENCE STANDARDS

.1 ASTM International
  .1 ASTM D 1784-11, Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
  .1 Submit manufacturer's printed product literature and data sheets for blackout roller shades and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:
  .1 Indicate on drawings dimensions in relation to window jambs, operator details, head anchorage details, hardware and accessories details.

.4 Samples:
  .1 Submit one representative working

1.04 DELIVERY, STORAGE AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
  .1 Store materials off ground indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

2 PRODUCTS

2.01 DESIGN CRITERIA

.1 Design roller shade to following requirements:
  .1 Allow wear susceptible parts to be replaceable by either user or manufacturer.
  .2 Guarantee of at least five-years of available replacement parts following discontinue of products manufacture.
  .3 Include instructions for replacing or repairing worn parts, including

inventory numbers for parts and procedures for ordering replacement parts.

.4 Allow for refurbishing or return of used vertical louvre blinds.

2.02 MATERIALS AND FABRICATION

.1 Minimum width: 125 mm

.2 Maximum width: 3048 mm

.3 Minimum height: 914 mm

.4 Maximum height: 3048 mm

.5 Flame Retardant

.6 Vinyl Fiberglass laminated with pure vinyl

.7 Chain Lift Roller diameter: Up to 2162 mm width = 32 mm, 2137 mm to 3077 mm = 51 mm, over 3080 mm = 45 mm.

.8 Distance from edge of window to fabric on inside/outside mount and chain lift: 22 mm on chain side, 9.5 mm on opposite side for a total of 32 mm.

.9 Distance from edge of window to fabric on inside/outside mount and spring lift: 22 mm on each side for a total of 45 mm.

.10 Shades come standard with a white beaded lift cord unless ordered as a spring mount.

.11 Shades over 1524 mm in width must be ordered as a chain mech only.

.12 Minimum mounting space required for inside mount: 51 mm

.13 4 layer, 12 gauge

.14 Roller shades wider than 1854 mm and longer than 1828 mm may have a seam in the fabric

.15 Comes Standard with Chain

3 EXECUTION

3.01 INSTALLATION

.1 Install blinds at all exterior windows.

.2 Include centre brackets where necessary to prevent deflection of headrail.

.3 Adjust to provide for operation without binding.

.4 Use non corrosive metal fasteners for installation, concealed in final assembly.

.5 Blinds shall overlap the window trim.

3.02 ADJUSTING

.1 Adjust roller shade components for correct function and operation in accordance with manufacturer's written instructions.

.2 Lubricate moving parts to operate smoothly and fit accurately.

3.03 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.04 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by horizontal louvre blinds installation.

END OF SECTION

1 General

1.1 RELATED REQUIREMENTS

.1 Section 22 42 01 Plumbing Specialties and Accessories.

1.2 REFERENCE STANDARDS

.1 Canadian Standards Association (CSA International).
- a) CSA-B64 Series-0, Backflow Preventers and Vacuum Breakers.
- b) CSA-B79-94(R2000), Floor, Area and Shower Drains, and Cleanouts for Residential Construction.
- c) CSA-B356-00, Water Pressure Reducing Valves for Domestic Water Supply Systems.

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

3. Plumbing and Drainage Institute (PDI).
- a) PDI-G101-96, Testing and Rating Procedure for Grease Interceptors with Appendix of Sizing and Installation Data.
- b) PDI-WH201-92, Water Hammer Arresters Standard.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
- .1 Submit manufacturer's instructions, printed product literature and data sheets for products and accessories and include product characteristics, performance criteria, physical size, finish and limitations.
- .2 Submit manufacturer's installation instructions.

.3 Shop Drawings:
- .1 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .2 Instructions: submit manufacturer's installation instructions.

1.5 DELIVERY, STORAGE, AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials off ground in dry location and in accordance with manufacturer's recommendations.

.2 Store materials off ground with moisture barrier at both ground level and as a cover forming a well-ventilated enclosure, with drainage to prevent standing water.

.3 Replace defective or damaged materials with new.

2 Products

2.1 FIRE EXTINGUISHER

.1 Supply and install a 5 kg. dry chemical fire extinguishers, suitable for all types of fire, Model 4A-40BC. Mount in each foyer and basement of all units.

2.2 FLOOR DRAINS

.1 Floor drains shall be installed as referred to in Section 22 42 01, and be complete with threaded cap below floor ring and perforated cover.

2.3 BACKWATER VALVE

.1 It shall be the responsibility of the Contractor to protect the sump pit, standpipes and floor drain with in-line backwater valves to prevent sewer backup.

.2 The in-line backwater valves shall be accessible for maintenance and repair by use of a length of 300 mm diameter PVC pipe, floor ring and blank cover.

2.4 MOTORS

.1 All motors shall be manufactured and installed according to CSA requirements and CEMA standards for a 40 deg.C temperature rise. No motor shall operate in excess of 1800 RPM.

3 Execution

3.1 INSTALLATION

1. Install in accordance with National Plumbing Code of Canada, provincial codes, and local authority having jurisdiction.

.2 Install in accordance with manufacturer's instructions and as

specified..

3.2 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.3 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by rough carpentry installation.

END OF SECTION

1 General

1.1 RELATED REQUIREMENTS

.1 Section 21 01 05 – Common Work Results - Mechanical.

1.2 REFERENCE STANDARDS

.1 Canadian Standards Association (CSA International). All fixtures, fittings and pipes are to bear CSA approval.

.1 CAN/CSA-B45 Series-02(R2008), Plumbing Fixtures.

.2 CAN/CSA-B125.3-05, Plumbing Fittings.

.3 CAN/CSA-B651-04, Accessible Design for the Built Environment.

.2 The manufacturer or Contractor shall provide all labour, materials and equipment necessary to construct and install a complete, functioning, plumbing system in accordance with the Canadian Plumbing code, for the accommodation unit selected.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit shop drawings to requirements of Section 01 33 00.

.2 Include product description, model, dimensions, component sizes, rough-in requirements, service sizes, finishes, connections to other equipment and piping, performance data, power requirements, and certified pump curves.

.3 Submissions for valves shall clearly indicate make, model, location, type, size and pressure rating.

.4 Submit manufacturer's installation instructions under provisions of Section 01 30 00.

1.5 DELIVERY, STORAGE, AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials off ground in dry location and in accordance with manufacturer's recommendations.

.2 Store materials off ground with moisture barrier at both ground level and as a cover forming a well-ventilated enclosure, with drainage to prevent standing water.

.3 Store wood I-beams and I-joists on edge.

.4 Stack, lift, brace, cut and notch engineered lumber

products in strict accordance with manufacturer's instructions and recommendations.

.5 Replace defective or damaged materials with new.

1.6 SERVICES

.1 Service connection points for water and sewer shall be grouped at one location, preferably in the immediate area of the Utility Room (as applicable).

2 Products

2.1 WATER PIPING

.1 Hot and cold water lines shall be PEX. Entire hot & cold water supply line to be insulated with 10 mm thick preformed foam insulation, properly sized to fit pipe diameter. Acceptable produce, Incolock 10 mm foam pipe insulation or approved equal.

.2 Hot and cold water supplies to each fixture or group of fixtures are to be fitted with two ball type isolating valves. Include inlet and outlet on hot water heater.

2.2 WATER CLOSET

.1 White coloured vitreous china jet, whirlpool action, close coupled closet combination with regular bowl, vitreous china lined tank and flapper type flush valve.

.2 Design for water closet based on Crane “Chateau” and American Standard “Cadet II”.

.3 Seat design based on Olsonite #30.

.4 Supply pipe to be chrome plated 10 mm angle with stop and escutcheon..

2.3 BATH TUB

.1 White colour modular tub complete with dome light DL2-white, heavy gauge curved CCR55 curtain rod, design based on MAAX Montego 60-II, or approved equal.

.2 Tub to be fitted out with single lever washerless chrome plated brass faucet assembly with mechanical waste and shower diverter, 40 mm waste and overflow. Design based on Moen L82839, or approved equal.

.3 Trap to be 40 mm copper or plastic with cleanout. Concealed shower fittings complete with ball joint shower head, bent arm and escutcheon.

2.4 SHOWER

.1 White colour modular shower stall complete with dome light DL2-white, heavy gauge straight CR55 curtain rod, design based on Madison 3 SH33L/R made by Mirolin.

.2 Shower to be fitted out with single lever washerless chrome plated supply assembly and concealed shower fittings complete with ball joint shower head, bent arm and escutcheon.

.3 Design based on Delta brand.

2.5 VANITY LAVATORY

.1 53 cm x 43 cm steel resisting, white coloured porcelain china, self-rimming countertop lavatory with supply openings on 10 cm centres, semi-oval basin with front overflow and cushion seal gasket, soap depressions and swivel clamps.

.2 Faucet to be fitted with 10 cm combination lavatory supply fittings with mechanical waste, 10 cm long spout with aerator, single lever washerless chrome plated brass faucet assembly.

.3 Design based on Moen L84683, or approved equal.

2.6 KITCHEN SINK

.1 Double compartment 79 cm x 52 cm x 18 cm Type 203, heavy gauge 18-8 grade stainless steel sink with back ledge and three hole drilling. Design based on Steel Queen by Waltec.

.2 All corners well back in the bowl. Baked on heavy undercoating. Positive waterproof seal and under rim adhesive factory applied.

.3 Kitchen supply fitting with 19.7 cm long swing spout and aerator. Heavy chrome finish, single lever washerless construction.

.4 Design based on Delta.

2.7 HOSE BIBB

.1 Provide 13 mm hot and cold chrome plated for the washer where shown.

.2 Two exterior hose bibbs with frost proof hydrant shall be provided, 254 mm long, all brass, with wall flange. Install at front and rear yard elevations with interior shutoff ball valves.

2.8 LAUNDRY TUB

.1 Provide one PVC laundry tub complete with Moen 4871, or approved

equal, faucet and 50 mm drain per unit. One in the single family home and two in the duplexes. Install next to washer and dryer.

2.9 HOT WATER HEATER

.1 The hot water tank shall be heated by natural gas or propane (as per locations dictated in the general requirements) and shall have a 144 litre capacity and a minimum recovery rate of 155 litres per hour at 50 deg.C. Unit shall be a high efficiency unit. Design based on Jetglas M-4-TW40T6FSX. Provide a minimum (10) year guarantee. Provide venting as per manufacturers specifications. Include all chimney extensions as required for water heater to be floor mounted and wall vented. Provide mesh vent cap protector over exterior exhaust vent.

.2 Upon completion of the installation, the Contractor shall have the equipment installation inspected by the equipment manufacturer’s representative and submit a report to Owner. certifying that the entire installation is in accordance with the manufacturer’s instructions.

.3 Provide one (1) water heater per single family home, two (2) per duplex.

2.10 WASHING MACHINE

.1 Washer to be provided by others. Contractor is responsible for installation of plumbing systems. To be ready for hook-up.

2.11 DISHWASHER

.1 Dishwasher to be provided by others. Contractor is responsible for installation of plumbing systems. To be ready for hook-up.

3 Execution

3.1 EXAMINATION

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

3.2 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  .1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.3 PROTECTION

.1 Protect installed products and components from damage during construction.

END OF SECTION

1 GENERAL

1.1 SECTION INCLUDES

.1 Forced air furnaces.
.2 Controls.

1.2 REFERENCES

.1 ARI 210/240 - Unitary Air-Conditioning and Air-Source Heat Pump Equipment.
.2 ARI 270 - Sound Rating of Outdoor Unitary Equipment.
.3 ASHRAE 52 - Method of Testing Air Cleaning Devices Used in General Ventilation for Removing Particulate Matter.
.4 ASHRAE 90A - Energy Conservation in New Building Design.
.5 ASHRAE 103 - Method of Testing for Annual Fuel Utilization Efficiency of Residential Central Furnaces and Boilers.
.6 NFPA 54 (AGA Z223.1) - National Fuel Gas Code.
.7 NFPA 90B - Installation of Warm Air Heating and Air-Conditioning Systems.
.8 NFPA 211 - Chimneys, Fireplaces, Vents, and Solid Fuel Burning Appliances.

1.3 SUBMITTALS FOR REVIEW

.1 Section 01 33 00: Procedures for submittals.

.2 Product Data: Provide rated capacities, weights, accessories, electrical nameplate data, and wiring diagrams.

.3 Shop Drawings: Indicate assembly, required clearances, and location and size of field connections.

1.4 QUALITY ASSURANCE

.1 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

1.5 REGULATORY REQUIREMENTS

.1 Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

1.6 WARRANTY

.1 Section 01 78 10: Submittals for project closeout.

.2 Provide five year manufacturer’s warranty for heat exchangers.

.3 Provide three year manufacturer's warranty for solid state ignition modules.

.4 Provide five year manufacturer's warranty for electronic air cleaners.

1.7 EXTRA MATERIALS

.1 Section 01 78 10: Submittals for project closeout.
.2 Provide two of pilot thermocouples.

.3 Provide one extra set of filters.

2 PRODUCTS

2.1 HEATING UNITS

.1 The manufacturer of the accommodation unit, shall provide all labour, material and equipment necessary to construct and install an approved package type, fully operative, ducted warm air heating and exhaust system. This system shall be fueled by Natural Gas or Propane (as per locations dictated in the general requirements). The system shall have sufficient capacity to maintain on a continuing basis, a minimum indoor temperature of 22.2 deg.C at the outside winter design temperature as determined by the NBC for the site location. All duct connections shall be sealed by a mastic approved for the purpose. Balance the heating system when complete to ensure even heat throughout residence and provide a written report of the air flows. No branch ducts will be allowed out of the ends of the trunk ducts.

.2 All materials and equipment, including CSA/CGA/ULC approved furnace, automatic controls, air supply and return ductwork, prefinished metal supply registers, thermostats, return grilles, filters, shall meet the most stringent standards, and requirements of the NBC Provincial Regulations and local Codes and Bylaws.

.3 Furnace Specification:
a) The furnace shall be most energy efficient model commonly available. Design Based On: Lennox Model EL296UH070XE36B, (70,000 BTU with two stage heating).
b) Venting shall be side wall vent, no concentric vent kits allowed.
c) Installation shall include external filter rack in return plenum and top quality balancing dampers in supply air ducts.

Install clear vinyl tubing from flue drain to standpipe. Install tubing as high as flue drain elevation will allow.

2.1 HRV UNITS

.1 A Cross-flow heat recovery ventilator with 4 - 6" diameter round ports, integrated balance and backdraft dampers in the exhaust to the exterior and the fresh air intake, polypropylene core, polyester filters in the exhaust and supply air streams, removable hinged door, fan defrost, mounting chains, supply and exhaust PSC blower motors, class B, thermally protected, drain fittings and 3m (10') PVC drain hose. Minimum efficiency of 70% at -25 deg C. Run two 12mm PVC condensate drain lines to drain.

3 EXECUTION

3.1 EXAMINATION

.1 Division 1: Verification of existing conditions before starting work.

.2 Verify that floors are ready for installation of units and openings are as indicated on shop drawings.

.3 Verify that proper power supply is available for furnace package.

.4 Verify that proper fuel supply is available for connection.

3.2 INSTALLATION

.1 Install to NFPA 90A.
.2 Install gas fired furnaces to ANSI Z223.1 (NFPA 54).

.3 Provide vent connections to NFPA 211.

.4 Mount counterflow furnaces installed on combustible floors on additive base.

.5 Pipe drain from cooling coils to nearest floor drain.

END OF SECTION

Part 1 GENERAL

1.1 GENERAL

.1 This Section covers items common to Sections 26, 27 & 28. This section supplements requirements of Section 01.

1.2 CODES AND STANDARDS

.1 Do complete installation in accordance with CSA C22.1 latest edition unless specified otherwise.

.2 Do overhead and underground systems in accordance with CSA C22.3 No.1-M1987 except where specified otherwise.

1.3 DRAWINGS AND SPECIFICATIONS

.1 Before submitting bid and commencing work, check drawings and specifications of other trades for conflicts with the electrical work, if such conflicts exist, obtain a ruling from the Project Authority as to what adjustments are to be made before proceeding. Carefully examine the site and ascertain all related conditions, and verify all dimensions.

.2 Should any discrepancy appear between the electrical drawings and the specifications which leaves the trade in doubt as to the true intent and meaning of the drawings and specifications, obtain a ruling from the Project Authority before submitting a tender. If this is not done, it will be assumed the more expensive alternative has been allowed.

1.4 SHOP DRAWINGS

.1 Submit shop drawings to the Project Authority for all electrical equipment.

.2 All light fixture shop drawings shall be submitted at once. Arrange in alphabetical order. Each light fixture shop drawing shall be submitted with associated lamp, ballast or LED driver information.

.3 All shop drawings shall be submitted electronically in PDF format. Provide a separate PDF file for each set of shop drawings. Each set of shop drawings shall contain information pertinent to this project. All accessories, options, mounting hardware, etc. shall be highlighted or clearly identified on each shop drawing. All shop drawings shall be reviewed and marked as such by the electrical contractor prior to submission to the Project Authority.

.4 Submit main service and distribution equipment shop drawings.

1.5 MAINTENANCE MANUALS AND AS-BUILT DRAWINGS

.1 Compile and submit to the Project Authority for review three (3) sets of maintenance manuals. Each manual shall contain shop drawings for all major electrical equipment, a list of suppliers providing components, original factory manuals, name and address of contractors, test results and certificates. Manuals shall be bound in blue 3 ring binders

with project name, address and date of completion embossed in white on the binding and the cover.

.2 Submit to the Project Authority as-built drawings detailing electrical systems as installed. Include the following:

.1 All addenda, approved change orders and site instructions. These shall be indicated on the drawings using the consultant’s symbols. Where this is not practical, attach all related documents to the appropriate drawing.

.2 Ensure all panel schedules and circuit numbers reflect on site changes.

.3 Update and dimension all underground and overhead services. Dimension from corners of buildings.

1.6 WARRANTY

.1 Unless specified elsewhere, all materials and workmanship shall be warranted for a period of one (1) year from the date of final acceptance. During this time, the contractor shall repair or replace, at their expense, any defective materials or workmanship.

1.7 CARE, OPERATION, START-UP, AND TRAINING

.1 Instruct owner’s operating personnel in the operation, care and maintenance of systems, system equipment and components.

.2 Where systems require programming, provide initial programming to allow system to operate in all functional modes. As part of the owners training demonstrate how to make changes to all programmable functions and modes. Refer to individual specification sections for further training requirements.

1.8 VOLTAGE RATINGS

.1 Operating voltages: to CAN3-C235-83 (R2010).

.2 Motors, electric heating, control and distribution devices and equipment shall operate satisfactorily at 60 Hz within normal operating limits established by above standard. Equipment shall operate in extreme operating conditions established in above standard without damage to equipment.

1.9 VOLTAGE DROP CALCULATIONS

.1 Perform voltage drop calculations on branch circuit wiring. Adjust conduit and wire sizes as required to conform to a maximum of 5% voltage drop from the supply side of the customers service to the point of utilization and 3% voltage drop in feeder or branch circuits. Refer to CEC section 8.

1.10 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 Notify Project Authority of changes required by Electrical Inspection Department prior to making changes.

.4 Provide Certificates of Acceptance from authorities having jurisdiction on completion of work to Project Authority.

1.11 MATERIALS AND EQUIPMENT

.1 All equipment and material shall be CSA certified. Where there is no alternative to supplying equipment which is not CSA certified, obtain special approval from Electrical Inspection Department.

.2 Factory assemble control panels and component assemblies.

1.12 MECHANICAL CONTROLS AND CONTROL WIRING

.1 Refer to mechanical contract documents for all information related to mechanical controls and control wiring including responsibility for supply and installation.

1.13 FINISHES

.1 Shop finish metal enclosure surfaces by application of rust resistant primer inside and outside, and at least two coats of finish enamel.

.2 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.

.3 Clean and prime exposed non-galvanized hangers, racks and fastenings to prevent rusting.

1.14 EQUIPMENT IDENTIFICATION

.1 Identify electrical equipment with nameplates and labels as follows:

.2 Nameplates:

.1 Lamacoid 3 mm thick plastic engraving sheet, black face, white core, attached with adhesive back.

NAMEPLATE SIZES			
Size 1	10 x 50 mm	1 line	3 mm high letters
Size 2	12 x 70 mm	1 line	5 mm high letters
Size 3	12 x 70 mm	2 lines	3 mm high letters
Size 4	20 x 90 mm	1 line	8 mm high letters
Size 5	20 x 90 mm	2 lines	5 mm high letters
Size 6	25 x 100 mm	1 line	12 mm high letters
Size 7	25 x 100 mm	2 lines	6 mm high letters

.3 Labels: Embossed plastic labels with 6 mm high letters unless specified otherwise.

.4 Wording on nameplates and labels shall be approved by Project Authority prior to manufacture.

.5 Allow for average of twenty-five (25) letters per nameplate and label.

.6 Identification to be **English.**

.7 Use one nameplate or label for each language.

.8 Nameplates for terminal cabinets and junction boxes shall indicate system and/or voltage characteristics.

.9 Disconnects, starters and contactors: indicate equipment being controlled and voltage.

.10 Terminal cabinets and pull boxes: indicate system and voltage.

.13 Each panel shall be supplied with a directory card holder welded to inside of door, complete with a neatly typewritten list showing information as follows:

PANEL BOARD NAME……B
PANEL CIRCUIT……..120/240 VOLTS

CIRCUIT NUMBER	**DESCRIPTION**	**LOAD**
1	LIGHTING ROOM 100	1200 WATTS
2	RECEPTACLES ROOM 100	6-15 AMPS
3	ROOM 220 EXHAUST FAN	500 WATTS

1.15 WIRING IDENTIFICATION

.1 Maintain phase sequence and colour coding throughout.

.2 Colour code: to latest edition of CSA C22.1.

1.16 WIRING TERMINATIONS

.1 Lugs, terminals, screws used for termination of wiring to be suitable for copper conductors.

1.17 MANUFACTURERS AND CSA LABELS

.1 Visible and legible, after equipment is installed.

1.18 WARNING SIGNS

.1 As specified and to meet requirements of Electrical Inspection Department and Project Authority.

.2 Decal signs, minimum size 175 x 250 mm.

1.19 LOCATION OF OUTLETS

.1 Do not install outlets back-to-back in wall; allow minimum 150 mm horizontal clearance between boxes.

.2 Change location of outlets at no extra cost or credit, providing distance does not exceed 3000 mm, and information is given before installation.

.3 Locate light switches on latch side of doors and as per Canadian Electrical Code (CEC) in damp locations.

.4 CEC shall override locations of switches on plans.

1.20 VAPOUR BARRIER INTEGRITY

.1 Maintain the integrity of the building vapour barrier where penetrations occur as a result of the work under this division. Refer to appropriate specification sections under other divisions to determine the extent and quality of work.

.2 Use vapour barrier back box covers in all exterior walls and insulated ceilings.

.3 Seal all interior conduits that pass through unheated spaces using duct seal or approved alternate product.

1.21 MOUNTING HEIGHTS

.1 Mounting height of equipment is from finished floor to centreline of equipment unless specified or indicated otherwise.

.2 If mounting height of equipment is not specified or indicated, verify before proceeding with installation.

1.22 LOAD BALANCE

.1 Measure phase current to panelboards under normal operating conditions. Adjust branch circuit connections as required to obtain best balance of current between phases and record changes.

.2 Measure phase voltages at loads and adjust transformer taps to within 2% of rated voltage of equipment.

1.23 CONDUIT AND CABLE INSTALLATION

.1 Install conduit and sleeves prior to pouring of concrete. Sleeve all conduit penetrations through concrete with: schedule 40 steel pipe, sized for free passage of conduit, and protruding 50 mm. After conduit is installed, fill area between sleeve and conduit with #1/0 stainless steel wool. Seal area at each end using expanding insulating foam, trimmed neatly flush with concrete wall.

.3 If plastic sleeves are used in fire rated walls or floors, remove before conduit installation.

.4 Install cables, conduits and fittings to be embedded or plastered over, neatly and as close to building structure as possible so furring can be kept to minimum.

1.24 EQUIPMENT SUPPLIED BY OTHER DIVISIONS

.1 The Electrical Contractor shall be fully responsible for obtaining electrical ratings, specifications, installation requirements and approved shop drawings of all equipment requiring electrical connections that is supplied by other divisions. No electrical equipment shall be ordered prior to obtaining this information. No electrical equipment shall be ordered prior to a formal review and acceptance of this information by the Project Authority. The Project Authority shall issue written acceptance of the information and shall also provide, if required, documented changes to the electrical design resulting from the review of this information. No allowance shall be made to the Electrical Contractor for failure to complete this coordination work, thereby resulting in an incorrect installation.

1.25 FIRE STOPPING FOR ELECTRICAL CABLES

.1 Provide fire stop assemblies, at all required fire separations, for any power and communications cables passing through a fire separation.

.2 Where individual conduits or power cables pass through a fire separation, provide fire rated caulking.

1.27 FIELD QUALITY CONTROL

All electrical work shall be carried out by qualified, licensed electricians or apprentices as per the conditions of the Provincial Act respecting vocational training and qualification. Employees registered in a provincial 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.

Part 2 PRODUCTS

2.1

.1

Section	Description	Approved Manufacturers
262723	Doorbell / Chimes	Edwards, Nutone, Broan, or approved equal
262726	Wiring Devices	Hubbell, Leviton, P&S, Cooper, or approved equal
283102	Fire Alarm	BRK, or approved equal

Part 3 EXECUTION

3.1 NOT USED

END OF SECTION

Part 1 GENERAL

1.1 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CSA C22.2No.65-93 (R2008), 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).

Part 2 PRODUCTS

2.1 MATERIALS

.1 Pressure type wire connectors: with current carrying parts of copper sized to fit copper conductors as required.

.2 Fixture type splicing connectors: with current carrying parts of copper sized to fit copper conductors 10 AWG or less.

.3 Clamps or connectors for non-metallic sheathed cable as required.

Part 3 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.

END OF SECTION

Part 1 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 .03-96 (R2000), Test Methods for Electrical Wires and Cables.

1.3 PRODUCT DATA

.1 Submit product data in accordance with Section 26 05 01 – Common Work Results – Electrical.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Construction/Demolition Waste Management and Disposal, and with the Waste Reduction Workplan.

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

.3 Fold up metal banding, flatten and place in designated area for recycling.

Part 2 PRODUCTS

2.1 BUILDING WIRES

.1 Conductors: stranded for 10 AWG and larger. Minimum size: 14 AWG.

2.2 ARMOURED CABLES

.1 Type: AC90.

.1 Conductors: insulated, copper, size as indicated.

.2 Armour: interlocking type fabricated from aluminum strip.

2.3 CONTROL CABLES

.1 Type LVT: 8 soft annealed copper conductors, sized as indicated, with thermoplastic insulation, outer covering of thermoplastic jacket or an armour of closely wound aluminum wire.

.2 Low energy 300 V control cable: stranded annealed copper conductors sized as indicated.

2.4 NON-METALLIC SHEATHED CABLE

.1 Non-metallic sheathed copper cable type: NMD-90, size and installed as allowed by CEC.

2.5 COMMUNICATIONS AND SYSTEMS CABLES

.1 Refer to individual sections elsewhere in this specification for cable specifications.

Part 3 EXECUTION

3.1 INSTALLATION OF ARMOURED CABLES

.1 Group cables wherever possible.

3.2 INSTALLATION OF CONTROL CABLES

.1 Install control cables.

.2 Ground control cable shield.

3.3 INSTALLATION OF NON-METALLIC SHEATHED CABLE

.1 Install cables.

.2 Install straps and box connectors to cables as required.

3.4 INSTALLATION OF COMMUNICATIONS AND SYSTEMS CABLES

.1 Install cables.

.2 Install straps as required to support cables.

.3 Refer to individual sections for additional requirements.

END OF SECTION

Part 1 GENERAL

1.1 REFERENCES

.1 American National Standards Institute (ANSI)/Institute of Electrical and Electronics

Part 2 PRODUCTS

2.1 EQUIPMENT

.1 Clamps for grounding of conductor: size as required to electrically conductive underground water pipe.

.2 Rod electrodes or grounding plates as allowed by soil conditions.

.3 Grounding conductors: bare stranded copper, soft annealed, size as indicated.

.4 Insulated grounding conductors: green, type RW-90.

.5 Non-corroding accessories necessary for grounding system, type, size, material as indicated, including but not necessarily limited to:

.1 Grounding and bonding bushings.
.2 Protective type clamps.
.3 Bolted type conductor connectors.
.4 Thermit welded type conductor connectors.
.5 Bonding jumpers, straps.
.6 Pressure wire connectors.

Part 3 EXECUTION

3.1 INSTALLATION GENERAL

.1 Install complete permanent, continuous grounding system including, electrodes, or plates, conductors, connectors, accessories.

.2 Install connectors in accordance with manufacturer's instructions.

.3 Protect exposed grounding conductors from mechanical injury.

.4 Make buried connections, and connections to conductive water main and electrodes using copper welding by thermal process.

.5 Use mechanical connectors for grounding connections to equipment provided with lugs.

.6 Soldered joints are not permitted.

.7 Install bonding wire for flexible conduit, connected at end to grounding bushing, solderless lug, clamp or cup washer and screw.

.8 Make grounding connections in radial configuration only, with connections terminating at street side of water pipe. Series and loop connections are not acceptable.

3.2 ELECTRODES

.1 Make ground connections to continuously conductive underground water pipe on street side of water meter.

.2 Install water meter shunt.

.3 Install rod electrodes or grounding plates and make grounding connections.

.4 Bond separate, multiple electrodes together.

.5 Use size copper conductors for connections to electrodes as per CEC.

.6 Make special provision for installing electrodes that will give acceptable resistance to ground value where rock or sand terrain prevails. Ground as indicated.

3.3 SYSTEM AND CIRCUIT GROUNDING

.1 Install system and circuit grounding connections to neutral of primary system.

3.4 EQUIPMENT GROUNDING

.1 Install grounding connections to typical equipment included in, but not necessarily limited to following list; Service equipment.

3.5 COMMUNICATION SYSTEMS

.1 Install grounding connections for telephone systems as follows:

.1 Telephones: make telephone grounding system in accordance with telephone company's requirements.

3.6 FIELD QUALITY CONTROL

.1 Perform tests in accordance with Section 26 05 01 - Common Work Results - Electrical.

.2 Perform ground continuity and resistance tests using method appropriate to site conditions and to approval of Project Authority and local authority having jurisdiction over installation.

.3 Perform tests before energizing electrical system.

.4 Disconnect ground fault indicator during tests.

END OF SECTION

Part 1 GENERAL

1.1 RELATED SECTIONS

.1 Construction/Demolition Waste Management and Disposal.

Part 2 PRODUCTS

2.1 SUPPORT CHANNELS

.1 Not used.

Part 3 EXECUTION

3.1 INSTALLATION

.1 Secure equipment to solid masonry, tile and plaster surfaces with lead anchors or nylon shields.

.2 Secure equipment to poured concrete with expandable inserts.

.3 Secure equipment to hollow masonry walls or suspended ceilings with toggle bolts.

.4 Support equipment, conduit or cables using clips, spring loaded bolts, cable clamps designed as accessories to basic channel members.

.5 Fasten cables to building construction or support system using staples or straps.

.1 One-hole steel straps to secure surface cables 50 mm and smaller.

.6 Provide metal brackets, frames, hangers, clamps and related types of support structures where indicated or as required to support cable runs.

.7 Ensure adequate support for cables dropped vertically to equipment where there is no wall support.

.8 Do not use wire lashing or perforated strap to support or secure cables.

.9 Do not use supports or equipment installed for other trades for cable support except with permission of other trade and approval of Project Authority.

.10 Install fastenings and supports as required for each type of equipment cables, and in accordance with manufacturer's installation recommendations.

END OF SECTION

Part 1 GENERAL

1.1 SHOP DRAWINGS AND PRODUCT DATA

.1 Submit shop drawings and product data for cabinets in accordance with Submittal Procedures.

1.2 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Construction/Demolition Waste Management and Disposal, and with the Waste Reduction Workplan.

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

.3 Fold up metal banding, flatten and place in designated area for recycling.

Part 2 PRODUCTS

2.1 JUNCTION AND PULL BOXES

.1 Welded steel construction with screw-on flat covers for surface mounting.

.2 Covers with 25 mm minimum extension all around, for flush-mounted pull and junction boxes.

Part 3 EXECUTION

3.1 JUNCTION BOXES AND CABINETS INSTALLATION

.1 Install junction boxes in inconspicuous but accessible locations.

.2 Mount cabinets with top not higher than 2 m above finished floor.

3.2 IDENTIFICATION

.1 Provide equipment identification in accordance with Section 26 05 01 - Common Work Results - Electrical.

END OF SECTION

Part 1 GENERAL

1.1 REFERENCES

.1 CSA C22.1-2009, Canadian Electrical Code, Part 1.

1.2 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Construction/Demolition Waste Management and Disposal, and with the Waste Reduction Workplan.

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

Part 2 PRODUCTS

2.1 OUTLET AND CONDUIT BOXES GENERAL

.1 Size boxes in accordance with CSA C22.1.

.2 102 mm square or larger outlet boxes as required for special devices.

.3 Gang boxes where wiring devices are grouped.

.4 Blank cover plates for boxes without wiring devices.

.5 Combination boxes with barriers where outlets for more than one system are grouped.

2.2 SHEET STEEL OUTLET BOXES

.1 Electro-galvanized steel single and multi gang flush device boxes for flush installation, minimum size 76 x 50 x 38 mm or as indicated. 102 mm square outlet boxes where required.

.2 102 mm square or octagonal outlet boxes for lighting fixture outlets.

.3 102 mm square outlet boxes with extension and plaster rings for flush mounting devices in finished walls.

2.3 OUTLET BOXES FOR NON-METALLIC SHEATHED CABLE

.1 Electro-galvanized, sectional, screw ganging steel boxes, minimum size 76 x 50 x 63 mm with two double clamps to take non-metallic sheathed cables.

2.4 FITTINGS - GENERAL

.1 Bushing and connectors with nylon insulated throats.

.2 Knock-out fillers to prevent entry of debris.

Part 3 EXECUTION

3.1 INSTALLATION

.1 Support boxes independently of connecting cables.

.2 Fill boxes with paper, sponges or foam or similar approved material to prevent entry of debris during construction. Remove upon completion of work.

.3 For flush installations mount outlets flush with finished wall using plaster rings to permit wall finish to come within 6 mm of opening.

.4 Provide correct size of openings in boxes for conduit, and cable connections. Reducing washers are not allowed.

.5 Outlet boxes installed on opposite sides of fire rated walls shall be complete with wall opening protective materials (fire rated putty pads) where outlet boxes are not separated by a minimum of 610mm.

END OF SECTION

Part 1 GENERAL

1.1 REFERENCES

.1 Canadian Standards Association (CSA)

.1 CAN/CSA C22.2 No. 18-98 (R2003), Outlet Boxes, Conduit Boxes, and Fittings and Associated Hardware.

.2 CSA C22.2 No. 211.2-06, Rigid PVC (Unplasticized) Conduit.

1.2 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Construction/Demolition Waste Management and Disposal, and with the Waste Reduction Workplan.

.2 Place materials defined as hazardous or toxic waste in designated containers.

.3 Ensure emptied containers are sealed and stored safely for disposal away from children.

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

Part 2 PRODUCTS

2.1 CONDUITS

.1 Rigid PVC conduit: to CSA C22.2 No. 211.2.

2.2 CONDUIT FASTENINGS

.1 One hole steel straps to secure surface conduits 51 mm and smaller. Two hole steel straps for conduits larger than 51 mm.

.2 Channel type supports for two or more conduits at 3 m oc.

.3 Threaded rods, 6 mm dia., to support suspended channels.

2.3 CONDUIT FITTINGS

.1 Fittings: manufactured for use with conduit specified. Coating: same as conduit.

.2 Factory "ells" where 90˚ bends are required for 27 mm and larger conduits.

2.4 EXPANSION FITTINGS FOR RIGID CONDUIT

.1 Weatherproof expansion fittings with internal bonding assembly suitable for 200 mm linear expansion.

.2 Watertight expansion fittings with integral bonding jumper suitable for linear expansion and 21 mm deflection in all directions.

.3 Weatherproof expansion fittings for linear expansion at entry to panel.

2.5 PULL CORD

.1 Polypropylene.

Part 3 EXECUTION

3.1 INSTALLATION

.1 Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.

.2 Conceal conduits except in unfinished areas.

.3 Use rigid PVC conduit underground.

.4 Install pull cord in empty conduits.

.5 Remove and replace blocked conduit sections. Do not use liquids to clean out conduits.

.6 Dry conduits out before installing wire.

3.2 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 on channels.

.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.

3.3 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 concrete toppings.

3.4 CONDUITS UNDERGROUND

.1 Slope conduits to provide drainage.

.2 Waterproof joints (PVC accepted) with heavy coat of bituminous paint.

END OF SECTION

Part 1 GENERAL

1.1 RELATED WORK

.1 Plywood Backboard: Rough Carpentry section.

1.2 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Submittal Procedures.

.2 Drawings to include electrical detail of panel, branch breaker type, quantity, ampacity and enclosure dimension.

Part 2 PRODUCTS

2.1 LOAD CENTRES

.1 Load Centres shall be the product of one manufacturer.

.1 Install circuit breakers in load centre before shipment.

.2 In addition to CSA requirements manufacturer's nameplate must show fault current that panel including breakers has been built to withstand.

.2 100A, 1 phase, 250V load centres: bus and breakers rated for 10 KA (symmetrical) interrupting capacity minimum or as indicated.

.3 Load centre shall be complete with main 100A service entry rated breaker.

.4 Sequence phase bussing with odd numbered breakers on left and even on right, with each breaker identified by permanent number identification as to circuit number and phase.

.5 Mains, number of circuits, and number and size of branch circuit breakers as indicated.

.6 Tin plated aluminium bus.

.7 Neutral bar of same ampere rating as mains.

.8 Mains: suitable for push-on type breakers. Provide arc fault (AFCI) breakers for circuits as required by Canadian Electrical Code.

.9 Door with concealed hinges and spring loaded, front operable latch mechanism.

.10 Trim and door finish: Grey and finished to accept field painting.

.11 Provide minimum of five (5) spare 15A-1P breakers in panel.

.12 Panel shall be minimum of 42 spaces.

.13 Provide and install 30 amp portable generator connector equivalent to ‘Generlink’. Install between utility meter and meter socket. Confirm installation with supply authority.

2.2 BREAKERS

.1 Main breaker: separately mounted on top or bottom of panel to suit cable entry. When mounted vertically, down position should open breaker.

2.3 EQUIPMENT IDENTIFICATION

.1 Provide equipment identification in accordance with Section 26 05 01 - Common Work Results - Electrical.

.2 Nameplate for each panelboard size 4 engraved as indicated.

.3 Complete circuit directory with typewritten legend showing location and load of each circuit.

Part 3 EXECUTION

3.1 INSTALLATION

.1 Locate panelboards as indicated and mount securely, plumb, true and square, to adjoining surfaces.

.2 Install surface mounted panelboards on plywood backboards. Where practical, group panelboards on common backboard.

.3 Mount panelboards to height specified in Section 26 05 01 - Common Work Results - Electrical or as indicated.

.4 Connect loads to circuits.

.5 Connect neutral conductors to common neutral bus with respective neutral identified.

.6 Refer to figure 2-8 of SaskPower Service Guide for installation of incoming service. Install separate meter for each suite.

END OF SECTION

Part 1 GENERAL

1.1 SHOP DRAWINGS AND PRODUCT DATA

.1 Submit shop drawings and product data in accordance with Section 01 33 00 - Submittal Procedures.

Part 2 PRODUCTS

2.1 SWITCHES

.1 15/20A, 120V single pole, double pole, three-way, four-way switches.

.2 Manually-operated general purpose ac switches with following features:

.1 Terminal holes approved for No. 10 AWG wire.

.2 Silver alloy contacts.

.3 Urea or melamine moulding for parts subject to carbon tracking.

.4 Suitable for back and side wiring.

.5 Rocker operated, fully rated for all specified lamps, and up to 80% of rated capacity of motor loads.

.6 White rectangular decorator rocker type, Leviton #5691 Series.

2.2 RESIDENTIAL GRADE RECEPTACLES

.1 Residential grade duplex receptacle, CSA type 5-15R, 125V, 15A, self-grounding, with the following features:

.1 White thermoplastic nylon molded body and face.

.2 Suitable for No. 14-10 AWG for back and side wiring.

.3 Eight (8) back wired entrances and four (4) side wiring screws.

.4 Brass plated ground clips, zinc plated steel strap.

.5 White rectangular decorator style.

.6 Tamper resistant.

.7 Leviton #DR155-GW.

.2 Residential grade ground fault circuit interrupter receptacles, CSA type 5-15R and 5-20R, 125V, 15A with the following features:

.1 White thermoplastic nylon molded body and face.

.2 Suitable for No. 14-12 AWG wire.

.3 Red trip indicator light.

.4 Side or internal screw pressure plate back wire, complete with four (4) side wiring screws.

.5 White rectangular, decorator style, with device colour matching dual-direction test and reset buttons.

.6 Tamper resistant.

.7 5-15R – Leviton #X7599-KW.

.8 5-20R – Leviton #X7899-W.

.3 Provide 14-50R receptacle for range power connection. Refer to plans for location. Circuit to a separate 40A-2P breaker in panel.

.4 Provide 14-30R receptacle for dryer power connection. Refer to plans for location. Circuit to a separate 30A-2P breaker in panel.

.5 Provide 5-20R GFCI receptacles on exterior of building complete with weatherproof while in use cover plates. Location of receptacles as per plans. Each exterior receptacle shall be circuited to a separate 20A-1P breaker in panel.

.6 Provide one (1) 5-20R receptacle per suite complete with while in use cover plate mounted to a 4″ x 4″ pressure treated post at end of driveway. Post shall be buried minimum of 1220mm below grade and shall extend above grade a minimum of 915mm. Power feed to receptacle shall be buried below grade as per CEC. Confirm location of post and routing of underground power feeds with Project Authority. Circuit receptacle to a separate 20A-1P breaker in panel. If post is not able to be buried to a depth of 1220mm, due to ground conditions, consult Project Authority.

.7 Provide one (1) 5-20R GFCI receptacle in each suite washroom. Each receptacle shall be circuited to a separate 20A-1P breaker in panel.

.8 Provide a 120V, water tight power connection to kitchen dishwasher. Circuit to a separate 15A-1P breaker in panel.

.9 Provide separate 5-15R receptacle power connections for the following equipment locations: fridge, microwave/rangehood combination, washer and utility area freezer.

.10 Refer to mechanical drawings for power connections to all mechanical equipment including furnace, water heater, HRV, sump pump, exhaust fans, and base board heaters. Refer to drawings for equipment list, and location. Confirm power requirements of equipment with mechanical contractor.

.11 Provide 5-20R receptacles at kitchen millwork. Circuit no more than two receptacles per 20A-1P breaker. Receptacles in kitchen area shall be GFCI as required by CEC.

.12 Provide a 120V connection for propane tank heater from separate 15A-1P breaker. Confirm connection type on site.

2.3 COVER PLATES

.1 Cover plates for wiring devices.

.2 Cover plates from one manufacturer throughout project.

.3 Stamped steel utility box cover for wiring devices installed in surface-mounted utility boxes and FS/FD boxes.

.4 Residential grade nylon coverplates, plate style shall match devices.

.5 Weatherproof while in use cover plates, complete with gaskets for duplex receptacles as indicated and transparent impact resistant polycarbonate NEMA 3R cover Hubbell Taymac MM410C or approved equal.

2.4 GENERAL

.1 Other receptacles with ampacity and voltage as indicated.

.2 Receptacles of one manufacturer throughout project.

Part 3 EXECUTION

3.1 INSTALLATION

.1 Switches:

.1 Install single throw switches with handle in "UP" position when switch closed.

.2 Install switches in gang type outlet box when more than one switch is required in one location.

.3 Mount toggle switches at height specified in Section 26 05 01 - Common Work Results – Electrical or as indicated.

.2 Receptacles:

.1 Install receptacles in gang type outlet box when more than one receptacle is required in one location.

.2 Mount receptacles at height specified in Section 26 05 01 - Common Work Results – Electrical or as indicated.

.3 Where split receptacle has one portion switched, mount vertically and switch upper portion.

.4 Install tamper resistant receptacles in residential dwelling units and as per CEC.

.3 Cover plates:

.1 Protect stainless steel cover plate finish with paper or plastic film until painting and other work is finished.

.2 Install suitable common cover plates where wiring devices are grouped.

.3 Do not use cover plates meant for flush outlet boxes on surface-mounted boxes.

END OF SECTION

Part 1 GENERAL

1.1 REFERENCES

.1 CSA International

.2 Underwriters' Laboratories of Canada (ULC)

1.2 PRODUCT DATA

.1 Submit product data in accordance with Section 26 05 01 – Common Work Results – Electrical.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for door chimes and include product characteristics, performance criteria, physical size, finish and limitations.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with with manufacturer's written instructions.

.2 Separate and recycle waste materials in accordance with Construction/Demolition Waste Management and Disposal Plan and with the Waste Reduction Work Plan.

Part 2 PRODUCTS

2.1 EQUIPMENT

.1 Doorbell chime shall be white in colour, and surface mounted in residence corridor. Chime shall ring two-note chime for front door and one-note chime for back or side door. Unit shall be hard wired. Maximum dimensions 210mm wide, 150mm tall, 65mm wide. ULC listed.

.2 Class II transformer shall be 16V secondary, 120V 60Hz primary with surface mounting adjacent residence electrical panel. Unit shall be CSA listed and thermally protected.

.3 Push buttons shall be illuminated, suitable for exterior surface mounting, white in colour.

.4 Provide low voltage wiring as per manufacturer’s recommendations.

Part 3 EXECUTION

3.1 INSTALLATION

.1 Attach components to wall where indicated with screws and expanded shields.

.2 Install wiring.

Remove packing material and construction dirt around plunger.

3.2 FIELD QUALITY CONTROL

.1 Perform tests in accordance with Section 26 05 00 - Common Work Results - Electrical.

.2 Test system for operation and sound level.

3.3 CLEANING

.1 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.4 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by door chimes installation.

END OF SECTION

Part 1 GENERAL

1.1 REFERENCES

.1 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.

.2 United States of America, Federal Communications Commission (FCC)

.1 FCC (CFR47) EM and RF Interference Suppression.

1.2 RELATED SECTIONS

.1 Submittal Procedures.

.2 Construction/Demolition Waste Management and Disposal.

.3 Quality Control.

1.3 SHOP DRAWINGS AND PRODUCT DATA

.1 Submit shop drawings in accordance with Submittal Procedures.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Construction/Demolition Waste Management and Disposal.

.2 Place materials defined as hazardous or toxic waste in designated containers.

Part 2 PRODUCTS

2.1 LAMPS

.1 Provide lamps as required in light fixtures, range hood and ceiling fans.

.2 All lamps shall be integrated LED screw in lamps rated at 120V, medium screw in base, average rated life 25,000 hours, CRI > 82, and 3000K.

2.2 LUMINAIRES

.1 All light fixtures shall be CSA certified.

Ceiling fans shall be residential grade, indoor rated, complete with five (5) blades, 52″ diameter blade sweep, 120V, forward/reversing AC motor, pendant downrod, maximum 20″ overall height, white in colour and complete with minimum 3 x 60W incandescent lamp light kit or LED integral light fixture equal to incandescent lumen package. Light fixture shall be complete with frosted glass shade(s). Ceiling fan light kit and fan shall be

individually switched. Ceiling fans in dining rooms to be Kendal AC6852SN/LK4-CL with light kit SG9042WH, or approved equal. Ceiling fans in bedrooms to be Kendal AC6842SN/LK7006SN.

.2 Wall mounted light fixture above washroom vanities shall be Russell 750-704 BCH, or approved equal. Residential grade, 120V satin nickel or chrome finish, damp location listed, and complete with minimum of 3 x 100W A19 incandescent rated lamp holders or integral LED light fixture of equivalent lumens.. Fixture shall be complete with frosted glass shades.

.3 Pot lights and exterior soffit fixtures shall be 120V low profile surface LED downlight designed for installation in 3.5″ and 4″ square, octagon or round junction box. Light fixture shall be damp location listed. Trim ring shall be white aluminum frame. LED fixture shall be complete with flat acrylic, opaque lens with UV stabilizing protective trim. Light fixture shall be 3000°K colour temperature, have minimum 80 colour rendering index LEDs, minimum of 1150 lumens, 15W power requirement, power factor shall be > 0.90, Class A sound rating and THD < 20%.

.4 Shower/two light fixtures shall be 120V low profile surface LED downlight designed for installation in 3.5″ and 4″ square, octagon or round junction box. Light fixture shall be damp location listed. Trim ring shall be white aluminum frame. LED fixture shall be complete with flat acrylic, opaque lens with UV stabilizing protective trim. Light fixture shall be 3000°K colour temperature, have minimum 80 colour rendering index LEDs, minimum of 760 lumens, 13W power requirement, power factor shall be > 0.90, Class A sound rating and THD < 20%.

.5 Light fixtures in corridors, walk in closets and storage rooms shall be Russell 341-716, or approved equal. Residential grade, 120V, satin nickel or chrome finish, flush ceiling mount, maximum 12″ diameter, 6.5″ deep and complete with minimum of 2 x 60W A19 incandescent rated lamp holders or integral LED light fixture of equivalent lumens. Fixture shall be complete with frosted glass shades.

.6 Island pendant light fixtures shall be Russell 312-713/BCH, or approved equal. Residential grade, 120V stain nickel or chrome finish, single pendant downrod and minimum of 1 x 60W A19 incandescent rated lamp holder or integral LED light fixture of equivalent lumens. Fixture shall be complete with frosted glass shades.

.7 Exterior wall mount light fixture shall be Russell 799-601/BLK, or approved equal. Residential grade, 120V, black or bronze finish, wet location listed and complete with minimum 1 x 100W A19 incandescent rated lamp holder or integral LED light fixture of equivalent lumens. Fixture shall be complete the glass shade.

.8 Exterior motion sensor LED flood light fixture shall be residential grade, 120V, black/bronze finish, damp location listed, rated minimum of 50,000 hours and complete with two (2) adjustable heads dual array motion sensor mounted to light fixture shall have 180° detection. Light fixture shall be complete with integral photocell to eliminate activation during the day. Fixture shall be minimum of 1200 lumens, 25W, 4000°K colour temperature.

Fixture heads to be complete with clear acrylic lenses sealed to prevent moisture. Fixture shall be rated -40°C.

2.3 SPARE LAMPS

.1 At the completion of the project provide 5% spare lamps of every lamp type specified.

.2 Provide a minimum of 2 spare lamps for every lamp type specified.

.3 Obtain a written and signed receipt from the Project Authority at time of turn over.

Part 3 EXECUTION

3.1 INSTALLATION

.1 Locate and install luminaires as indicated.

.2 Provide plaster frame and trim as required, and turn over to trade providing ceiling installation.

.3 Support luminaries directly from building structure.

.4 Recessed lighting luminaries in inaccessible ceilings shall be secured to blocking attached to building structure.

.5 Where no finished ceiling exists, luminaries shall be suspended on rigid conduit hangers complete with ball aligner, and outlet box canopy. All suspension components shall be degreased and painted white, unless otherwise noted.

.6 Replace drivers and lamps, which in the opinion of the Project Authority, are found to exhibit excessive noise.

.7 Coordinate installation of luminaries with mechanical contractor to avoid conflicts between luminaries, and mechanical system components.

3.2 WIRING

.1 Connect luminaires to lighting circuits.

3.3 LUMINAIRE ALIGNMENT

.1 Align luminaires mounted in continuous rows to form straight uninterrupted line.

.2 Align luminaires mounted individually parallel or perpendicular to building grid lines.

END OF SECTION

Part 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 271119 – Terminals and Connectors for Communication Conductors.

1.2 REFERENCES

.1 The following references and standards shall be followed with respect to the cabling system supply, installation and testing, but shall not alter the design of the cabling system as detailed on the drawings and specifications.

.2 CAN/CSA-T530-M90 Building Facilities, Design Guidelines for Telecommunications.

.3 CAN/CSA-C22.2 No. 214-08 Communications Cables.

.4 CAN/CSA-C22.2 No. 182.4-M90 (R2006) Plugs, Receptacles and Connectors for Communication Systems.

.5 EIA/TIA Bulleting TSB-36 Technical Systems Bulleting Additional Cable Specifications for Unshielded Twisted Pair Cables, Electronic Industries Association (USA), November 1991.

.6 Uniform International Conference of Building Officials Building Code (ICBO).

.7 BICSI Telecommunications Distribution Method Manual 13th Edition.

.8 BICSI Information Transport System Manual 4th Edition.

.9 CAN/ULC C102.4M (1987) Test for Fire and Smoke Characteristics of Electrical Wiring and Cable.

1.3 SYSTEM DESCRIPTION

.1 Structured system of telecommunications cables (copper) installed within buildings for distributing voice and data (including video) signals.

Part 2 PRODUCTS

2.1 HORIZONTAL CABLING, DATA/UTP

.1 Cable supplied to all data outlets shall be Category 6, UTP- 4 Pair, 24 AWG, CMR rated cable, FT4 rated.

.2 Category 6 Electrical Specifications

.1 DC Resistance @ 20C, Maximum: 9.8 Ohm/100meters

.2 DC Resistance Unbalance, Maximum: 5%

.3 Mutual Capacitance, Maximum: 5.6 nF/100meters

.4 Capacitance Unbalance Pair to Ground, Maximum: 330pF/100meters

.5 Input Impedance: 100+/- 15 Ohms from 1 Hz to 100MHz 100+/- 22 Ohms from 100MHz to 200MHz

.6 Nominal Velocity of Propagation: NVP Plenum 72% @ 10MHz

.7 Propagation Delay (Skew) , Maximum: 20 ns/100meter

.8 Blue in color.

Maximum Attenuation Values, Worst Pair and Cross Talk (NEXT Min).

Frequency (MHz)	Attenuation (dB/100m)	Next (dB Min.)
1	2.0	74.3
4	3.8	65.3
8	5.4	60.8
10	6.0	59.3
16	7.6	56.3
20	8.5	54.8
25	9.6	53.3
31.25	10.7	51.9
62.5	15.5	47.4
100	19.9	44.3
200	29.2	39.8
250	33	38.3
300	36.6	37.2
350	40.0	36.2
400	43.2	35.3

2.2 HORIZONTAL CABLING, VOICE

.1 Cable supplied to all voice outlets shall be Category 6, UTP – 4 Pair, 24 AWG, CMR rated cable, FT4 rated.

.2 Category 6 Electrical Specifications

.1 DC Resistance @ 20C, Maximum: 9.4 Ohm / 100 meters.

.2 DC Resistance Unbalance, Maximum 5%.

.3 Mutual Capacitance, Maximum: 5.6 nF/100 meters.

.4 Capacitance Unbalance Pair to Ground, maximum: 330 pF / 100 meters.

.5 Input Impedance: 100 +/- Ohms from 1 Hz to 100 MHz, 100 +/- 22 Ohms from 100 MHz to 200 MHz.

.6 Nominal Velocity of Propagation: NVP Plenum 72% @ 10 MHz.

.7 Propagation Delay (skew), Maximum: 20 ns / 100 meter.

.8 White in color.

Maximum Attenuation Values, Worst Pair and Cross Talk (next min).

Frequency (MHz)	Attenuation (dB/100m)	Next (dB Min.)
1	2.0	74.3
4	3.8	65.3
8	5.4	60.8
10	6.0	59.3
16	7.6	56.3
20	8.5	54.8
25	9.6	53.3
31.25	10.7	51.9
62.5	15.5	47.4
100	19.9	44.3
200	29.2	39.8
250	33	38.3
300	36.6	37.2
350	40.0	36.2
400	43.2	35.3

2.3 COAXIAL CABLE (CXC)

.1 Single coaxial member, 75ohm impedance each having metallic centre conductor surrounded by dielectric material and 2 metal outer conductors separated by dielectric material and surrounded by PVC jacket: to CAN/CSA C22.2 No.214 FT-4 fire rated jacket.

.2 Distribution cable (RG-11), 75ohm impedance. Centre conductor No. 14 AWG, copper-covered steel, insulation of cellular polyethylene, shield of aluminum foil plus braid, shield coverage 97%. Loss at 500 MHz not to exceed 3.5 dB per 30m.

.3 Drop cable (RG-6), 75ohm impedance. Centre conductor No. 18 AWG, copper-covered steel, insulation of cellular polyethylene, shield of aluminum foil plus braid, shield coverage 97%. Loss at 500 MHz not to exceed 5 dB per 30m.

Part 3 EXECUTION

3.1 INSTALLATION OF HORIZONTAL DISTRIBUTION CABLES

.1 Install horizontal cables, as indicated on drawings from termination in telecommunications panel to outlets.

.2 Plastic tie – wraps, ‘C’ clamps, ‘D’ rings are not permitted for use with communications cabling. Only hook and loop straps are permitted, and are to be utilized every 610mm.

.3 For distribution of television signals, terminate CXC cable on type F connectors.

3.2 INSTALLATION OF RISER CABLES

.1 Install riser cable, as indicated in conduit or tray from termination in each telecommunications panel to equipment room. Termination: to CAN/CSA-T529.

3.3 FIELD QUALITY CONTROL

.1 Perform tests in accordance with Section 26 05 01 - Common Work Results - Electrical.

3.4 LABELING

.1 Label each cable within 50mm of terminations.

.2 Use permanent, wrap around, self-adhesive labels employing individual characters. Characters shall be minimum 14 point, bold, Arial font, black on white background.

3.5 “AS BUILT’ RECORDS

.1 Provide as built drawings detailing the terminations and connections for all communication conductors. As built drawings shall include label names for all terminations and connections as installed on site. Provide in hard copy format.

END OF SECTION

Part 1 GENERAL

1.1 SYSTEM DESCRIPTION

.1 Termination, patch cords, and cross-connection equipment installed inside building for voice and data for telecommunications systems employing unshielded-twisted-pair (UTP), shielded-twisted-pair (STP), and coaxial (CXC), cables.

1.2 RELATED SECTIONS

.1 Rough Carpentry

.2 Section 27 05 14 – Communications Cables Inside Building

.3 Section 26 05 01 – Common Work Results – Electrical

.4 Construction / Demolition Waste Management and Disposal

1.3 REFERENCES

.1 CAN/CSAT530-M90, Building Facilities, Design Guidelines for Telecommunications.

.2 CAN/CSAC22.2No.182.4-M90 (R2006), Plugs, Receptacles and Connectors for Communication Systems.

.3 EIA/TIA Bulletin TSB-36, Technical Systems Bulletin Additional Cable Specifications for Unshielded Twisted Pair Cables, Electronic Industries Association (USA), November 1991.

.4 TIA/EIA Telecommunications Systems Bulletin TSB40, Additional Transmission Specifications for Unshielded Twisted-Pair Connecting Hardware, Telecommunications Industry Association, August 1992.

Part 2 PRODUCTS

2.1 COMMUNICATIONS DISTRIBUTION BOX

.1 Recessed box shall be installed in each suite adjacent panel. Box shall be constructed of flame retardant polymer.

.2 Panel shall be 762mm wide, 356mm wide and 89mm deep.

.3 Coil all voice, UTP and co-ax cabling to panel.

.4 Install one (1) 5-15R receptacle in panel. Receptacle shall be circuited to a separate 15A-1P breaker in suite panel.

.5 Panel shall be complete with twelve (12) 25mm entry/exit ports and two (2) 7mm knockouts.

.6 Panel shall be complete with hinged over.

.7 Panel shall be equal to Primex P3000, 125-0990.

2.2 COVERPLATES

.1 2 port coverplate.

.2 Construction and color as per Section 26 27 26 – Wiring Devices.

2.3 CATV/UTP OUTLETS

.1 Shall be complete with one (1) Cat. 6 outlet and one (1) 1F connector.

.2 Shall be white in colour.

.3 Shall be equal to Leviton %eA20-SW.

2.4 VOICE OUTLETS

.1 Flush type, snap-in inserts with encapsulated lead frame design and inline IDC terminating interface.

.2 Category 6, RJ-45.

.3 Suitable for 568A termination.

.4 White in color.

2.5 WALL MOUNT CONNECTORS FOR VOICE

.1 Fire retardant plastic construction with front and back IDC terminating strips.

.2 Suitable for terminating 22, 24, or 26 guage plastic insulated solid copper conductors without stripping.

.3 Connection clips recessed to prevent accidental short circuit contact.

.4 Contact resistance < 1 Mohm / contact.

.5 Insulation resistance > 100 Mohm between clips.

.6 Provide quantity of connectors to accommodate all termination plus 25% future.

.7 Mount in wall mount connector mount of stamped steel, one piece construction and fire retardant plastic fanning strips. Provide quantity to accommodate all connectors plus 25% future.

.8 Designation strips shall have fire retardant plastic construction and shall snap onto mounts between connectors. Provide ID labels with designation strips.

2.6 BUILDING ENTRANCE SURGE PROTECTION TERMINALS, INDOOR

.1 Wall mount, indoor rated enclosure.

.2 Suitable for IDC connector input and output.

.3 Internal fuse link.

.4 Suitable for 5-pin protection modules.

.5 Accepts up to #6 AWG ground.

.6 Provide required quantity of terminations plus 25% future. Provide multiple units as required.

2.7 BUILDING ENTRANCE SURGE PROTECTION MODULES

.1 Plug-in type replaceable modules suitable for use with terminals as specified.

.2 Solid state type.

.3 D.C. breakover @ 100V/µs, 27-36V.

.4 Peak pulse current @ 8x20µs, 200A.

.5 Holding current (min), 50mA.

.6 Surge Life (min. operations)

@10A, 10x1000µs unlimited
@100A, 10x1000µs >300
@1A (rms), 1s >60
@10A (rms), 1s >20

.7 Capacitance: 1V(rms) @ 1KHz, 20V DC, < 200 pf.

.8 Insulation Resistance @ 50V DC, >100Mohms.

.9 Fail Safe Operation

@1.0A <50s
@5.0A <15s
@20A <10s
@60A <3s

.10 Provide required quantity of module plus 10% spare. Spares shall be turned over to the Owner.

2.16 COMMUNICATIONS CABLE ROUTING HOOKS:

.1 100mm in diameter

.2 Galvanized steel construction

.3 Complete with wire retainers

.4 Suitable for fastening directly to building structure only.

Part 3 EXECUTION

3.1 INSTALLATION

.1 Install building communications terminating and cross-connecting systems in cabinet or on wall where indicated on plan.

3.2 INSTALLATION OF COMMUNICATION WIRES

.1 Colour match conductors on terminal strip in accordance with CAN/CSA C22.2 No.182.4 and CSA T529. For IDC-type connections, use tool with seating and cutting heads for connecting conductors to terminals.

.2 Harness slack wire in cabinets, terminals and cross-connecting terminating systems.

3.3 FIELD QUALITY CONTROL

.1 Perform tests in accordance with Section 26 05 01 - Common Work Results - Electrical.

3.4 GROUNDING AND BONDING

.1 Racks shall be grounded using #6 AWG insulated copper conductor. Provide all required bonding material and hardware and bond to building grounding electrode subsystem at building electrical service entrance. ANSI/TIA/EIA 607 Grounding and Bonding requirements must be met.

3.5 LABELING

.1 Provide a separate label for each terminated outlet or connector location.

END OF SECTION

Part 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 26 05 01 - Common Work Results - Electrical.

1.2 REFERENCES

.1 Government of Canada

.1 NBC-2010, National Building Code of Canada.

.2 Underwriters Laboratories of Canada (ULC)

.1 CAN/ULC-S531-02, Smoke Alarms.

1.3 SYSTEM DESCRIPTION

.1 Smoke alarms, carbon monoxide detectors and combination co/smoke alarms interconnected in each residence/suite to notify residents of fire and carbon monoxide.

1.4 REQUIREMENTS OF REGULATORY AGENCIES

.1 System components: listed by ULC and comply with applicable provisions of National Building Code Local/Provincial Building Code, and meet requirements of local authority having jurisdiction.

1.5 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Submittal Procedures.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Construction/Demolition Waste Management and Disposal, and with the Waste Reduction Workplan.

.2 Place materials defined as hazardous or toxic waste in designated containers.

.3 Ensure emptied containers are sealed and stored safely for disposal away from children.

Part 2 PRODUCTS

2.1 MATERIALS

.1 Equipment and devices: ULC listed and labelled and supplied by single manufacturer.

2.2 STAND ALONE DUAL SOURCE CARBON MONOXIDE DETECTORS

.1 120V / 9V Battery operation.

.2 Test / silence pushbutton.

.3 Metal Oxide sensor.

.4 Integral audible device to provide 85 dB. at 3m.

.5 Inter-connectable to other CO detectors or smoke alarms.

.6 Installed in locations as per NBC and manufacturer’s recommendation.

2.3 STAND ALONE DUAL SOURCE SMOKE ALARMS

.1 120V / 9V Battery operation.

.2 Test / silence pushbutton.

.3 Photoelectric type.

.4 Integral audible device to provide 85 dB. at 3m.

.5 Inter-connectable to other CO detectors or smoke alarms.

.6 Installed in locations as per NBC and manufacturer’s recommendation.

2.4 STAND ALONE DUAL SOURCE COMBINATION CO / SMOKE ALARMS

.1 120V / 9V Battery operation.

.2 Test / silence pushbutton.

.3 Metal Oxide sensor for CO detector and Photoelectric type for smoke alarm.

.4 Integral audible device to provide 85 dB. at 3m.

.5 Inter-connectable to other CO detectors or smoke alarms.

.6 Installed in locations as per NBC and manufacturer’s recommendation.

Part 3 EXECUTION

3.1 INSTALLATION

.1 Install devices as per manufacturer’s guidelines.

3.2 FIELD QUALITY CONTROL

.1 Perform tests in accordance with Section 26 05 01 - Common Work Results - Electrical and CAN/ULC-S537.

.2 Test devices to ensure all smoke alarms, carbon monoxide detectors and combination CO/smoke alarms alarm when one device is activated. Make corrections as required.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 31 11 00 – Clearing and Grubbing

.2 Section 31 14 13 – Soil Stripping and Stockpiling

.3 Section 31 22 13 – Rough Grading

.4 Section 31 23 33.01 – Excavating, Trenching and Backfilling

1.02 REFERENCE STANDARDS

.1 ASTM International
  .1 ASTM D 698-07e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort.

1.03 ADMINISTRATIVE REQUIREMENTS

.1 Co-ordination: arrange with authority having jurisdiction for relocation of buried services that interfere with execution of work.
  .1 Pay costs of relocating services.

1.04 ACTION AND INFORMATIONAL SUBMITTALS

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

2 PRODUCTS

2.01 MATERIALS

.1 Crushed Granular 40-0 to CCDG 14.02.

3 EXECUTION

3.01 EXAMINATION

.1 Evaluation and Assessment:
  .1 Before commencing work verify locations of buried services on and adjacent to site.

3.02 PREPARATION

.1 Temporary erosion and sedimentation control:
  .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.
  .2 Inspect, repair, and maintain erosion and sedimentation control

measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

.2 Protection of in-place conditions:

.1 Protect excavations from freezing.

.2 Keep excavations clean, free of standing water, and loose soil.

.3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to Departmental Representative's approval.

.4 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.

.5 Protect buried services that are required to remain undisturbed.

.3 Removal:

.1 Remove trees, stumps, logs, brush, shrubs, bushes, vines, undergrowth, rotten wood, dead plant material, exposed boulders and debris within areas designated on drawings.

.2 Remove stumps and tree roots below footings, slabs, and paving, and to 600 mm below finished grade elsewhere.

.3 Remove obsolete buried services within 2 m of foundations: cap cut-offs.

3.03 EXCAVATION

.1 Shore and brace excavations, protect slopes and banks and perform work in accordance with Provincial and Municipal regulations whichever is more stringent.

.2 Strip topsoil over areas to be covered by new construction, over areas where grade changes are required, and so that excavated material may be stockpiled without covering topsoil.

.1 Stockpile topsoil on site for later use.

.3 Excavate as required to carry out work.

.1 Do not disturb soil or rock below bearing surfaces.

.2 Notify Departmental Representative when excavations are complete.

.3 If bearings are unsatisfactory, additional excavation will be authorized in writing and paid for as additional work.

.4 Excavation taken below depths shown without Departmental Representative's written authorization to be filled with concrete of same strength as for footings at Contractor's expense.

.4 Excavate trenches to provide uniform continuous bearing and support for 150 mm thickness of pipe bedding material on solid and undisturbed ground.

.1 Trench widths below point 150 mm above pipe not to exceed diameter of pipe plus 600 mm.

.5 Excavate for slabs and paving to subgrade levels.

.1 In addition, remove all topsoil, organic matter, debris and other loose and harmful matter encountered at subgrade level.

3.04 FIELD QUALITY CONTROL

.1 Testing of materials and compaction of backfill and fill will be carried out by testing laboratory designated by Departmental Representative.

.2 Not later than 1 week minimum before backfilling or filling, submit to designated testing agency, samples of backfill as described in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS.

.3 Do not begin backfilling or filling operations until material has been approved for use by Departmental Representative.

.4 Not later than 48 hours before backfilling or filling with approved material, notify Departmental Representative to allow compaction tests to be carried out by designated testing agency.

3.05 BACKFILLING

.1 Remove snow, ice, construction debris, organic soil and standing water from spaces to be filled.

.2 Lateral support: maintain even levels of backfill around structures as work progresses, to equalize earth pressures.

.3 Compaction of subgrade: compact existing subgrade under walks, paving, and slabs on grade, to same compaction as fill.
.1 Fill excavated areas with 125 mm granular drainage layer, compacted to 100% proctor. Granular material to be clean, crushed stone that passes through a 40 mm sieve, with not more than 10% passing through a 5 mm sieve. Install 6 mil polyethylene sheeting over the entire drainage layer.

.4 Placing:
.1 Place backfill, fill and base course material in 150 mm lifts: add water as required to achieve specified density.

.5 Compaction: compact each layer of material to following densities for material to ASTM D 698:
.1 To underside of base courses: 95%.
.2 Base courses: 100%.
.3 Backfill areas: 95%
.4 Elsewhere: 90%.

.6 In trenches:
.1 Up to 300 mm above pipe or conduit: sand placed by hand.
.2 Over 300 mm above pipe or conduit: native material approved by Departmental Representative.

.7 Under seeded and sodded areas: use site excavated material to bottom of topsoil except in trenches and within 600 mm of foundations.

.8 Against foundations (except as applicable to trenches and under slabs and paving): excavated material or imported material with no stones larger than 200 mm diameter within 600 mm of structures.

.9 Underground tanks: use sand to bottom of granular base courses or to bottom of topsoil, as applicable.

3.06 GRADING

.1 Grade so that water will drain away from buildings, walls and paved areas, to catch basins and other disposal areas approved by Departmental Representative.
  .1 Grade to be gradual between finished spot elevations shown on drawings.
  .2 Grade interior subgrade beneath slab to drain to sump pit, location as shown on drawings.

3.07 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  .1 Leave Work area clean at end of each day.
  .2 Dispose of cleared and grubbed material off site daily.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 31 00 00 – Earth Works

.2 Section 31 14 13 – Soil Stripping and Stockpiling

.3 Section 31 22 13 – Rough Grading

.4 Section 31 23 33.01 – Excavating, Trenching and Backfilling

1.02 MEASUREMENT PROCEDURES

.1 Measure following items in hectares within limits as indicated:
- .1 Clearing.
- .2 Grubbing.
- .3 Close cut clearing.
- .4 Underbrush clearing.

.2 Measure clearing isolated trees [and grubbing isolated tree stumps] as number of isolated trees cleared [and number of isolated stumps grubbed].

1.03 DEFINITIONS

.1 Clearing consists of cutting off trees and brush vegetative growth to not more than specified height above ground and disposing of felled trees, previously uprooted trees and stumps, and surface debris.

.2 Close-cut clearing consists of cutting off standing trees, brush, scrub, roots, stumps and embedded logs, removing at, or close to, existing grade and disposing of fallen timber and surface debris.

.3 Clearing isolated trees consists of cutting off to not more than specified height above ground of designated trees, and disposing of felled trees and debris.

.4 Underbrush clearing consists of removal from treed areas of undergrowth, deadwood, and trees smaller than 50 mm trunk diameter and disposing of fallen timber and surface debris.

.5 Grubbing consists of excavation and disposal of stumps and roots boulders and rock fragments of specified size to not less than specified depth below existing ground surface.

1.04 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Samples:
- .1 Submit 3 samples of each material listed below for approval prior to delivery of materials to project site.
- .2 Tree wound paint: one litre can with manufacturer's label.

.3 Herbicide: one litre can with manufacturer's label.

.3 Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.4 Provide manufacturer's installation instructions.

1.05 QUALITY ASSURANCE

.1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

.2 Safety Requirements: worker protection.
- .1 Workers must wear protective clothing when applying herbicide materials.
- .2 Wokers must wear protective clothing when clearing and grubbing.
- .3 Workers must not eat, drink or smoke while applying herbicide material.
- .4 Clean up spills of preservative materials immediately with absorbent material and safely discard to landfill.

1.06 STORAGE AND PROTECTION

.1 Prevent damage to all site entities which are to remain.
- .1 Repair damaged items to approval of Departmental Representative.
- .2 Replace trees designated to remain, if damaged, as directed by Departmental Representative.

2 PRODUCTS

2.01 MATERIALS

.1 Bituminous based paint of standard manufacture specially formulated for tree wounds.

.2 Herbicide: effective for killing annual and perennial weeds, and bamboo grass, by being absorbed through roots and foliage.
- .1 Spray applied on non-crop land areas.

.3 Soil Material for Fill:
- .1 Excavated soil material: free of debris, roots, wood, scrap material, vegetable matter, refuse, soft unsound particles, deleterious, or objectionable materials.
- .2 Remove and store soil material for reuse.

3 EXECUTION

3.01 TEMPORARY EROSION AND SEDIMENTATION CONTROL

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.02 PREPARATION

.1 Inspect site and verify with Departmental Representative, items designated to remain.

.2 Locate and protect utility lines: preserve in operating condition active utilities traversing site.
- .1 Notify Departmental Representative immediately of damage to or when unknown existing utility line[s] are encountered.
- .2 When utility lines which are to be removed are encountered within area of operations, notify Departmental Representative in ample time to minimize interruption of service.

.3 Notify utility authorities before starting clearing and grubbing.

.4 Keep roads and walks free of dirt and debris.

3.03 APPLICATION

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

3.04 CLEARING

.1 Clearing includes felling and cutting of trees into sections and satisfactory disposal of trees and other vegetation designated for removal, including downed timber, brush, and rubbish occurring within cleared areas.

.2 Clear as Departmental Representative, by cutting at height of not more than 300 mm above ground. In areas to be subsequently grubbed, height of stumps left from clearing operations to be not more than 1000 mm above ground surface.

.3 Cut off branches and cut down trees overhanging area cleared as directed by Departmental Representative.

.4 Apply herbicide in accordance with manufacturer's label to top surface of stumps designated not to be removed.

3.05 CLOSE CUT CLEARING

.1 Close cut clearing to ground level.

.2 Perform close cut clearing by hand so that existing muskeg is not damaged.

3.06 UNDERBRUSH CLEARING

.1 Clear underbrush from areas as indicated at ground level.

3.07 GRUBBING

.1 Remove and dispose of roots larger than 7.5 cm in diameter, matted roots, and designated stumps from indicated grubbing areas.

.2 Grub out stumps and roots to not less than 200 mm below ground surface.

3.08 REMOVAL AND DISPOSAL

.1 Remove cleared and grubbed materials to designated disposal.

.2 Cut timber greater than 125 mm diameter to 1200 mm lengths and stockpile as indicated. Stockpiled timber becomes property of Departmental Representative.

3.09 FINISHED SURFACE

.1 Leave ground surface in condition suitable for immediate grading operations to approval of Departmental Representative.

3.10 CLEANING

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

.2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, flagging tape, tools and equipment.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 31 00 00 – Earth Works

.2 Section 31 11 00 – Clearing and Grubbing

.3 Section 31 22 13 – Rough Grading

.4 Section 31 23 33.01 – Excavating, Trenching and Backfilling

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 TEMPORARY EROSION AND SEDIMENTATION CONTROL

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.02 STRIPPING OF TOPSOIL

.1 Ensure that procedures are conducted in accordance with applicable Municipal and Provincial requirements.

.2 Remove topsoil before construction procedures commence to avoid compaction of topsoil.

.3 Handle topsoil only when it is dry and warm.

.4 Remove vegetation from targeted areas by non-chemical means and dispose of stripped vegetation by alternative disposal.

.5 Remove brush from targeted area by non-chemical means and dispose of through mulching.

.6 Strip topsoil by scraper to depths of 100 mm as directed by Departmental Representative.

.1 Avoid mixing topsoil with subsoil.

.7 Pile topsoil in berms in locations as directed by Departmental Representative.
.1 Stockpile height not to exceed 2.5 - 3 m.

.8 Dispose of unused topsoil off-site.

.9 Protect stockpiles from contamination and compaction.

.10 Cover topsoil that has been piled for long term storage, with trefoil or grass to maintain agricultural potential of soil.

3.03 PREPARATION OF GRADE

.1 Verify that grades are correct and notify Departmental Representative] [DCC Representative.
.1 Grade area only when soil is dry to lessen soil compaction.
.2 Grade soil establishing natural contours and eliminating uneven areas and low spots, ensuring positive drainage.

3.04 PLACING OF TOPSOIL

.1 - 1.15 mü to allow for aeration of soil.

.2 Place topsoil only after Departmental Representative has accepted subgrade.

.3 Spread topsoil during dry conditions in uniform layers not exceeding 150 mm, over unfrozen subgrade free of standing water.

.4 Establish traffic patterns for equipment to prevent driving on topsoil after it has been spread to avoid compaction.

.5 Cultivate soil following spreading procedures.

3.05 SUB-SOILING

.1 Apply sub-soil, following spreading and cultivating procedures to designated areas to improve drainage and agricultural potential of soil.

.2 Work sub-soil area following natural grade contour lines, with vibrating sub-soiler to depth of 40 cm.

.3 Cross sub-soil the area following the first pass.

.4 Cultivate the soil with a chain harrow to de-clod the soil.

3.06 CLEANING

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

.2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 31 00 00 – Earth Works

.2 Section 31 11 00 – Clearing and Grubbing

.3 Section 31 14 13 – Soil Stripping and Stockpiling

.4 Section 31 23 33.01 – Excavating, Trenching and Backfilling

1.02 REFERENCE STANDARDS

.1 ASTM International
  .1 ASTM D 698-07e1, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort.

.2 Underwriters' Laboratories of Canada (ULC)

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

1.04 EXISTING CONDITIONS

.1 Known underground and surface utility lines and buried objects are as indicated on site plan.

.2 Refer to dewatering in Section 31 23 33.01 - Excavating, Trenching and Backfilling.

2 PRODUCTS

2.01 MATERIALS

.1 Fill material: native fill in accordance with of Section 31 23 33.01 - Excavating, Trenching and Backfilling.

.2 Excavated or graded material existing on site suitable to use as fill for grading work if approved by Departmental Representative.

3 EXECUTION

3.01 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for rough grading installation in accordance with manufacturer's written instructions.
  .1 Visually inspect substrate in presence of Departmental Representative.

.2 Inform Departmental Representativeof unacceptable conditions immediately upon discovery.
.3 Proceed with installation only after unacceptable conditions have been remedied.

3.02 STRIPPING OF TOPSOIL

.1 Do not handle topsoil while in wet or frozen condition or in any manner in which soil structure is adversely affected as determined by Departmental Representative.

.2 Commence topsoil stripping of areas as indicated after area has been cleared of brush, weeds and grasses and removed from site.

.3 Strip topsoil to depth of 100 mm. Rototill weeds and grasses and retain as topsoil on site. Avoid mixing topsoil with subsoil.

.4 Stockpile in locations as directed by Departmental Representative. Stockpile height not to exceed 2 m.

.5 Dispose of unused topsoil as directed by Departmental Representative.

3.03 GRADING

.1 Rough grade to levels, profiles, and contours allowing for surface treatment as indicated.

.2 Rough grade to following depths below finish grades:
.1 150 mm for grassed areas.
.2 200 mm for gravel paving.

.3 Slope rough grade away from building 1:50 minimum.

.4 Prior to placing fill over existing ground, scarify surface to depth of 150 mm minimum before placing fill over existing ground. Maintain fill and existing surface at approximately same moisture content to facilitate bonding.

.5 Compact filled and disturbed areas to corrected maximum dry density to ASTM D 698, as follows:
.1 90% under landscaped areas.
.2 95% under paved and walk areas.

.6 Do not disturb soil within branch spread of trees or shrubs to remain.

3.04 TESTING

.1 Inspection and testing of soil compaction will be carried out by testing laboratory designated by ULC. Costs of tests will be paid under a Cash Allowance in accordance with Sections 01 29 83 - Payment Procedures for Testing Laboratory Services and 01 45 00 - Quality Control.

.2 Submit testing procedure, frequency of tests, testing laboratory as designated by ULC or certified testing personnel to Departmental Representative.

3.05 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning
.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.06 PROTECTION

.1 Protect existing natural features, bench marks, surface or underground utility lines which are to remain as directed by Departmental Representative. If damaged, restore to original or better condition unless directed otherwise.

.2 Maintain access roads to prevent accumulation of construction related debris on roads.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 31 00 00 – Earth Works

.2 Section 31 11 00 – Clearing and Grubbing

.3 Section 31 14 13 – Soil Stripping and Stockpiling

.4 Section 31 22 13 – Rough Grading

1.02 REFERENCE STANDARDS

.1 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

.2 Canadian Standards Association (CSA International)
- .1 CAN/CSA-A3000-03, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
- .2 CSA-A23.1/A23.2-[04], Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

1.03 DEFINITIONS

.1 Excavation classes: one class of excavation will be recognized; common excavation.
- .1 Common excavation: excavation of materials of whatever nature.

.2 Unclassified excavation: excavation of deposits of whatever character encountered in Work.

.3 Topsoil:
- .1 Material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.
- .2 Material reasonably free from subsoil, clay lumps, brush, objectionable weeds, and other litter, and free from cobbles, stumps, roots, and other objectionable material larger than 25 mm in any dimension.

.4 Waste material: excavated material unsuitable for use in Work or surplus to requirements.

.5 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.

.6 Unsuitable materials:
- .1 Weak, chemically unstable, and compressible materials.
- .2 Frost susceptible materials:
  - .1 Fine grained soils with plasticity index less than 10 when tested to ASTM D 4318, and gradation within limits specified when tested to: Sieve sizes to CAN/CGSB-8.1.

.7 Unshrinkable fill: very weak mixture of cement, concrete aggregates and

water that resists settlement when placed in utility trenches, and capable of being readily excavated.

1.04 ACTION AND INFORMATIONAL SUBMITTALS

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

1.05 QUALITY ASSURANCE

.1 Qualification Statement: submit proof of insurance coverage for professional liability.

.2 Submit design and supporting data at least [2] weeks prior to beginning Work.

.3 Design and supporting data submitted to bear stamp and signature of qualified professional engineer registered or licensed in Province of Saskatchewan, Canada.

.4 Keep design and supporting data on site.

.5 Engage services of qualified professional Engineer who is registered or licensed in Province of Saskatchewan, Canada in which Work is to be carried out to design and inspect cofferdams, shoring, bracing and underpinning required for Work.

.6 Do not use soil material until written report of soil test results are reviewed and approved by Departmental Representative.

.7 Health and Safety Requirements:
- .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.06 EXISTING CONDITIONS

.1 Buried services:
- .1 Before commencing work verify location of buried services on and adjacent to site.
- .2 Arrange with appropriate authority for relocation of buried services that interfere with execution of work: pay costs of relocating services.
- .3 Remove obsolete buried services within 2 m of foundations: cap cut-offs.
- .4 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.
- .5 Prior to beginning excavation Work, notify applicable Departmental Representative and establish location and state of use of buried utilities and structures.
- .6 Confirm locations of buried utilities.
- .7 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered.
- .8 Where utility lines or structures exist in area of excavation, obtain direction of Departmental Representative before re-routing. Costs for such Work to be paid by the Contractor.
- .9 Record location of maintained, re-routed and abandoned underground

lines.

.10 Confirm locations of recent excavations adjacent to area of excavation.

2 PRODUCTS

2.01 MATERIALS

.1 Type 1 and Type 2 fill:

.1 Crushed, pit run or screened stone, gravel or sand.

.2 Gradations to be within limits specified when tested to ASTM C 136. Sieve sizes to CAN/CGSB-8.1.

.3 Table:

Sieve Designation	% Passing Type 1	Type 2
75 mm	-	[100]
50 mm	-	-
37.5 mm	-	-
25 mm	[100]	-
19 mm	[75-100]	-
12.5 mm	-	-
9.5 mm	[50-100]	-
4.75 mm	[30-70]	[22-85]
2.00 mm	[20-45]	-
0.425 mm	[10-25]	[5-30]
0.180 mm	-	-
0.075 mm	[3-8]	[0-10]

.2 Type 3 fill: selected material from excavation or other sources, approved by Departmental Representative for use intended, unfrozen and free from rocks larger than 75 mm, cinders, ashes, sods, refuse or other deleterious materials.

.3 Geotextile soil stabilization.

3 EXECUTION

3.01 TEMPORARY EROSION AND SEDIMENTATION CONTROL

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.02 SITE PREPARATION

.1 Remove obstructions, ice and snow, from surfaces to be excavated within

limits indicated.

3.03 PREPARATION/ PROTECTION

.1 Protect existing features in accordance with Section [01 56 00 - Temporary Barriers and Enclosures] and applicable local regulations.

.2 Keep excavations clean, free of standing water, and loose soil.

.3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to Departmental Representative approval.

.4 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.

.5 Protect buried services that are required to remain undisturbed.

3.04 STRIPPING OF TOPSOIL

.1 Begin topsoil stripping of areas as directed by Departmental Representative after area has been cleared of brush, weeds and grasses and removed from site.

.2 Strip topsoil to depth of 150 mm.
.1 Do not mix topsoil with subsoil.

.3 Stockpile in locations as directed by Departmental Representative.
.1 Stockpile height not to exceed 2 m and should be protected from erosion.

.4 Dispose of unused topsoil as directed by Departmental Representative.

3.05 STOCKPILING

.1 Stockpile fill materials in areas designated by Departmental Representative.
.1 Stockpile granular materials in manner to prevent segregation.

.2 Protect fill materials from contamination.

.3 Implement sufficient erosion and sediment control measures to prevent sediment release off construction boundaries and into water bodies.

3.06 COFFERDAMS, SHORING, BRACING AND UNDERPINNING

.1 Maintain sides and slopes of excavations in safe condition by appropriate methods and in accordance with Health and Safety Act for the Province of Saskatchewan.

.2 Construct temporary Works to depths, heights and locations as indicated.

.3 During backfill operation:
.1 Unless otherwise indicated or directed by Departmental Representative, remove sheeting and shoring from excavations.
.2 Do not remove bracing until backfilling has reached respective levels of such bracing.

.3 Pull sheeting in increments that will ensure compacted backfill is maintained at elevation at least 500 mm above toe of sheeting.

.4 When sheeting is required to remain in place, cut off tops at elevations as indicated.

3.07 DEWATERING AND HEAVE PREVENTION

.1 Keep excavations free of water while Work is in progress.

.2 Provide for Departmental Representative approval details of proposed dewatering or heave prevention methods, including dikes, well points, and sheet pile cut-offs.

.3 Avoid excavation below groundwater table if quick condition or heave is likely to occur.

.1 Prevent piping or bottom heave of excavations by groundwater lowering, sheet pile cut-offs, or other means.

.4 Protect open excavations against flooding and damage due to surface run-off.

3.08 EXCAVATION

.1 Advise Departmental Representative at least 7 days in advance of excavation operations for initial cross sections to be taken.

.2 Excavate to lines, grades, elevations and dimensions as indicated.

.3 Excavation must not interfere with bearing capacity of adjacent foundations.

.4 Do not disturb soil within branch spread of trees or shrubs that are to remain.

.1 If excavating through roots, excavate by hand and cut roots with sharp axe or saw.

.5 For trench excavation, unless otherwise authorized by Departmental Representative in writing, do not excavate more than 30 m of trench in advance of installation operations and do not leave open more than 15 m at end of day's operation.

.6 Keep excavated and stockpiled materials safe distance away from edge of trench as directed by Departmental Representative.

.7 Restrict vehicle operations directly adjacent to open trenches.

.8 Dispose of surplus and unsuitable excavated material in approved location.

.9 Do not obstruct flow of surface drainage or natural watercourses.

.10 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.

.11 Notify Departmental Representative when bottom of excavation is reached.

.12 Obtain Departmental Representative approval of completed excavation.

.13 Remove unsuitable material from trench bottom including those that extend below required elevations to extent and depth as directed by Departmental

Representative.

.14 Correct unauthorized over-excavation as follows:
.1 Fill under bearing surfaces and footings with Type 2 fill compacted to not less than 100% of corrected Standard Proctor maximum dry density
.2 Fill under other areas with Type 2 fill compacted to not less than 95 % of corrected Standard Proctor maximum dry.

.15 Hand trim, make firm and remove loose material and debris from excavations.
.1 Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil.

3.09 FILL TYPES AND COMPACTION

.1 Use types of fill as indicated or specified below. Compaction densities are percentages of maximum densities obtained from ASTM D 698.
.1 Exterior side of perimeter walls: use Type 3 fill to subgrade level. Compact to 95% of corrected maximum dry density.
.2 Within building area: use Type 2 to underside of base course for floor slabs. Compact to 100 % of corrected maximum dry density.
.3 Under concrete slabs: provide 125 mm compacted thickness base course of Type 1 fill to underside of slab. Compact base course to 100%.

3.10 BEDDING AND SURROUND OF UNDERGROUND SERVICES

.1 Place and compact granular material for bedding and surround of underground services as indicated.

.2 Place bedding and surround material in unfrozen condition.

3.11 BACKFILLING

.1 Do not proceed with backfilling operations until completion of following:
.1 Departmental Representative has inspected and approved installations.
.2 Departmental Representative has inspected and approved of construction below finish grade.
.3 Inspection, testing, approval, and recording location of underground utilities.
.4 Removal of concrete formwork.
.5 Removal of shoring and bracing; backfilling of voids with satisfactory soil material.

.2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.

.3 Do not use backfill material which is frozen or contains ice, snow or debris.

.4 Place backfill material in uniform layers not exceeding 150 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.

.5 Backfilling around installations:

.6 Install drainage system in backfill as indicated.

3.12 RESTORATION

.1 Replace topsoil as indicated.

.2 Reinstate lawns to elevation which existed before excavation.

.3 Reinstate pavements and sidewalks disturbed by excavation to thickness, structure and elevation which existed before excavation.

.4 Clean and reinstate areas affected by Work as directed by Departmental Representative.

.5 Use temporary plating to support traffic loads over unshrinkable fill for initial 24 hours.

.6 Protect newly graded areas from traffic and erosion and maintain free of trash or debris.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 06 10 53 – Miscellaneous Rough Carpentry

.2 Section 31 22 13 – Rough Grading

1.02 REFERENCE STANDARDS

.1 ASTM International
  .1 ASTM C 136-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

.2 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB-8.2-[M88], Sieves, Testing, Woven Wire, Metric.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

1.04 DELIVERY, STORAGE AND HANDLING

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

.2 Store crushed stone as and where directed by Departmental Representative.

2 PRODUCTS

2.01 MATERIALS

.1 Granular base: in accordance with following requirements:
  .1 Crushed stone or gravel: hard, durable, angular particles, free from clay lumps, cementation, organic material, frozen material and other deleterious materials.
  .2 Gradations: within limits specified when tested to ASTM C 136 and ASTM C 117. Sieve sizes to CAN/CGSB-8.1.
  .3 Table:

Sieve Designation	% Passing
19 mm	[100]
12.5 mm	[70-100]
4.75 mm	[40-70]
2.00 mm	[23-50]
0.425 mm	[7-25]
0.075 mm	[3-8]

  .4 Liquid limit: ASTM D 4318 maximum 25.
  .5 Plasticity index: ASTM D 4318 maximum 6.

3 EXECUTION

3.01 GRANULAR BASE

.1 Granular base material thickness: 100 mm minimum.

.2 Spread and compact granular base material in uniform layers not exceeding 100 mm compacted thickness.

.3 Compact to a density of not less than 100 % Standard Density in accordance with ASTM D 698.

3.02 EDGING

.1 Install edging true to grade, in location, layout [and pattern] as indicated.

3.03 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 06 10 53 – Miscellaneous Rough Carpentry

.2 Section 31 22 13 – Rough Grading

.3 Section 32 91 19.13 – Topsoil Placement and Grading

1.02 MEASUREMENT AND PAYMENT

.1 Measure supply and erection of chain link fence in metres erected including gates.

1.03 REFERENCE STANDARDS

.1 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-138.1-96, Fabric for Chain Link Fence.
- .2 CAN/CGSB-138.2-96, Steel Framework for Chain Link Fence.
- .3 CAN/CGSB-138.3-96, Installation of Chain Link Fence.
- .4 CAN/CGSB-138.4-96, Gates for Chain Link Fence.
- .5 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.

.2 CSA International
- .1 CSA A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.

1.04 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
- .1 Submit manufacturer's instructions, printed product literature and data sheets for concrete mixes, fences, posts and gates and include product characteristics, performance criteria, physical size, finish and limitations.

1.05 DELIVERY, STORAGE AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
- .1 Store materials in accordance with manufacturer's recommendations.

2 PRODUCTS

2.01 MATERIALS

.1 Concrete mixes and materials: in accordance with Section 03 30 00 - Cast-in-Place Concrete CSA A23.1.
- .1 Nominal coarse aggregate size: 40 mm.
- .2 Compressive strength: 32 MPa minimum at 56 days.
- .3 Air Entrainment: 3% - 6%. Slump 80 mm ± 30 mm
- .4 Exposure Class S-2.
- .5 Height: 1.2 m.

.2 Posts, braces and rails: to CAN/CGSB-138.2, galvanized steel pipe. Dimensions as indicated.

.3 Top and bottom tension wire: to CAN/CGSB-138.2, single strand, galvanized steel wire.

.4 Tie wire fasteners: steel wire.

.5 Tension bar: to ASTM A 653/A 653M, 5 x 20 mm minimum galvanized steel.

.6 Gate frames: to ASTM A 53/A 53M, galvanized steel pipe, standard weight 45 mm outside diameter pipe for outside frame, 35 mm outside diameter pipe for interior bracing.
- .1 Fabricate gates as indicated with electrically welded joints, and hot-dip galvanized after welding.
- .2 Fasten fence fabric to gate with twisted selvage at top.
- .3 Furnish gates with galvanized malleable iron hinges, latch and latch catch with provision for padlock which can be attached and operated from either side of installed gate.
- .4 Furnish double gates with chain hook to hold gates open and centre rest with drop bolt for closed position].

.7 Fittings and hardware: to CAN/CGSB-138.2, galvanized steel.
- .1 Tension bar bands: 3 x 20 mm minimum galvanized steel or 5 x 20 mm minimum aluminum.
- .2 Post caps to provide waterproof fit, to fasten securely over posts and to carry top rail.
- .3 Overhang tops to provide waterproof fit, to hold top rails.
- .4 Turnbuckles to be drop forged.

.8 Organic zinc rich coating: to CAN/CGSB-1.181.

2.02 FINISHES

.1 Galvanizing:
- .1 For chain link fabric: to CAN/CGSB-138.1, Grade 2.
- .2 For pipe: 550 g/mý minimum to ASTM A 90.
- .3 For other fittings: to ASTM A 123/A 123M.

3 EXECUTION

3.01 PREPARATION

.1 Grading:
  .1 Remove debris and correct ground undulations along fence line to obtain smooth uniform gradient between posts.
    .1 Provide clearance between bottom of fence and ground surface of 50 mm.

3.02 ERECTION OF FENCE

.1 Erect fence along lines as indicated and to CAN/CGSB-138.3.

.2 Excavate post holes to 1060 mm depth x 254 mm diameter for terminal posts and 760 mm x 254 mm for line posts.

.3 Space line posts 3 m apart, measured parallel to ground surface.

.4 Space straining posts at equal intervals not to exceed 150 m if distance between end or corner posts on straight continuous lengths of fence over reasonably smooth grade, is greater than 150 m.

.5 Install additional straining posts at sharp changes in grade and where directed by Departmental Representative.

.6 Install corner post where change in alignment exceeds 10 degrees.

.7 Install end posts at end of fence and at buildings.
  .1 Install gate posts on both sides of gate openings.

.8 Place concrete in post holes then embed posts into concrete to minimum 760 mm depth.
  .1 Extend concrete 50 mm above ground level and slope to drain away from posts.
  .2 Brace to hold posts in plumb position and true to alignment and elevation until concrete has set.

.9 Install fence fabric after concrete has cured, minimum of 5 days.

.10 Install brace between end and gate posts and nearest line post, placed in centre of panel and parallel to ground surface.
  .1 Install braces on both sides of corner and straining posts in similar manner.

.11 Install overhang tops and caps.

.12 Install top rail between posts and fasten securely to posts and secure waterproof caps and overhang tops.

.13 Install bottom tension wire, stretch tightly and fasten securely to end, corner, gate and straining posts with turnbuckles and tension bar bands.

.14 Lay out fence fabric. Stretch tightly to tension recommended by manufacturer and fasten to end, corner, gate and straining posts with tension bar secured to post with tension bar bands spaced at 300 mm intervals.
  .1 Knuckled selvedge at bottom.

.2 Twisted selvedge at top.

.15 Secure fabric to top rails, line posts and bottom tension wire with tie wires at 450 mm intervals.
.1 Give tie wires minimum two twists.

3.03 INSTALLATION OF GATES

.1 Install gates in locations Departmental Representative.

.2 Level ground between gate posts and set gate bottom approximately 40 mm above ground surface.

3.04 TOUCH UP

.1 Clean damaged surfaces with wire brush removing loose and cracked coatings. Apply two coats of organic zinc-rich paint to damaged areas.
.1 Pre-treat damaged surfaces according to manufacturers' instructions for zinc-rich paint.

3.05 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 31 22 13 – Rough Grading

1.02 REFERENCE STANDARDS

.1 Agriculture and Agri-Food Canada
  .1 The Canadian System of Soil Classification, Third Edition, 1998.

1.03 DEFINITIONS

.1 Compost:
  .1 Mixture of soil and decomposing organic matter used as fertilizer, mulch, or soil conditioner.
  .2 Compost is processed organic matter containing 40% or more organic matter as determined by Walkley-Black or Loss On Ignition (LOI) test.
  .3 Product must be sufficiently decomposed (i.e. stable) so that any further decomposition does not adversely affect plant growth, and contain no toxic or growth inhibiting contaminates.

1.04 ACTION AND INFORMATIONAL SUBMITTALS

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

2 PRODUCTS

2.01 TOPSOIL

.1 Topsoil for sodded areas: mixture of particulates, micro organisms and organic matter which provides suitable medium for supporting intended plant growth.
  .1 Soil texture based on The Canadian System of Soil Classification, to consist of 20 to 70 % sand, minimum 7 % clay, and contain 2 to 10 % organic matter by weight.
  .2 Contain no toxic elements or growth inhibiting materials.
  .3 Finished surface free from:
    .1 Debris and stones over 50 mm diameter.
    .2 Course vegetative material, 10 mm diameter and 100 mm length, occupying more than 2% of soil volume.
  .4 Consistence: friable when moist.

2.02 SOURCE QUALITY CONTROL

.1 Advise Departmental Representative of sources of topsoil to be utilized with sufficient lead time for testing.

.2 Contractor is responsible for amendments to supply topsoil as specified.

3 EXECUTION

3.01 STRIPPING OF TOPSOIL

.1 Begin topsoil stripping of areas as directed by Departmental Representative after area has been cleared of brush, weeds and grasses and removed from site.

.2 Strip topsoil to depths as required.
- .1 Avoid mixing topsoil with subsoil where textural quality will be moved outside acceptable range of intended application.

.3 Stockpile in locations as directed by Departmental Representative.
- .1 Stockpile height not to exceed 2 m.

.4 Disposal of unused topsoil is to be in an environmentally responsible manner but not used as landfill.

.5 Protect stockpiles from contamination and compaction.

3.02 PREPARATION OF EXISTING GRADE

.1 Verify that grades are correct.
- .1 If discrepancies occur, notify Departmental Representative.

.2 Grade soil, eliminating uneven areas and low spots, ensuring positive drainage.

.3 Remove debris, roots, branches, stones in excess of 50 mm diameter and other deleterious materials.
- .1 Remove soil contaminated with calcium chloride, toxic materials and petroleum products.
- .2 Remove debris which protrudes more than 75 mm above surface.
- .3 Dispose of removed material off site.

.4 Cultivate entire area which is to receive topsoil to minimum depth of 100 mm.
- .1 Cross cultivate those areas where equipment used for hauling and spreading has compacted soil.

3.03 PLACING AND SPREADING OF TOPSOIL/PLANTING SOIL

.1 Place topsoil after Departmental Representative has accepted subgrade.

.2 Spread topsoil in uniform layers not exceeding 100 mm.

.3 For sodded areas keep topsoil 15 mm below finished grade.

.4 Spread topsoil as indicated to following minimum depths after settlement.
- .1 135 mm for sodded areas.

.5 Manually spread topsoil/planting soil around trees, shrubs and obstacles.

3.04 FINISH GRADING

.1 Grade to eliminate rough spots and low areas and ensure positive drainage.

.1 Prepare loose friable bed by means of cultivation and subsequent raking.

3.05 ACCEPTANCE

.1 Departmental Representative will inspect and test topsoil in place and determine acceptance of material, depth of topsoil and finish grading.

3.06 SURPLUS MATERIAL

.1 Dispose of materials except topsoil not required where directed by Departmental Representative.

3.07 CLEANING

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

.2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 32 91 19.13 – Topsoil Placement and Grading

1.02 ADMINISTRATIVE REQUIREMENTS

.1 Scheduling:
.2 Schedule sod laying to coincide with preparation of soil surface.
.3 Schedule sod installation when frost is not present in ground.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for sod and fertilizer and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements of seed mix, seed purity, and sod quality.

1.04 DELIVERY, STORAGE AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

2 PRODUCTS

2.01 MATERIALS

.1 Number One Turf Grass Nursery Sod: sod that has been especially sown and cultivated in nursery fields as turf grass crop.
.1 Turf Grass Nursery Sod quality:
.1 Not more than 1 broadleaf weed and up to 1% native grasses per 40 square metres.
.2 Density of sod sufficient so that no soil is visible from height of 1500 mm when mown to height of 50 mm.
.3 Mowing height limit: 35 to 65 mm.
.4 Soil portion of sod: 6 to 15 mm in thickness.

.2 Commercial Grade Turf Grass Nursery:
.1 Mow sod at height directed by Departmental Representative within 36 hours prior to lifting, and remove clippings.
.2 Not more than 5 broadleaf weeds and up to 20% native grasses per 40 square metres.

.3 Water:
.1 Supplied by Departmental Representative at designated source.

.4 Fertilizer:
.1 To Canada "Fertilizers Act" and Fertilizers Regulations.
.2 Complete, synthetic, slow release with 65 % of nitrogen content in water-insoluble form.

2.02 SOURCE QUALITY CONTROL

.1 Obtain written approval from Departmental Representative of sod at source.

.2 When proposed source of sod is approved, use no other source without written authorization from Departmental Representative.

3 EXECUTION

3.01 PREPARATION

.1 Verify that grades are correct and prepared in accordance with Section 32 91 19.13 - Topsoil Placement and Grading. If discrepancies occur, notify.

.2 Do not perform work under adverse field conditions such as frozen soil, excessively wet soil or soil covered with snow, ice, or standing water.

.3 Fine grade surface free of humps and hollows to smooth, even grade, to contours, to tolerance of plus or minus 15 mm for Commercial Grade Turf Grass Nursery, surface to drain naturally.

.4 Remove and dispose of weeds; debris; stones 50 mm in diameter and larger; soil contaminated by oil, gasoline and other deleterious materials.

3.02 SOD PLACEMENT

.1 Ensure sod placement is done under supervision of certified Landscape Planting Supervisor.

.2 Lay sod within 24 hours of being lifted if air temperature exceeds 20 degrees C.

.3 Lay sod sections in rows, joints staggered. Butt sections closely without overlapping or leaving gaps between sections. Cut out irregular or thin sections with sharp implements.

.4 Roll sod as directed by Departmental Representative. Provide close contact between sod and soil by light rolling. Use of heavy roller to correct irregularities in grade is not permitted.

3.03 SOD PLACEMENT ON SLOPES AND PEGGING

.1 Start laying sod at bottom of slopes.

.2 Peg sod on slopes steeper than 3 horizontal to 1 vertical, within 1 m of catch basins and within 1 m of drainage channels and ditches to following pattern:

.1 100 mm below top edge at 200 mm on centre for first sod sections along contours of slopes.
.2 Not less than 3-6 pegs per square metre.
.3 Not less than 6-9 pegs per square metre in drainage structures. Adjust pattern as directed by Departmental Representative.
.4 Drive pegs to 20 mm above soil surface of sod sections.

3.04 FERTILIZING PROGRAM

.1 Fertilize during establishment and warranty periods.

3.05 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.
.2 Keep pavement and area adjacent to site clean and free from mud, dirt, and debris at all times.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
.1 Clean and reinstate areas affected by Work.

3.06 PROTECTION BARRIERS

.1 Protect newly sodded areas from deterioration as directed by Departmental Representative.

.2 Remove protection 2 weeks after installation as directed by Departmental Representative.

3.07 MAINTENANCE DURING ESTABLISHMENT PERIOD

.1 Perform following operations from time of installation until acceptance.
.1 Water sodded areas in sufficient quantities and at frequency required to maintain optimum soil moisture condition to depth of 75 to 100 mm.
.2 Cut grass to 50 mm when or prior to it reaching height of 75 mm.
.3 Maintain sodded areas weed free 95%.
.4 Fertilize areas in accordance with fertilizing program. Spread half of required amount of fertilizer in one direction and remainder at right angles and water in well.
.5 Temporary barriers or signage to be maintained where required to protect newly established sod.

3.08 ACCEPTANCE

.1 Sodded Commercial Grade Turf Grass Nursery Sod areas will be accepted by Departmental Representative provided that:
.1 Sodded areas are properly established.
.2 Extent of surface soil visible when grass has been cut to height of 60 mm is acceptable.
.3 Sod is free of bare or dead spots and extent of weeds apparent in grass is acceptable.
.4 Sodded areas have been cut minimum 2 times prior to acceptance.
.5 Fertilizing in accordance with fertilizer program has been carried

out at least once.

.2 Areas sodded in fall will be accepted in following spring one month after start of growing season provided acceptance conditions are fulfilled.

.3 When environmental conditions allow, all sodded areas showing shrinkage cracks shall be top-dressed and seeded with a seed mix matching the original.

.4 Areas sodded in fall will be accepted in following spring one month after start of growing season provided acceptance conditions are fulfilled.

3.09 MAINTENANCE DURING WARRANTY PERIOD

.1 Perform following operations from time of acceptance until end of warranty period:
- .1 Water sodded Commercial Grade Turf Grass Nursery Sod areas at weekly intervals to obtain optimum soil moisture conditions to depth of 100 mm.

.2 Repair and resod dead or bare spots to satisfaction of Departmental Representative.

.3 Cut grass and remove clippings to height as follows:
- .1 Commercial Grade Turf Grass Nursery Sod:
  - .1 60 mm during normal growing conditions.
- .2 Cut grass at 2 week intervals or as directed by Departmental Representative, but at intervals so that approximately [one third] of growth is removed in single cut.
- .3 Fertilize areas in accordance with fertilizing program. Spread half of required amount of fertilizer in one direction and remainder at right angles and water in well.
- .4 Eliminate weeds by Chemical means to extent acceptable to Departmental Representative.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 31 23 33.01 Excavating, Trenching and Backfilling

1.02 REFERENCE STANDARDS

.1 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB-34.22-94, Asbestos-Cement Drain Pipe.

.2 CSA International
  .1 CSA A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
  .2 CSA B1800-11, Thermoplastic Non-Pressure Pipe Compendium (Consists of B181.1, B181.2, B181.3, B181.5, B182.1, B182.2, B182.4, B182.6, B182.7, B182.8, B182.11 and B182.13).
    .1 CSA B182.2-11, PSM Type Polyvinylchloride (PVC) Sewer Pipe and Fittings.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
  .1 Submit manufacturer's instructions, printed product literature and data sheets for drainage material and include product characteristics, performance criteria, physical size, finish and limitations.

1.04 DELIVERY, STORAGE AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
  .1 Store materials in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  .2 Store and protect drainage material from nicks, scratches, and blemishes.
  .3 Replace defective or damaged materials with new.

2 PRODUCTS

2.01 BEDDING AND SURROUND MATERIALS

.1 Coarse filter aggregate: to CSA A23.1/A23.2, Group 1 20-5 mm in accordance with Section 31 23 33.01 – Excavating, Trenching and Backfilling.

.2 Fine filter aggregate: to CSA A23.1/A23.2 In accordance with Section 31 23 33.01 – Excavating, Trenching and Backfilling.

.3 Flexible plastic tubing and fittings: perforated nominal inside diameter 100 mm.

.4 Rigid plastic pipe and fittings: to CSA B182.2, size NPS2, 65 mm diameter, complete with fittings. Pipe to act as drainage passage, one located centrally beneath each of four wall foundations.

.5 Geotextile filter fabric

2.02 BACKFILL MATERIAL

.1 Type 2, in accordance with Section 31 23 33.01 – Excavating, Trenching and Backfilling..

.2 Excavated or graded material existing on site may be suitable to use if approved by Departmental Representative.

3 EXECUTION

3.01 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for drainage materials installation in accordance with manufacturer's written instructions.
.1 Visually inspect substrate in presence of Departmental Representative.

.2 Make sure graded base conforms with required drainage pattern before placing bedding material.

.3 Make sure improper slopes, unstable areas, areas requiring additional compaction or other unsatisfactory conditions are corrected to approval of Departmental Representative.

.4 Make sure foundation wall and dampproofing have been installed and approved by Departmental Representative before placing bedding material.

3.02 BEDDING PREPARATION

.1 Cut trenches in subgrade and place bedding material in uniform layer compacted thickness to depth of 125 mm.

.2 Shape bed true to grade and to provide continuous, uniform bearing surface for pipe.

.3 Shape transverse depressions, as required, to suit joints.

.4 Compact each layer full width of bed to at least 95% of corrected maximum dry density.

.5 Fill excavation below design elevation of bottom of specified bedding with

compacted bedding material.

3.03 PIPE OR TUBING INSTALLATION

.1 Make sure pipe interior and coupling surfaces are clean before laying.

.2 Lay perforated pipe minimum to slope of 1:100. For pipe face perforations and coupling slots downward.

.3 Lay non-perforated pipe to slope of 1:50 from perforated pipe to disposal area. Make joints watertight.

.4 Grade bedding to establish pipe slope.

.5 Install end plugs at ends of collector drains to protect pipe ends from damage and ingress of foreign material.

.6 Connect non-perforated pipe to sump pit by appropriate adapters manufactured for this purpose.

.7 Provide cleanouts on non-perforated pipe at changes of pipe direction and in runs greater than 15 m.

.8 Provide flush cleanouts where directed by Departmental Representative] [DCC Representative.

3.04 PIPE OR TUBING SURROUND MATERIAL

.1 Upon completion of pipe laying and after Departmental Representative has inspected and approved Work in place, surround and cover pipe and install geotextile filter.

.2 Hand place surround material in uniform layers not exceeding 150 mm compacted thickness, as indicated.

.3 Place layers uniformly and simultaneously on each side of pipe.

.4 Compact each layer from pipe invert to mid-height of pipe to at least 95% of corrected maximum dry density.

.5 Compact each layer from mid-height of pipe to underside of backfill to at least 90% of corrected maximum dry density.

.6 Place low strength unshrinkable fill where compaction cannot be achieved using mechanical methods.

3.05 BACKFILL MATERIAL

.1 Place backfill material above pipe surround in uniform layers not exceeding 150 mm compacted thickness up to grades as indicated.

.2 Under paving and walks, compact backfill to at least 95% corrected maximum dry density. In other areas, compact to at least 90% corrected maximum dry density.

.3 Use appropriate compaction equipment.
.1 Conduct hand tamping around confined areas of pipe.

.2 Do not use water or other hydraulic means to place or consolidate backfill material.

3.06 FOUNDATION

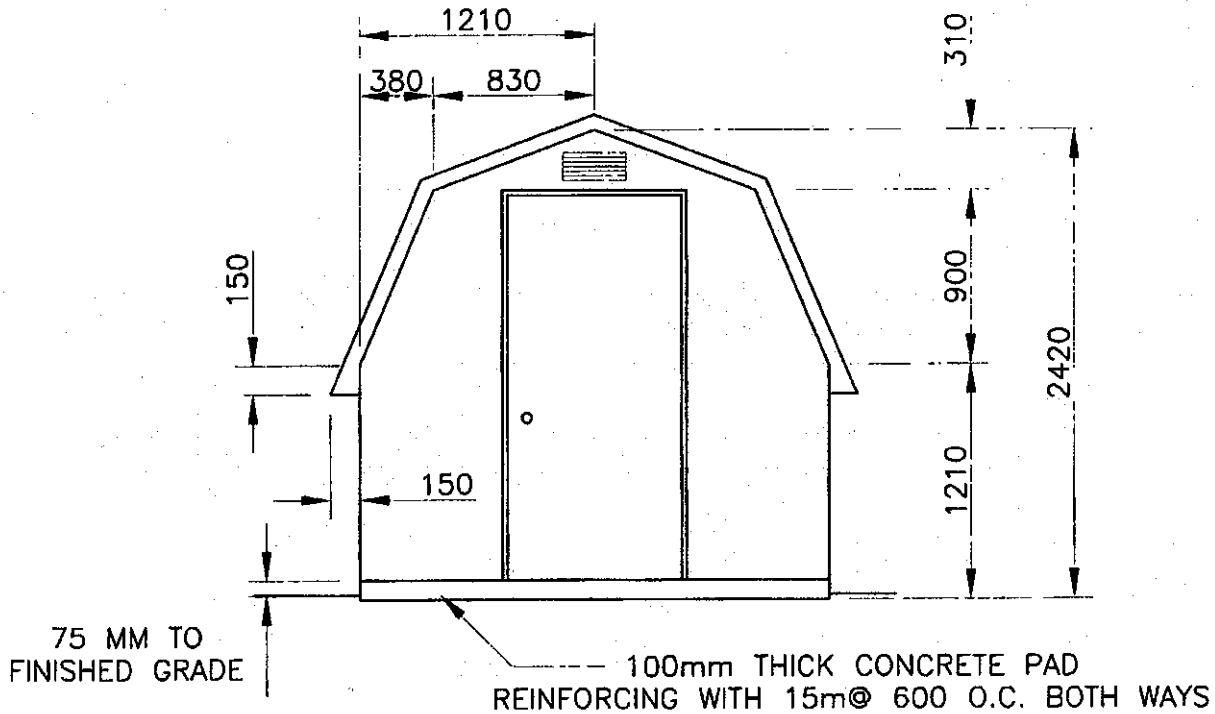
.1 Make penetrations through foundation structures only after receipt of written approval from Departmental Representative.

3.07 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

END OF SECTION



STORAGE SHED – Not to scale

APPENDIX "A"