



Lac La Biche County
welcoming by nature.

LAC LA BICHE COUNTY

RFP SPECIFICATIONS

Proposal For

**County Centre Maintenance Shop and
Connector Building**

Phase #2

Project No. CS-31-2018-01

TABLE OF CONTENTS

- A. Required Documents
- B. Bonding requirements
- C. Written Two (2) Year Guarantee
- D. Insurance
- E. Property Insurance
- F. Protection of work and Property
- G. Damages and mutual responsibility
- H. Contractor responsibility

DIVISION 01 GENERAL REQUIREMENTS

- 01030 Alternates/Alternatives
- 01050 Field Engineering
- 01060 Regulatory Requirements
- 01080 Identification Systems
- 01300 Submittals
- 01400 Quality Control
- 01500 Construction Facilities and Temporary Controls
- 01700 Contract Closeout
- 01900 Contract Dispute mechanism
- 02100 Terms of Payment

DIVISION 02 EXISTING CONDITIONS AND WORKSITE

- 02800 Site Improvements

DIVISION 03 CONCRETE

- 03200 Concrete Framework
- 03200 Concrete Reinforcement
- 03250 Concrete Accessories
- 03300 Cast-In-Place Concrete
- 03370 Concrete Curing

DIVISION 04 MASONRY

- 04200 Culture Stone Clad Veneer

DIVISION 06 WOOD, PLASTICS and COMPOSITES

06050	Fasteners and Adhesives
06100	Rough Carpentry
06130	Heavy Timber Construction
06170	Prefabricated Structural Wood
06171	Prefabricated Wood Trusses
06200	Finish Carpentry
06400	Architectural Woodwork

DIVISION 07 THERMAL AND MOISTURE PROTECTION

07100	Waterproofing
07180	Water Repellents
07190	Vapour Retarders
07195	Air Barriers
07200	Insulation
07242	Exterior Finish/Stucco
07250	Fireproofing
07480	Exterior Wall Assemblies
07500	Membrane Roofing
07600	Flashing and Sheet Metal
07910	Sealants

DIVISION 08 OPENINGS

08100	Metal Doors and Frames
08200	Wood and Plastic Doors and Frame
08400	Entrances and Store Fronts
08500	Metal Windows
08700	Hardware's

DIVISION 09 FINISHES

09250	Gypsum Board
09651	MDF Base, Window and Door trim
09911	Interior Painting
09912	Exterior Painting
9C.00	Ceramic/Porcelain Tile

DIVISION 10 SPECIALTIES

10800	Toilet and Bath Accessories
-------	-----------------------------

DIVISION 11 EQUIPMENT

DIVISION 21 FIRE SUPPRESSION

DIVISION 22 PLUMBING

DIVISION 23 HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)

DIVISION 26 ELECTRICAL

DIVISION 27 COMMUNICATIONS

INTRODUCTORY INFORMATION

Minimum Construction Standards

A. Required Documents

1. The following documents are to be maintained at the job site and kept up to date:
 - .11 Contract Drawings
 - .12 Specifications
 - .13 Addendums
 - .14 Reviewed Shop Drawings
 - .15 Change Orders
 - .16 All Modifications to Contract
 - .17 Field Test Results
 - .18 Work Schedule
 - .19 Equipment Manufacturer's Installation and Application Instructions
2. Contract Documents
 - .20 Submitted tender is to be completed as a stipulated fixed price contract in accordance with CCDC 2.
 - .21 Tender closing date is August 7, 2018 at 2:00 p.m. with all tenders to be submitted in a sealed envelope to the location indicated on the request for proposal information sheet. All tenders to be submitted in a sealed envelope according to the instructions noted within the proposal information sheet attached.

- .22 It is the Contractor's responsibility to question conflicts and ask for clarification.
- .23 All enquiries regarding these plans and specifications will be directed to Richards Consulting & Associates Ltd.
- .24 Drawings and specifications are to be read in conjunction with each other and in the case of conflict, the drawings shall govern.
- .25 Addendum instructions shall govern over drawings and specifications.
- .26 All addendums will be issued by Richards Consulting & Associates Ltd. and a copy will be forwarded to all bidding contractors.
- .27 Contractors to provide at time of bid and maintain throughout the project, Worker's Compensation Board (WCB) Clearance documentation.
- .28 Contractors to provide at time of bid a Certificate of Recognition (COR) issued by Occupational Health & Safety (OH&S).
- .29 All project progress payments to be accompanied by a Statutory Declaration.

B. Bonding Requirements

The Contractor shall provide both a performance and a labour and material payment bond. The performance bond shall be in accordance with CCDC 2 requirements. The labour and material bond shall be in accordance with CCDC 2 requirements. Both bonds to be secured for 50 percent of the project tender price. Upon submission of bid, all Contractors are to provide a bid bond for ten (10) percent of the contract value.

C. Written Two Year Guarantee

1. All materials used in the construction of the building shall be new, best quality, regular production items which are free from defects and complete with applicable warranties.
2. Installations shall be done as per manufacturer's instructions or to common trade practices but not less than engineer's approval.
3. At least one month prior to the expiry of the Guarantee period, the Owner shall notify the Contractor in writing of any final tests which the Contractor maybe required to carry out under the contract. The

Contractor shall arrange to have such tests carried out promptly, and to provide opportunity for the Owner to inspect or supervise such tests.

4. Contractors shall furnish the Owner with a written two year guarantee covering all material, equipment, and workmanship and shall make good any defects or problems that arise with the year. Guarantee shall take affect from the date of the Owner's acceptance.

D. Insurance

1. Pay for and provide all insurance in accordance with the requirements of General Conditions, CCDC 2.
2. Builders shall provide Builders All Risk insurance for the contract price of the project. The policy shall have both the Contractors and the Owners name indicated on it.

E. Property Insurance

1. The Contractor shall provide and maintain property insurance acceptable to the Owner, insuring the full value of the Work in the amount of the Contract Price and the full value as stated on products that are specified to be provided by the Owner for incorporation into the Work. The insurance shall be in the joint names of the Contractor and the Owner and shall include the interests of the Contract, the Owner and the Subcontractors and all others having an insurable interest in the Work. The policies shall include all Subcontractors as Unnamed Insureds or, if they specifically request, as Named Insureds. The policies shall preclude subrogation claims by the Insurer against anyone insured thereunder.
2. Such coverage shall be provided for EITHER an ALL Risks Builder's in risk Policy OR by a combination of a standard Builder's Risk Fire Policy including Extended Coverage and Malicious Damage Endorsements and a Builder's risk Difference in Conditions Policy providing equivalent coverage.
3. The policies shall insure against all risks of direct loss or damage subject to the exclusion specified in the Supplementary General Conditions (SGC). Such coverage shall apply to:
 - a) All products, labour and supplies of any nature whatsoever, the property of the Insureds or of others for which the Insureds may have assumed responsibility, to be used in or pertaining to the site preparations, demolition of existing structures, erections and/or fabrication and/or reconstruction and/or repair of the

insured project while on the site or in transit, subject to the exclusion of the property specified.

b) The installation, testing and any subsequent use of machinery and equipment including boilers, pressure vessels or vessels under vacuum.

c) Damage to the Work caused by an accident to and/or the explosion of any boiler(s) or pressure vessel(s) forming part of the Work.

Such coverage shall exclude construction machinery, equipment, temporary structural and other temporary facilities, tools and supplies used in the construction of the Work and which are not expendable under the Contract.

4. The Contractor shall provide the Owner with evidence of all insurance prior to commencement of the Work and shall promptly provide the Owner with a certified true copy of each insurance policy. Policies provided shall contain an endorsement to provide all Named Insureds with prior notice of changes and cancellations. Such endorsement shall be in the following form: "It is understood and agreed that the coverage provided by this policy will not be changed or amended in any way nor cancelled until thirty (30) days after written notice of such change or cancellation shall have been given to all Named Insureds"
5. All such insurance shall be maintained continuously until 10 days after the date the Engineer issues a certificate of Total Performance. All such insurance shall provide for the Owner to take occupancy of the Work or any part thereof during the term of the insurance. Any increase in the cost of this insurance arising out of such occupancy shall be at the Owner's expense.

F. Protection of Work and Property

1. The Contractor shall protect the property adjacent to the Project site from damage as the result of his operations under the contract.
2. The Contractor shall protect the Work and the Owner's property from damage and shall be responsible for any damage which may arise as the result of his operations under the Contract.

3. Should any damage occur to the work and/or Owner's property for which the Contractor is responsible he shall make good such damage at his own expense or pay all costs incurred by others in making good such damage.
4. Should any damage occur to the Work and/or Owner's property for which the contractor is not responsible as provided in (GC30.02) he shall make good such damage to the Work and, if the Owner so directs to the Owner's property and the Contract Price and Contract Time shall be adjusted in accordance with GC20 CHANGES IN THE WORK.

G. Damages and Mutual Responsibility

1. If either party to this Contract should suffer damage in any manner because of any wrongful act or neglect of the other party or anyone employed by him, then he shall be reimbursed by the other party for such damage. The party reimbursing the other party shall be subrogated to the rights of the other party in respect of such wrongful act or neglect if it be that of a third party.
2. If the Contractor has caused damage to any Other Contractor on the Work, the Contractor agrees upon due notice to settle with such Other Contractors by agreement on arbitration, if he will so settle. If such Other Contractor sued the Owner on account of any damage alleged to have been so sustained the Owner shall notify the contractor and may require the Contractor to defend the action at the Contractor's expense. If any final order or judgment against the Owner arises therefrom the Contractor shall pay or satisfy it and pay all costs incurred by the Owner.
3. If the contractor becomes liable to pay or satisfy any final order, judgement or award against the Owner than the Contractor, upon undertaking to indemnify the Owner against any and all liability for costs, shall have the right to appeal in the courts of competent jurisdiction.

H. Contractor Responsibilities

1. Location of Equipment and Fixtures
 - .11 All equipment, fixtures and distribution systems are to be located to provide minimum interference and maximum useable space.
 - .12 Place all equipment and fixtures in accordance with manufacturer's instructions.
 - .13 Submit field drawings showing relative positions of services and equipment, when required by engineer.

- .14 Confirm actual locations with engineer's and manufacturer's specifications.
- .16 Concealment
 - .a Unless noted otherwise conceal all pipes, ducts and wiring in floors, walls and ceilings of finished areas.
- 2. Cutting, Fitting and Patching
 - .21 Contractors are responsible for all cutting, fitting and patching to make work fit properly, including site excavation.
 - .22 Where new work meets with existing or where existing work is altered cut, patch and make good to match existing.
 - .23 Engineer's approval must be obtained before cutting, boring or sleeves any load bearing members.
 - .24 All work to pipes, sleeves, ducts and conduits to fit airtight unless specified otherwise.
- 3. Existing Services and Shut-downs
 - .31 Contractors to oversee sub trades and responsible for all relocations or removal of existing services.
 - .32 Before executing work, establishes the locations of all service lines in area.
 - .33 Submit schedule for approval to all affected parties of shut-downs or closure of services.
- 4. Repairs to Existing Buildings or Services
 - .41 Repairs or replace any existing finishes damaged by this work.
 - .42 Make good all existing curbs or sidewalks.
 - .43 Repair or replace any landscaping damaged by construction.

DIVISION 01 GENERAL REQUIREMENTS

01030 Alternates/Alternatives

- .1 Alternatives for any item, material or equipment stated on the drawings or requested by Owner are approved if:
 - .11 Meets or exceeds standards given in Alberta Building Code.

- .12 Meets or exceed specifications given in the drawings or as accepted by Owner.
- .13 **NOTE:** The specifications given on the drawings govern the specifications contained in the general specifications. The Owner's preferences, as long as it meets code, govern over all.
- .14 Items which must have written approval from Richards Consulting & Associates Ltd. are:
 - .a Building and construction designs that alter any physical size or detail.
 - .b Any item that effects that structural rigidity of the building.
 - .c Any item that would change color, texture or finish.
- .2 If a sub trade or supplier assumes an item or change is approved without getting proper authorization and after installation that item or change is found to not meet or exceed the specifications as given, then that sub trade or supplier may be required to prove and/or replace or change the item at their own cost to meet the specifications given on the project.
- .3 Terms of monthly payments shall be in accordance with CCDC 2.
- .4 Final contract close out and payment of outstanding monies shall be in accordance with CCDC 2.
- .5 Taxes and duties are the Contractor's responsibility to pay as required and are to be submitted in accordance with local, provincial and federal regulations.

01040 Field Engineering

- .1 Site Conditions
 - .11 The actual geodetic elevations of the building's main floor in relation to the surrounding site, to be in conformance with provided engineered drawings.
 - .12 All sub trades to review and confirm existing conditions prior to construction start.
 - .13 Lac La Biche County to supply copy of soils report to all necessary sub trades.
- .2 Site Survey
 - .21 Contractors to supply complete layout of work to locations, lines and elevations indicated.

- .22 Provide all devices and equipment to layout and construct work.
- .23 Supply stakes and other survey markers required to properly layout work.

01050 Regulatory Requirements

- .1 Minimum Construction Standards
 - All construction is to meet or exceed the following codes and standards, the more stringent to govern:
 - .11 Alberta Building Code
 - .12 National Building Code
 - .13 Local Bylaws
 - .14 Workers' Compensation Act
 - .15 Occupational Health and Safety Act/Code and all applicable regulations.
 - .16 Failure to satisfy all noted regulatory codes or bylaws noted in points .11 to .15 which ultimately results in additional costs or project delays will be the responsibility of the general contractor.

01060 Identification Systems

- .1 Project Identification/Construction Sign
 - .11 Contractor may erect a project sign on the site. Sign shall be painted by a professional sign painter. Submit design drawing to consultant prior to installation.
 - .12 Sign shall contain the buildings name, Owner's name, Consultant's name, general contractors and major subcontractor.

01300 Submittals

- .1 Maintenance Shop Drawings
 - .11 Contractor to prepare and submit to Consultant all required pre-engineered drawings.
 - .12 Pre-engineered shop drawings are to be submitted for approval prior to fabrication.

- .13 Pre-engineered shop drawings may include manufacturer's catalog pages or cuts so long as specified model or item is clearly indicated.
- .2 As-Built Drawings
 - .21 One set of drawings shall be kept on site and the Contractor will record in red ink the following:
 - .211 Deviations and changes provided by Engineer.
 - .212 Field changes of dimensions and details
 - .213 Actual depth of various elements of foundations
 - .22 Following Engineers' reviews, all notes, dimensions, details, etc. shall be transferred to a set of clean, new prints for Owner.

01400 Quality Control

- .1 Inspection of the Work
 - .11 The Owner, Consultant, Building Standards Agency, Municipality, and Engineer shall have access to the work for inspection purposes.
 - .12 Any special test, approvals, or inspections required by the Contract documents, Owner's instructions, or local laws and ordinances must be given adequate notice.
 - .13 Supply copies of all certificates and/or copies of all reports of tests done on the project to the Engineer and the Owner.
 - .14 Contractor is responsible for all costs associated with necessary inspections and testing, this includes, all material and site inspection requirements.
- .2 Site Inspections
 - .21 Contractor shall contact Richards Consulting & Associates Ltd. to perform onsite inspections for:
 - .a Foundation sub-base prior to concrete pour
 - .b Reinforcement for all concrete work
 - .c Overall structural framing
- .3 Rejected Work
 - .31 Remove immediately any defective work whether the result of poor workmanship, use of defective or improper materials or damaged carelessness (whether incorporated into the work or not) which has been rejected by the Consultant or the Owner as failing to conform to the

Contract documents. The defective work is to be replaced promptly at no cost to the Owner.

- .32 If the opinion of the Consultant is that it is not expedient to correct the defective work or any work which was not done in accordance with the Contract documents, the Consultant may deduct the difference in value between the works as is and that called for by the Contract from the Contract price. This amount shall be determined by the Consultant.

.4 Test and Mix Designs

- .41 The Contractor shall select and pay for independent testing and inspection companies for the following:
 - .411 Subsoil and fill
 - .412 Concrete
 - .414 Structural steel
 - .415 Roofing, metal flashing
- .42 The Contractor shall pay for all testing and inspections required by authority having jurisdiction.
- .43 All testing and inspection companies shall be to the Owner's approval. Contractor selected inspection and testing firms must be provided with their portfolios at the time of tender submission.
- .44 Should any material, component or fabrication fail the test or inspection the Contractor shall pay for the full cost of remedial work and further testing or inspection until it is approved.

.5 Material Quality

- .51 Unless otherwise stated in the Contract documents provided and pay for all labor, products, tools, construction equipment and machinery, water, heat, light, power, transportation, and other facilities and services necessary for the proper performance of the work.
- .52 All products provided are to be new unless otherwise specified. Any products not specified shall be of a quality best suited to the purpose required and their use must be approved by the Consultant.

- .53 Products must conform to all CAN/C.G.S.B., C.S.A., A.S.T.M, U.L.C. and factory mutual standards as noted and provide material conformity if requested by the Consultant.
 - .54 Conform to published trade association standards manuals if applicable.
 - .55 Remove and replace any material not conforming to the Contract documents or any that contain defects deemed irreparable by the Consultant.
- .6 Equivalent and Alternative Materials
- .61 Only use those alternative products and methods which have been approved by the Consultant prior to tender closing.
 - .62 No alternative or substitution will be allowed due to failure to order specified products or materials in proper advance time regarding place of manufacture, lead time required and/or distance to transport.
 - .63 The Consultant may at any time submit to the Contractor for pricing any products and methods “alternative “to those specified. Promptly advise if the value of such substitutions affect the Contract price and/or any changes or modifications to other parts as a result of the substitution. State the last date required for a decision on any substitution to maintain the agreed progress schedule. Any substitutions of “alternative” products or methods will be authorized by issue of a change order, if approved, by the Consultant.
 - .64 “Alternative” products or methods are those having similar properties or fulfilling similar functions to the specified item.
- .7 Materials Availability
- .71 Upon award of contract determines the delivery time necessary for all products and equipment required. Order the items to ensure delivery is such that the progress schedule is maintained.

- .8 Materials Handling at Site
 - .81 Conform to the material manufacturer's directions for the delivery, storage and handling of products.
 - .82 Store in original containers with all labels and seals intact.
 - .83 Protect materials from freezing, excessive heat, moisture and sunlight as directed by manufacturer.
 - .84 Products supplied by Owner to be installed by the Contractor will be delivered during regular hours at the Owner's expense. Contractor will unload and store if necessary, at the Contractor's expense.
 - .85 All flammable, corrosive or toxic substances to be stored in suitable containers in a separate shed away from main construction area and kept under lock and key.

- .9 Superintendence
 - .1 Superintendence may be deemed unsatisfactory and changes or additions may be demanded if control, organizations and coordination of Work is not satisfactory or quality of Work does not meet the requirements of the Contract or progress of the Work is behind the agreed schedules.

- .10 Labour
 - .1 Maintain good order and discipline among employees engaged in the Work.
 - .2 Maintain as large of work force in the various trades as required for efficiency and to maintain the agreed schedule.
 - .3 Contractor and subcontractors shall comply with applicable labor regulations and shall pay all workers, mechanics and laborers employed by them such wages and remuneration as are currently in force.
 - .4 Contractor and subcontractors shall be able to provide a weekly work force report if requested by Owner.

- 01500 Construction Facilities and Temporary Controls
 - .1 Field Offices
 - .11 Contractor's Office:

Contractor to provide and maintain a field office for administration purposes including record keeping or filing of all paperwork associated with the project. Field office to be equipped with heat, lights and tables for the examination of drawings.

.12 First Aid Facility

- .a A qualified first aid officer shall be appointed and designated for first aid work.
- .b Maintain a well identified and complete first aid kit.
- .c Conform to the requirements of the Worker's Compensation Board.

.2 Start-up Meeting

- .21 Immediately after notice of award of Contract a start-up or pre-construction meeting is to be held which is to be attended by the Owner, his Consultants, the Contractor and major subcontractors. Topics of meeting are to include procedure of Work, construction schedule and other items to expedite the progress of the Work.

.3 Project Site Meeting

- .31 Project meetings shall be formal and minutes taken weekly. Contractor to record and distribute minutes of meeting to all in attendance.

.4 Utilities

.41 Telephone

- .a Contractor to provide and pay for site telephone and fax services, both on separate phone lines.

.42 Light and Power

- .a Client will provide panel and service for Contractors usage, all connection beyond this will be Contractors responsibility.
- .b Provide and arrange for suitable power connections and any required temporary poles, lines and meters.
- .c Temporary power not to be used for welding, all welding is to be self-generated.

.43 Sanitary Facilities:

- .a Provide and maintain regularly serviced chemical toilets for use of all workers.
- .b Sanitary facilities in the new building(s) shall not be used by construction personnel.
- .44 Water Services:
 - .a Provide and pay for supply of clean potable water as required.
 - .b Provide and pay for any connections, temporary lines, etc. required for potable water.
- .45 Temporary Drainage:
 - .a Responsible for covering of all permanent drains during construction. Clear any plugged lines which may occur.
 - .b Provide temporary drainage of all water collecting on site.
- .46 Temporary Ventilation:
 - .a Provide and maintain all temporary ventilation for all sections of Work requiring ventilation. All exhaust to be directed to exterior of wall.
 - .b New building ventilation system shall not be used for construction exhaust.
- .5 Temporary Heat
 - .51 Provide and pay for provisions to heat the building(s) as required during construction.
 - .52 Any temporary supply lines or ventilation of heater to be done by Contractor.
 - .53 Ensure temporary heat is maintained in the finished building for 28 days from slab pour. Owner will take over heat service at this time.
- .6 Site Parking
 - .61 Parking on construction site shall be designated by the Contractor.
 - .62 Any parking on city streets shall be in compliance with municipal regulations.
 - .63 Site access for deliveries shall be as directed by Contractor.
 - .64 Site parking shall not impede County operations at any time.

- .7 Security
 - .71 Contractor to erect and maintain whatever enclosures, barricades and temporary doorways required and employ such forces as watchmen to prevent theft or vandalism and to provide safety to the public. This cost to be included in the Contract sum.
 - .72 Provide fire protection facilities or equipment as required by local authority having jurisdiction and the Construction Safety Code.
 - .73 Make all fire protection facilities or equipment highly visible and easy to access. Provide fire department access to the site at all.

- .8 Temporary fencing
 - .81 Contractor will be required to provide temporary and secure fencing to provide Contractor parking and access to construction site.
 - .82 Contractor to ensure proper and safe removal of temporary fencing and repair site if necessary to previous condition.

- .9 Environment Controls
 - .91 Conform to local and municipal by-laws enforcing the control of dust, debris, burning and noise on the adjacent to the site. Keep streets free of excavated material, debris and waste of all times.
 - .92 Protect existing trees and landscaping which is to remain.
 - .93 No burning or open fires are allowed on the construction site.

- .10 Safety
 - .101 Adhere to the Alberta regulations governing general safety during construction, demolition and relocation of buildings.
 - .102 Conform to the Worker's Compensation Board and other regulations governing safety in the work place.

- .1 Clean Up
 - .11 Remove all waste materials and rubbish from the site daily. Do not allow any waste material or rubbish to accumulate.
 - .12 Conduct cleaning and disposal operations to comply with local ordinances and regulations.
 - .13 Use only cleaning materials recommended by the manufacturer for the surface or materials to be cleaned and compatible with materials to be used by Owner following completion of the work.
 - .14 In preparation for inspection for substantial performance do final cleaning to meet the following:
 - .a Resilient flooring and base:
 - Scrubbed, washed, waxed, polished and all stains removed.
 - .b Other floors:
 - Scrubbed, washed and all stains removed.
 - .c Finish hardware:
 - Free from stains and polished.
 - .d Glass, ceramic tile and plastic:
 - Interior and exterior cleaned and polished.
 - .e All scratched or broken glass and plastic to be replaced.
 - .f Painted, decorated or stained work:
 - Remove all marks, stains, finger prints, soils and dirt
 - .g Metal doors and frames, windows:
 - Clean and free of dirt, grease, stains and finger prints.
 - .h Built-in Fixtures and Equipment:
 - Fully cleaned and touched up
 - .i Roof, site and exterior:
 - Cleaned and free of all construction debris.

- .j Roof and drains:
 - Cleaned and free of debris, leaves, etc.
 - .k Metal soffits and fascias:
 - Clean and free of dirt, grease and stains.
 - .l Concrete and paved surfaces:
 - Broom clean
 - .m Other surfaces:
 - Raked clean
 - .n Electrical and other panels:
 - Fully labeled and vacuumed clean.
 - .o Mechanical Work:
 - Fully operational and labeled, all duct work free of dust and debris.
 - .p Electrical Work:
 - Fully operational
- .15 At completion of project remove all storage sheds, offices, hoardings, temporary fences and protection and signs from the site.

.2 Final Inspections

- .21 Alberta Standards Guide for take-over procedures, A.C.A. Document "C" shall form part of and be read in conjunction with the Contract documents.
- .22 Submit written certification to the Consultant when project is at substantial performance requiring inspection.
- .23 Consultant shall notify Contractor within five (5) days to set date for inspection and designate the parties he wishes to have participate.
- .24 Consultants will notify Contractor within three (3) days of the inspection of his approval or disapproval.
- .25 If Consultant finds the Contract is substantially performed in accordance with the requirements of the Builder's Lien Act he will issue a Certificate of Substantial Performance. He will also issue a list of items to be completed or corrected and the value to be retained until a Certificate of Total Performance is issued.
- .26 If Consultant finds the Contract is not substantially

- performed he shall inform the Contractor in writing stating the reasons why.
- .27 Immediately following the issuance of the Substantial Performance Certificate the Consultant and Contractor shall establish a reasonable date for total performance.
- .28 Contractor to submit the following documentation with the certification:
- .a Guarantee, warranties and inspection certificates.
 - .b Maintenance and operations manuals including operational instructions.
 - .c Final accounting and a statutory declaration to the effect that all accounts have been paid and that there are no liens or encumbrances on the building.
 - .d Spare parts and operating equipment.
 - .e Record drawings.
 - .f Worker's Compensation Board Letter of Good Standing.
 - .g All inspection and certification reports, for example, Fire Alarm Verification, Elevator Inspection, Subgrade Compaction Reports, etc.
- .29 Consultant shall within five (5) days after the receipt of total performance application notifies the Contactor of approval or disapproval.
- .a If Consultant deems the Contract has been totally performed to the requirements of the Contract documents the Owner shall issue a Certificate of Total Performance and certify for payment the remaining monies due to the Contractor, less any hold back monies required to be retained.
 - .b If Consultant deems the Contract is not totally performed he shall notify the Contractor in writing stating the reason why.

DIVISION 02 EXISTING CONDITIONS AND WORKSITE

02800 Site Improvements

- .1 Contractor shall rebuild or replace as necessary all sidewalks, curbs, gutters, paving, sodding, grades, etc. that were affected by trenching, excavating or other work back to their original condition or better. Contractor shall only be responsible for grade work immediately next to the proposed structure and noted repair work. He shall not be responsible for the construction of the plan indicated road leading to the proposed structure.

DIVISION 03 CONCRETE

03300 Cast-In-Place Concrete

1.4 Submittals for Review

- .1 Section 01.33.00: Procedures for submittals
- .2 Product Data: Provide data on joint devices, attachment accessories.
- .3 Samples: Submit two (2), 400 mm long samples of expansion/contraction joint and control joint.
- .4 Submit certificates to Section 01.33.00
- .5 Minimum of four (4) weeks prior to starting concrete work, submit manufacturer's test data and certification by qualified independent inspection and testing laboratory that following materials will meet specified requirements of CSA A23.1/A23.2 and CSA-A3000:
 - a. Portland Cement
 - b. Blended hydraulic cement
 - c. Supplementary cementing materials
 - d. Grout
 - e. Admixtures
 - f. Aggregates
 - g. Water
- .6 Provide certification that mix proportions selected will produce concrete of quality, yield and strength as specified in concrete mixes, and will comply with CSA A23.1/A23.2.
- .7 Submit concrete mix designs for all classes of concrete, certified by an independent testing agency, to the Consultant.
- .8 Provide certification that plant, equipment, and materials to be used in concrete comply with requirements of CSA A23.1/A23.2.

- .9 High Strength Concrete Mixes: For mixes containing fly ash, submit reports from an independent testing agency indicating the fly ash complies with the requirements of the specifications.

1.7 Quality Assurance

- .1 Perform Work in accordance with ACI 301;
- .2 All concrete design conforms to or shall conform to CSA A23.3;
- .3 All materials and workmanship are to conform to CSA A23.1/A23.2;
- .4 Testing is to be performed in accordance with CSA A23.1/A23.2;
- .5 Acquire cement and aggregate from same source for all work;
- .6 Conform to CSA A23.1/A23.2 when concreting during hot weather;
- .7 Conform to CSA A23.1/A23.2 when concreting during cold weather.

1.8 Testing Pavement

- .1 Concrete testing will be paid for directly by Contractor.
- .2 Inspection and testing of concrete and concrete materials will be carried out by an independent testing agency designated by the Owner. Provide access for such testing and inspection.

1.9 Concrete Testing

- .1 It is the Contractor's responsibility to call for the specified number of tests at the appropriate time. Any additional testing, or retesting, required as a result of materials not meeting the specifications is to be paid for by the Contractor.
- .2 Provide and maintain facilities for temporary storage of concrete test cylinders.
- .3 The independent testing agencies will perform a complete test set for each 50 cubic meters of concrete, or fraction thereof, and in any event, not less than one test set for each type of concrete each day it is used.
- .4 Each test set is to consist of a slump test, air content test, temperature measurement, and not less than three (3) moulded specimens for compression testing, all in accordance with CSA A23.1/A23.2. Testing one (1) of the three (3) cylinders at seven (7) days and two (2) at 28 days.

2.1 Concrete Materials

- .1 Portland Cement: CSA A3000, Type 10, Natural color when there is no contact with native soil and/or groundwater in non-exposed applications.
- .2 Portland Cement: CSA A3000, Type 50, Natural color when in contact

with native soil and/or groundwater in non-exposed applications.

- .3 Aggregates: To CSA A23.1/A23.2, containing no shale. Maximum sizes as follows:
 - a. 20 mm generally
 - b. 40 mm for pile caps and piles
 - c. 10 mm for core filling of masonry and metal deck topping
- .4 Fine and Coarse Aggregates: CSA-A23.1/A23.2
- .5 Water: CSA-A23.1/A23.2, clean and not detrimental to concrete.
- .6 Fly Ash: to ASTM C618

2.2 Admixtures

- .1 Air Entrainment: ASTM C260

2.3 Accessories

- .1 The use of non-shrink grout in this section is primarily for dowelling to existing Work; such as setting anchor bolts and base plate grouting.
- .2 Concrete bonding agent: Approved proprietary material to be applied directly to concrete or mixed with cement and sand before application.
- .3 Concrete Curing Agent: to ASTM C309, Type 1, and, if for interior use, chlorinated rubber based and guaranteed by the manufacturer to be compatible with specified subsequent finishes.
- .4 Non-Shrinking Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 17 MPa in 48 hours and 48 MPa in 28 days.
- .5 Grout: Non-metallic, dry-pack OR flow able, 40 MPa compressive strength at 28 days, acid/alkali-resistant, expansion properties equal to the shrinking of the cement content.
- .6 Concrete Topping or Self Leveling Floor Underlayment: "Gypcrete" floor underlayment.
- .7 Vapour barrier as specified in Section 07.28.00

2.4 Joint Devices and Filler Materials

- .1 Edge joint filler: Bituminous impregnated fibreboard, 12 mm thick, to ASTM D1751.
- .2 Backing rod: As specified in Section 07.92.00
- .3 Sealant and Primer: as specified in Section 07.92.00

- .4 Saw-cut and control joint sealant: As specified in Section 07.92.00
- .5 Dovetail Anchor Slots: minimum 0.6 mm thick galvanized steel with insulation filled slots.
- .6 Cushion Pads: Tough, resilient, weather, moisture, and oil resistant material that will not corrode or cause corrosion, consisting of either layers of approved cotton duck saturated and bound together by rubber or synthetic compounds or made from specially compounded synthetic materials.

2.5 Concrete Mix Design

- .1 Use ready-mix concrete conforming to CSA A23.1/A23.2 and these specifications. Site-mix concrete is permitted for placements not exceeding one (1) cubic meter and for core-filling of masonry and bond beams.
- .2 Use normal weight concrete throughout, 2350 kg/m³.
- .3 Use Portland cement. Type as listed in concrete mix schedule for each given location.

3.3 Placing Concrete

- .1 Place concrete in accordance with CSA A23.1/A23.2.
- .2 Notify Consultant minimum 48 hours prior to commencement of operations.
- .3 Ensure reinforcement, inserts, embedded parts, formed expansion and contractions joints are not disturbed during concrete placement.
- .4 Install vapour retarder under interior slabs on grade. Lap joints minimum 150 mm and seal watertight by sealant applied between overlapping edges and ends. Refer to Section 07.28.00-Air and Vapour Barriers.
- .5 Repair vapour retarder damaged during placement of concrete reinforcing. Repair with vapour retarder material; lap over damaged areas minimum 150 mm and seal watertight.
- .6 Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- .7 Place concrete continuously between predetermined expansion, control, and construction joints.
- .8 Do not interrupt successive placement; do not permit cold joints to occur.
- .9 The time lapse between the introduction of cement into the concrete mixes and final placement of the concrete into the forms shall not exceed 120 minutes.

- .10 Place floor slabs in saw cut pattern indicated.
- .11 Screed floors and slabs on grade level, maintaining surface flatness of maximum 6 mm/3 meters.
- .12 The tops of all floors slabs, including slabs on grade, are to be brought to an even, level or sloping surface as indicated on the drawings, ready to receive the specified finish, in accordance with CSA A23.1/A23.2.
- .13 Slope slabs on grade floor drains so that water will not lie in any spot. Form floor slopes to regular, even grades. In areas with floor drains, maintain floor level at perimeter walls, slope floor uniformly to drain(s) at a minimum slope of 1:100 unless otherwise indicated on the drawings.

3.4 Construction Joints

- .1 Construction joint details shall be to CSA A23.1/23.2.
- .2 Locations of construction joints other than those shown on the drawings shall be approved by the Consultant.
- .3 The maximum length of concrete pour for slabs shall be 40 m, with a maximum aspect ratio of 2:1.

3.5 Saw cutting

- .1 Provide saw cuts to pattern indicated on floor finish plan.
- .2 Saw cut joints within 12 hours after placing. Use 4.76 mm (3/16 inch) thick blade, cut into 6 mm (1/4 inch) depth of slab thickness.
- .3 Saw cut interior slabs on grade into panels not exceeding 36 m², with a maximum panel dimension of 6000 mm or as noted on Structural Drawings. Provide saw cuts at column lines.

3.9 Concrete Finishing

- .1 Finish concrete floor surfaces to requirements of Section 03.35.10
- .2 Architectural slab finishes to be smooth concrete with steel trowel finished.
- .3 Steel trowel surfaces which are scheduled to be exposed.
- .4 Steel trowel surface which will receive carpeting, resilient flooring, seamless flooring, thin set quarry tile, or thin set ceramic tile.
- .5 In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drain at 1:100 nominal.
- .6 The tops of all floor slabs, including slabs on grade, are to be brought to an even, level or sloping surface as indicated on the drawings, ready to receive the specified finish, in accordance with CSA A23.1/A23.2

- .7 Interior floors indicated as exposed concrete are to be smooth concrete, steel trowel finished, and with flatness to a tolerance of = 10 mm overall.
- .8 Maintain topping slab thicknesses as indicated on drawings. Thicknesses of toppings are not to be modified to facilitate finishing to specified tolerances, or to compensate for cambers in supporting structural members.
- .9 Provide broom finish to exterior slabs, walks and stairs as noted on the drawings. Tool edge the nosing.

3.10 Curing and Protection

- .1 Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- .2 When adverse temperatures are probable, protecting concrete adverse temperatures occur. Ensure requirements for cold and hot weather curing and protection are observed.
- .3 When there is a probability the air temperatures will fall below five (5) Degrees Celsius, the cold weather concreting provisions of CSA A23.1/A23.2, shall be applied. Hot weather concreting provisions shall be applied when there is a probability of the air temperatures rising above 27 degrees Celsius.
- .4 Vent exhaust gases from hydrocarbon-fired heaters directly to the outside; do not locate heaters within an enclosed space.
- .5 Maintain concrete with minimal moisture loss at relatively constant temperatures for period necessary for hydration of cement and hardening of concrete.
- .6 When the rate of surface moisture evaporation determined from Appendix D of CSA A23.1/A23.2 exceeds 0.75 kg/(m²Xhr), concrete slabs shall be protected as outlined in Clause 21.2.2.3 of CSA A23.1/A23.2.
- .7 Protect exposed concrete members from staining or becoming coated with concrete due to form mortar leakage, concrete spillage, corrosion of reinforcing, or fluid leakage from equipment.

3.12 Embedding Conduit & Piping

- .1 Place all embedded conduit at mid-depth of the slab except at crossover locations. Keep conduits away from columns from a minimum distance of two times the seat thickness, measured from the face of the column.
- .2 Provide minimum of 50 mm clear between conduits crossing each other. Place conduits such that concrete cover to top and bottom of slab are

- equal and not less than 60 mm.
- .3 Provide chairs and spacers for conduit to maintain the required clearances.
- .4 Space conduits at minimum 150 mm horizontal centers.
- .5 Do not embed conduit larger than 50 mm outside diameter.
- .6 Review conduit placement in structural slabs with the Consultant before placing.

DIVISION 04 MASONRY

See drawings for Masonry Infill Requirements

DIVISION 06 WOOD, PLASTICS AND COMPOSITES

06050 Fasteners and Adhesives

- .1 Refer to drawings A5.0, S1.0

06100 Rough Carpentry

- .1 Refer to drawings S1.0-S7.0

06200 Finish Carpentry

- .1 Refer to drawings S3.5, S7.0, S7.1

06400 Architectural Woodwork

- .1 Refer to drawings S7.0, S7.1

DIVISION 07 THERMAL AND MOISTURE PROTECTION

07100 Waterproofing

- .1 Refer to drawings A5.0, S1.0

07180 Water Repellents

- .1 Refer to drawings A5.0, S1.0

07190 Vapor Retarders

- .1 All specified vapor retarders are to conform to CAN/CGSB 51.34-M86 CAN specifications (6 mill)

07195 Air Barriers

- .1 Refer to drawings A5.0, S4.0, S4.1 and S4.2.

07200 Insulation

- .1 Acoustical Insulation: References
 - .11 CSA A101-M1983, "Mineral Fibre Thermal Building Insulation."
 - .12 CAN/ULC-S102-M88, "Surface Burning Characteristics of

- Building Materials and Assemblies.”
- .13 CAN4-S114-M80, “Standards Method of Text for Determination of Non-Combustibility.”
- .2 Delivery/Storage
- .21 Deliver insulation and accessories in original unopened packaging or cartons bearing the manufacturer’s seals and labels.
- .22 Store materials under cover on raised platforms away from moisture. Keep dry at all times.
- .3 Insulation
- .31 Mineral Fibre Batts:
-to CAN2-92.1-M77, type flame spread rating 25 or less; CAN 4-S114-M80 non-combustible; RSI 0.67-25 mm batts, 405 and 610 mm width; preformed insulation without a membrane, friction fit, thermal resistance as indicated, of type recommended by manufacturer for installation to wood studs.
- .32 Rigid insulation for foundation shall be polystyrene expanded type two CAN/CGSB-51.20-M87 type of 4 to thickness or “R” value indicated on drawings.
- .33 Rigid insulation adhesive type “C”, medium trowel consistency and/or type “D-GUN” or knife consistency.
- .4 Installation
- .41 Install insulation material in accordance with manufacturer’s recommendations.
- .42 Install insulation to maintain continuity of the thermal protection of building elements and spaces.
- .43 Fit insulation tightly around openings and protrusions in plane of insulation.
- .44 Install batts between framing members, structural components and other items snug and tight. Fill all voids.
- .45 Cut and trim batts neatly to fit spaces. Use batts free from ripped or damaged back and edges.
- .46 Mineral wool batt insulation is to be fitted to fill voids within framed walls, voids steel beams and columns built into frame infill exterior walls; and is to be packed into voids of metal deck flutes extending over exterior walls.

07250 Fireproofing

- .1 Refer to drawings A5.0, S1.0

07480 Exterior Wall Assemblies

- .1 Refer to drawings A5.0, S1.0–S7.1

07600 Flashing and Sheet Metal

- .1 Refer to drawings S3.0-S4.0

07910 Sealants

- .1 References

- .11 CAN/CGSB-19.0 M77, Methods of Testing Putty, Caulking and Sealing Compounds (Reprinted, August 1984).
 - .12 Alberta Building Code, 2000.

- .2 Delivery/Storage

- .21 Receive and store materials as recommended by materials manufacturer.
 - .22 Maintain containers and labels in un-damaged conditions.

- .3 Manufacturers (Preferred)

- .31 Canadian General Electrical Company Ltd.
 - .32 Dow Corning Canada Inc.
 - .33 PRC Canada Inc.
 - .34 Chemtron Manufacturing Ltd.
 - .35 Sika Chemical of Canada Ltd.
 - .36 Hilti (Canada) Ltd.

- .4 Material Standards

- .41 Furnish sealants which are listed in the CAN/CGSB Qualified Products lists for the standards specified.

- .5 Execution

- .51 Remove all dust, paint, loose mortar and foreign matter, clean and dry joint surfaces.
 - .52 Remove all rust, mill scale and coatings from metals with wire brush or by sand blasting or grinding.
 - .53 Remove any oil, grease or other coatings from metals with appropriate solvent.
 - .54 Prepare all surfaces to suit recommendations of sealant manufacturer.
 - .55 Ensure joint dimensions and material sizes to achieve joint depth which is to be $\frac{1}{2}$ the width of the joint with a

- minimum width and depth of 5 mm (1/4") and a max width and depth of 25 mm (1").
 - .56 Install joint back up where required to achieve correct joint depths.
 - .57 If necessary mask the adjacent surfaces with tape to prevent staining.
 - .58 Apply bond breaker tape in accordance with manufacturer's directions.
 - .59 Prime all sides of joints following manufacturer's directions before installing caulking.
- .6 Application
 - .61 Apply sealant to manufacturer's directions:
 - use a gun with proper size nozzle in order to leave a weather tight, air tight bond. Use enough pressure to fill all voids and joints.
 - .62 Form surface of sealant smooth immediately after installation to be free of ridges, wrinkles, sags, air pockets, and embedded foreign materials. Neatly tool surface to form a slight concave joint.
 - .63 Caulk all interfaces between gypsum board edge bead and concrete block or steel construction (at walls and ceilings).
 - .64 Clean adjacent surfaces immediately and leave work neat and clean. Remove all excess sealant and droppings.
 - .65 Use recommended cleaners only.
 - .66 Remove masking tape after tooling all joints.

DIVISION 08 OPENINGS

08100 Metal Doors and Frames

- .1 All exterior metal doors are to be 18-gauge insulated cores.
- .2 All interior metal doors are to be 18-gauge honey comb core.
- .3 All metal doors to have tack weld seams at 150 mm (6") o.c. All seams to be ground smooth and filled.
- .4 All metal door frames to be 16-gauge single piece, fully welded.
- .5 All doors to come with 12" – 16-gauge stainless steel kick plate on both sides of doors.
- .6 All doors to come with 6" x 24" x 16-gauge stainless steel push plate on both sides of doors.
- .7 All exterior man doors to be made key pad ready suiting the County of

Lac La Biche standard keyless entry pad supplier requirements.

- .8 All overhead doors are to be commercial grade with electric openers.
- .9 Please see page A5 of provided drawing set for overhead door specifications.

08200 Wood and Plastic Doors and Frames

- .1 Interior wood doors to conform to CSA 0132.2.
- .2 Interior wood doors to be either 45 mm (1 3/4") solid or 35 mm (1 3/8") hollow core (as noted on drawings).
- .3 Paint grade doors to be unfinished hardboard.
- .4 Stain grade doors to be oak veneer unless otherwise noted.
- .5 Wood frames to be solid wood for jambs, stops and casings. Finish to match door.
- .6 Wood doors in wood frames as detailed on door and hardware schedule to be pre-hung flush door units.

08500 PVC Windows

- .1 All windows to be double pain argon gas filled sealed units
- .2 All windows to come with Low E glazing.
- .3 Materials, fabrication, attachments, accessories, assembly and performance shall meet or exceed requirements of CAN/CSA-A440-00 windows.
- .4 CAN/CSA-A440.2-2005, Energy Performance of Windows and other Fenestration systems.
- .5 Design Criteria
 - .a Provide products designed to meet specified performance requirements.
 - .b Design frames to equalize pressure between outside air and cavities surrounding insulating glass units.
 - .c Provide drainage from all spaces around insulating glass units, including each horizontal space created by setting blocks.
 - .d Provide window anchorage to withstand wind load to conform to Alberta Building Code and to distribute wind load along frames to window manufacturers recommendations.
 - .e Design components to accommodate thermally induced movement.

08700 Hardware

- .1 Ensure all hardware is adjusted and working properly.
- .2 Provide manufacturer's instruction closures and lock sets. Show proper care, lubrication and adjustments for all hardware.
- .3 Lock sets to be grand master keyed during construction with all keys returned and accounted for.
- .4 County of Lac La Biche to confirm keyless pad entry system prior to placement of man door order.

DIVISION 09 FINISHES

09250 Gypsum Board

.1 General

- .11 In cold or unheated spaces use exterior grade gypsum board.
- .12 In high humidity or where exposed to water use aquaboard in W/C & W/C corridor and densheild backer board in shower areas.
- .13 Whether exterior or water resistant any gypsum board used in fire separations and assemblies must be type "X" fireguard gypsum board.
- .14 Use metal corner beads on all exterior corners.
- .15 Use plastic millcore edge molding on all exposed edges or where gypsum board joins other material.
- .16 Fasten gypsum board with nails or screws, spacing as required to conform to CSA A82.31.
- .17 Taping:
 - two or three coats as required, with minimum width of skim coats at 305 mm (12") for tapered edges and 610 mm (24") width for butt joints.
- .18 Control joints must be used (preferably by openings) when wall dimensions exceed 9.0m (30ft) or 30 square meters (300 sq.ft.).
- .19 Apply F.R.P. panel glued to drywall 915 mm (3') above janitors mop sink, if needed, complete with caulking. Also apply F.R.P to all others labeled on plan.

.2 Product

- .21 Regular gypsum board to CSA A82.27-M1977 edges

- tapered.
- .22 Type "X" gypsum board to CSA A82.27-M1977 special fire resistant board, ULC fire rated, maximum permissible length and width; end square cut, edges tapered. Thickness as indicated on drawings.
- .23 Moisture resistant CGC aquaboard gypsum board to CSA – A82.27-M1977, 5/8" has fire resistant core, edges tapered.
- .24 Denshield backer board to CSA – A82.277 – M1977, edges Tapered.
- .3 Adhesives and Sealants
 - .31 Adhesive used for laminating gypsum board to gypsum board to be as recommended by the gypsum board manufacturer.
 - .32 Joint material, joint tape and mudding compound to ASTM C475-81, also as recommended by gypsum board manufacturer.
 - .33 Acoustic sealant to CAN/CGSB 19-GP-21M, one component, gun grade, non-staining, non-hardening, permanently flexible synthetic rubber-based sealant.
- .4 Workmanship
 - .41 Do work to CSA A82.31-M1980 including all appendices, unless specified.
 - .42 Co-ordinate installation of utilities, access panels, plaster rings and such. Ensure all are proper size and properly positioned.
- .5 Application of Gypsum Board
 - .51 Apply gypsum board as specified on drawings in locations specified on drawings.
 - .52 Gypsum board installation and taping of joints to CSA A82.31-1977 unless specifies otherwise.
 - .53 Place continuous polyethylene material at all edges of gypsum board where contact is made to metal windows or exterior door frames to provide a thermal break.
 - .54 All gypsum board vertical joints to occur over framing member.
 - .55 For rated drywall all vertical and horizontal joints to occur over framing members.
- .6 Acoustic Treatment

- .61 Install acoustical insulation between studs in sound rated partitions.
 - .62 Co-ordinate installation of acoustic batt insulation with services contractors.
 - .63 Ensure the sound attenuation blankets “fill space” between studs and run continuously from floor to ceiling, over doors and around corners.
 - .64 Insulation to be installed around all cut openings in wallboard, behind outlet boxes, plumbing, heating or structural items that pass thru the system and at abutting walls.
 - .65 Apply a 15 mm diameter bead of acoustic sealant continuously around periphery at each face of partitioning to acoustically seal gypsum board/structure junction where partitions abut fixed building components. Seal full perimeter of cut outs around electrical boxes, ducts, etc.
 - .66 Apply sealant to manufacturer's specifications.
 - .67 Place four beads of sealant under tracks to meet or exceed partition rating.
- .7 Finishing
- .71 Finish face panel joints and internal corners with a joint system consisting of joint compound tape and taping compound, all installed as per manufacturer's specifications and feathered out onto panel faces.
 - .72 Finish corner beads, control joints and trim as required with two (2) coats of joint compound and one (1) coat of taping compound feathered out onto panel faces.
 - .73 Fill all screw or nail head depressions evenly with joint and taping compound to bring flush with adjacent surfaces.
 - .74 Sand walls lightly to remove burred edges and other imperfections.
 - .75 Use minimum #120 grit sandpaper for first (1) and second (2) sanding. Use minimum #150 grit sandpaper for final sanding.
 - .76 Finish face to be smooth, level or plumb, free from waves and other defects, ready for painting.
- .8 Cutting and Patching

- .81 Do all cutting, patching and making good as required to ensure a satisfactory finish.
- .82 Remove and make good any defective work at no additional cost.
- .83 Patching after prime coat paint:
 - when prime coat is sufficiently dry, examine surfaces for final patching that may be required. Patching compound to be color tinted for later visual inspection.

.9 Schedules

- .91 Type "X" gypsum board to be used at fire rated elements and components as indicated on drawings.
- .92 Gypsum board thickness, unless noted otherwise to be as follows:
 - .a Partitions - 15.9 mm (5/8").
 - .b Ceilings/soffits/bulkheads - 15.9 mm (5/8").
 - .c Fire rated partitions - 15.9 mm (5/8"), type "X".
- .93 Use regular gypsum board at all other locations except as specified above or as otherwise shown on drawings.

09651 MDF Base, Window and Door trim

- .1 See drawing S1.0 of the provided drawing package.

09911 Interior Painting

.1 General

- .11 All colors are to be specified by owner.
- .12 Drywall finished walls and ceilings:
 - .a One (1) coat primer seal conforming to CAN/CGSB-1.119.
 - .b Two (2) coats of semi-gloss enamel conforming to CAN/CGSB-1.57.
- .13 Stippled or spantex ceiling finishes:
 - .a One (1) coat latex sealer conforming to 1-GP-119.
 - .b Two (2) coats interior alkyd flat paint conforming to 1-GP 118.
- .14 Stained wood doors and frames, handrails and trim:

- .a One (1) coat wood stain conforming to 1-GP-145.
 - .b One (1) coat sanding sealer or shellac.
 - .c Two (2) coats alkyd varnish.
- .2 Quality Assurance
- .21 Painting subcontractor shall have substantial experience as an independent contractor in commercial or institutional projects.
 - .22 All paint applications shall be “premium grade” unless specified otherwise.
- .3 Reference Documents
- .31 Unless otherwise specified comply with the requirements of “Canadian Painting Contractors Association Architectural Painting Specification Manual” (CPCA Manual).
- .4 Maintenance Material
- .41 Leave on premises not less than one (1) litre of unused material of each color and finish sheer used on the project.
 - .42 Tightly seal and clearly label all containers.
- .5 Delivery
- .51 Deliver materials in sealed original labeled containers bearing manufacturer’s name, type of material, brand name, color and if applicable instructions for mixing and reducing.
- .6 Storage
- .61 Store paint and other materials in a minimum ambient temperature of seven (7) degrees Celsius in a well-ventilated and heated designated area.
- .7 Environmental Requirements
- .71 Adequately ventilate areas where materials are being applied and maintain a dust free environment.
 - .72 Maintain bright and uniform levels of lighting in areas where coatings are being applied.
- .8 Protection
- .81 Provide a sufficient quantity of clean cloths and take protective measures to prevent spray, splashing’s and droppings.

- .82 Remove all electrical plates, surface hardware, fittings and equipment prior to painting. Carefully store and then replace these items.
 - .83 Keep smoke detectors free of paint and replace any that receive paint on them.
 - .84 Store cotton waste, cloths and material which may constitute a fire hazard in metal containers and remove from the site every night.
- .9 Extent of Paint Application
- .91 Where walls are specified as painted on the finish plans, paint all surfaces and objects including doors and frames unless directed otherwise.
 - .92 Paint trim covers of electrical distribution panels, fire hose, valve and extinguisher cabinets, convectors, duct banks, exposed pipes, ducts, conduits and associated accessories.
 - .93 Paint interiors of unfinished cupboards including shelves and the interior and running surfaces of drawers.
 - .94 Paint closets and built in shelving.
 - .95 Do not paint or stain items that are anodized.
- .10 Materials
- .1 Paint, varnish, stain, enamel, lacquer and fillers, except as otherwise specified shall be "Top Line Quality" products.
 - .2 Thinners:
 - odorless paint thinner, pure and clean with no deleterious material.
 - .3 Patching compounds:
 - spackling compound or oil base putty for surfaces receiving a paint finish. Oil base putty to be colored to match finish for surfaces receiving a transparent finish.
 - .4 Intumescent paint to be Contego Passive Fire Barrier Latex.
- .11 Mixing
- .1 Unless specified otherwise all paints shall be ready mix.
 - .2 Thinning of materials will be permitted only where specified or on owner's approval. Do not use solvent for thinning.
 - .3 Strain all material prior to each application.

- .12 Colors
 - .1 See drawings or as directed by Owner.
- .13 Gloss levels
 - .1 Unless specified interior paint finishes are to be semi-gloss.
- .14 Execution
 - .1 Pre-examine surfaces that are to receive coatings.
 - .2 Do not apply coatings to surfaces whose condition will affect execution, permanence or quality of workmanship.
 - .3 Substrates are to be sound, non-dusting and free of grease, oil, dirt and other foreign matter.
 - .4 Minimum temperature:
 - Eight (8) degrees Celsius (confirm with manufacturer's specs).
 - .5 Substrate moisture content:
 - maximum 15 percent for wood, 12 percent for others.
 Test for moisture with electronic moisture meter.
 - .6 Test cementitious substrates for alkalinity with litmus paper test.
- .15 Preparation of Substrates
 - .1 Prepare substrates in accordance with the requirements of Chapter 3, surface preparation, of the CPCA manual or as specified.
 - .2 Broom, vacuum and wipe clean as required. Sand lightly and dust prior to application of each coat.
 - .3 Remove all electrical plates, surface hardware, fittings, etc. prior to painting. Store and replace in undamaged condition.
 - .4 Provide sufficient drop cloths, shields and protective coverings to prevent spray or spillage from fouling other surfaces.
 - .5 Wood:
 - clean, sand smooth and dust off. Fill nail holes, splits, scratches, small joints and other imperfections with patching compound, after paint prime coat or first varnish coat has been applied and dried. Apply putty with putty knife finishing off flush with surface.

- .6 Painted wood finish:
 - clean knots, pitch streaks and sappy sections. Seal with shellac before applying prime coat.
- .7 Wood for transparent finish:
 - clean knots, pitch streaks and sappy sections. Seal with sanding sealer or shellac after applying stain; if stain is required. Sand between coats using minimum #400 grit wet/dry sandpaper.
- .8 Bare ferrous material:
 - remove rust and scale. Wash with solvent.
- .9 Previously primed metal:
 - remove shop paint and rust, make good.
- .10 Zinc coated metal:
 - remove surface contaminations and wash with solvent.
- .11 Gypsum board:
 - fill minor cracks, holes and imperfections with tinted patching compound after prime coat has been applied. Let dry, sand smooth and remove dust. Use minimum #150 grit sandpaper.
- .12 Alkaline surfaces:
 - wash and neutralize using proper type solution compatible with paint.
- .16 Back Priming
 - .1 Back prime interior wood surfaces that are to receive a paint finish with alkyd wood primer.
 - .2 Back prime interior wood surfaces that receive a varnish finish with gloss varnish reduced 25 percent with thinner.
- .17 Application of Coatings
 - .1 Applied and cured coatings shall be uniform in thickness, sheen color and texture. They shall be free of defects in appearance and performance. Edges of paint adjoining other materials shall be clean and sharp with no overlapping.
 - .2 Apply paint and other finishes with suitable equipment.
 - .3 Apply paint by brush or roller except on wood or metal then apply with brush only.

- .4 Use maximum 10 mm pile rollers for smooth surfaces to produce the least stipple effect. Heavier pile rollers can be used on rough surfaces.
- .5 Spray painting will be allowed where advantageous, with owner's approval. Airless spray applications, if allowed, shall be back rolled.
- .6 Use the same brand of paint for primer, intermediate and finish coats.
- .7 Vary slightly the color of successive coats to differentiate between coats.
- .8 Each applied coat shall be dry and hard before applying the next coat. Unless manufacturer's instructions state otherwise there shall be a minimum of 24 hours between coats.
- .9 On woodwork to receive a stain finish apply uniform coats of stain and wipe off if required. Wood shall have a uniform shade. Match stain so that dissimilar woods have uniform finished appearance.
- .10 For open grain woods to receive a clear finish, tint wood filler to match wood. Work filler well into grain; wipe off excess before it sets.

.18 Patching

- .1 Repair, touch up and refinish damaged areas that are deemed unsatisfactory to owner at no additional cost.
- .2 Refinish an entire wall or area if deemed necessary by owner at no additional cost.

09912 Exterior Painting

- .1 All colors to be specified by owner.
- .2 Clear finish wood fascia, wood doors, frames and windows; one (1) coat exterior grade varnish reduced 10 percent and two (2) coats of exterior grade varnish conforming to 1-GP-99.
- .3 Metal doors and frames, stairs, handrails and miscellaneous metal; one (1) coat zinc chromate primer conforming to 1-GP-132 and two (2) coats of oil base, low gloss paint.

9C.00 Ceramic/Porcelain Tile

9C.01 GENERAL: Comply with all of the Contract Documents

9C.02 SCOPE OF WORK: Refer to "Division Scope of Work"

9C.

.03 Surface preparation and installation to manufacturer's specifications. All tile grout is to be sealed upon installation.

.04 General Contractor to prepare and finish flooring as per manufacturer's specifications complete with stripping, waxing and polishing.

.05 Schluter system to be used for outside corners of tile surfaces on walls and other tiled surfaces where applicable.

.06 See page A6.8 for locations

A. Trim and Special Shapes

1. Rounded external corners, and trim shapes at head, jamb and sills of material and finish as glazed wall tile, and as follows:

.a Base: Sanitary cove units;

i) Public restrooms – Rounded top edge cove base

.b Internal Corners: Field butted square

.c External Corners: Equal legs rounded edge

B. Marble

1. Marble thresholds shall be 1 3/4" thick by 4" wide Grade A first quality, with toned finish, free from cracks, chips, stains or other defects, uniform in tone and colorings as selected by Architect Threshold shall have beveled edge, 2:1, to provide adjustment in differences in floor level.

2. Marble used for repairs shall match existing.

C. Portland Cement Grout (Ceramic Tile)

1. As specified in the ANSI A108.10 series of materials and installation specifications for latex Portland cement grout.

- D. Epoxy Grout (Quarry Tile)
 - 1. As specified in the ANSI A108.6 series of materials and installation specifications for epoxy grout.
- E. Mortar Bed Underlayment (Quarry Tile and Ceramic Mosaic Floor Tile)
 - 1. Mortar shall be composed of one (1) part Portland cement and six (6) parts and by volume.
 - 2. Portland cement shall comply with ASTM C-144
- F. Waterproofing Membrane (Bathrooms)
 - 1. Membrane shall be 15 lb. roofing felt
- G. Reinforcement for Mortar Bed Underlayment (Ceramic Tile Stair Treads and Ceramic Mosaic Floor Tile)
 - 1. Reinforcement shall be 2" x 2" x 16-gauge welded wire mesh or 3.5 lb galvanized expanded metal lath.
- H. Organic Tile Adhesive (Ceramic Tile)
- I. Latex – Portland Cement Mortar Adhesive (Ceramic Tile)
 - 1. Comply with ANSI A118.4

9C.06 CERAMIC TILE INSTALLATION

- A. Work Standards and Conditions
 - 1. Comply with Tile Council of America "Handbook for Ceramic Tile Installation"
 - 2. Comply with manufacturer's instructions
 - 3. Work temperature must be as per instructions of materials manufacturers
- B. Limits of Tile Application
 - 1. Extend tile into recesses and under and behind future equipment or fixtures
 - 2. Tile must be installed as a complete, uninterrupted covering

3. Edges and corners must be terminated neatly without disruption of pattern or joint alignment.
 4. Terminate tile neatly at obstructions or penetrations of other work
- C. Joint Pattern
1. Lay tile in standard grid unless otherwise specified in Scope
 2. Align joints of adjoining same size tiles on floor, base, walls, and trim
 3. In tile layout, center field tile in both directions on floors and walls
 4. Adjust layout and pattern to minimize tile cutting
 5. Joint widths must be consistent and uniform
- E. Provide Expansion and Joint Controls
1. As instructed by the Tile Council of America “Handbook of Ceramic Tile Installation”
- F. Standards of Work Quality
1. Fit special border tiles squarely without cuts.
 2. Perfectly match tiles pieces with other tile work, trim bases, tile accessories.
 3. Prepare tile according to manufacturer’s instructions, presoak, dry surfaces, clean, etc.
 4. Plan and install correct patterning that’s symmetrical, complete, square to floor or wall.
 5. Apply tile surface smoothly and free of irregularities, humps and dips.
 6. Install tile joints straight, level horizontally, aligned and exact vertically and uniform in size.
 7. Use extra care at difficult areas such as corners, fixture locations, around wall openings and recesses, at penetrations such as floor drains, door and window trim.
 8. Make tile cuts minimal, uniform, and not smaller than half a tile.
 9. Complete grouted or thin-set adhesion so no tiles can be pulled loose.

10. Do not allow tile at door thresholds to interfere with closure.
11. Do not use broken or cracked tiles.

9C.08 CLEANING AND PROTECTION

- A. Completely protect finished tile, and allow no damage to the work.
- B. Cleaning
 1. Wash tile surfaces with clean water before and after cleaning.
 2. Use cleaning solutions and materials as per manufacturer's instructions.
 3. Do not use acidic cleaners near finish metal or other vulnerable surfaces.
 4. Remove excess corrosive cleaning solutions from site; do not empty into building drains.
- C. Repair and replace defective work. Reject Tiles and Replace if:
 1. Chipped
 2. Scratched
 3. Cracked
 4. Popped up
 5. Loose
 6. Stained
 7. Miss-aligned
- D. Repair or replace all defective and non-conforming work as directed by Inspector. All repairs shall be undetectable.

9C.09 SAMPLES AND CERTIFICATE OF QUALITY

- A. Submit two samples of each kind, color, size and shape of tile to be used and a sample of caulking to be used for Architect's approval.
- B. Provide certificate of quality of tile and adhesive to Architect.

9C.10 GUARANTEES

- A. Guarantee all items of work furnished and installed under this Section for (1) one year, in addition to manufacturer's standard warranties. All guarantees to be from the date, when Final Certificate of Occupancy is issued from Department of Buildings.
- B. Provide one (1) box of each type and color of tile for future replacement, delivered to the Owner.

Division 10 SPECIALTIES

10800 Toilet and Bath Accessories

1. Soap Dispenser

- .1 Color specified by Owner, surface mounted.
- .2 By Bobrick model B-2112
- .3 Dispenser for liquid soap capacity - 1200 mL (40 oz).
- .4 Require one dispenser between every two lavatory sinks.

2. Paper Towel Dispenser

- .1 Color by Owner.
- .2 By Bobrick model B-3861
- .3 Require one per washroom if only up to three sinks and a minimum of
- .4 Two required for more than three sinks.

3. Paper Towel Waste Receptacle

- .1 Color specified by Owner.
- .2 Waste receptacle by Bobrick model B-240
- .3 Free standing, surface mounted or built in capacity minimum 80 L (33 gal.) complete with removable liner and push through lid.
- .4 Require one per washroom unless more requested by owner.

4. Toilet Tissue Dispenser

- .1 Color specified by owner.
- .2 By Bobrick model B-699
- .3 Wall mounted
- .4 Require one per stall or toilet compartment.

5. Grab Bars

- .1 Handicap washroom or stall
- .2 40 mm (1 1/2") diameter x 1.5 mm (1/16") wall tubing, polished
- .3 Chrome finish with knurled grip and exposed fasteners.
- .4 Required to be 1200 mm (48") long.

6. Mirrors

- .1 6 mm (1/4") clear float, size - 610 mm x 915 mm (24" x 36")
- .2 For handicap washroom maximum distance from floor to under side mirror to be 39", if this is not achievable use tilted mirrors.

7. Mop Sink

- .1 Is to be Fiat 2424

8. Toilet Partitions

- .1 Are to be metal floor braced model by Shanahan's or equivalent. Section 10160.

9. Hand Dryer

- .1 hand dryer by Bobrick model B-700.

10. Dressing Room Benches

- .1 By Sports Systems Unlimited (1.800.809.7465 ext. 237) to be wall hung with angle brackets.

a) High Density Polyethylene (HDPE) Benches:

- Colored HDPE 1" x 16" seats with radiused corners
- Comes with bench rails 1 5/8" Unistrut Channel with channel units
- Comes with Bench Bracket, 14" x 14" x 1/2" galvanized steel angle with 1/4" flat bar brace.

b) Recycled Plastic Lumber:

Nominally sized and comes in similar lengths as wood

- Wall mounting supports are powder coated steel finish
- 1" thicknesses
- Bench supports every 24" o.c.,

OR APPROVED EQUIVALENT

DIVISION 11 EQUIPMENT

- .1 F1 F2 Natural gas forced air furnace 115,000 BTU/hr 2,000 cfm 120 V, 24 V heat/cool thermostat with lockable covers, 2 in filters 5 inch insulated fresh air to RA with weather-hood Inlet and vent through wall Lennox EL 195UH110XE60C.
- .2 AC1 AC2 Nominal 5 ton air conditioning condensing unit 208 V 3 ph 40 A Lennox 113ACXN060 and Lennox CX34-50/60-6F Evaporator.
- .3 EF1 EF2 EF3 EF4 Wall mount exhaust fan 16-inch diameter 1500 cfm at .5 in sp 120 V Interlock with MUA1 with 90 weather-hood and power blade damper 120 V Greenheck SE1 16 BX QD.
- .4 EF5 100 cfm exhaust fan 120 V 5-inch insulated duct with weather hood and back draft damper control with 60-minute wound timer.
- .5 EF6 150 cfm bathroom exhaust fan 120 V on light circuit 5 in insulated duct with weather hood and back draft damper.
- .6 EF7 100 cfm bathroom exhaust fan 120 V on light circuit 5 in insulated duct with weather hood and back draft damper.
- .7 IRH1IRH2 IRH3 IRH 4 Infrared NG tube heaters 60-foot, 150,000 BTU/hr all stainless steel 120 V wall mounted thermostat with water proof cover inlets and vent through wall Calcana SR 150.
- .8 IRH 5 Infrared NG tube heater 20 foot, 150,000 BTU/hr 120 V wall mounted thermostat inlets and vent through wall Calcana SR 75.
- .9 UH1 UH2 UH3 1500 W electric kick space heater Ouelett Canada OAC series 208 V.
- .10 DHW 50-gallon natural gas hot water tank AO Smith Cyclone BT 100.

- .11 WC Gerber WS 21 518 with insulated tank and Bemis 1950 seat.
- .12 Lav Maxwell 12 834 with Delta 21C154 Faucet and Lav Guard 2 waste and supply covers.
- .13 Urinal Gerber 27 780 and Delta 81T231 Flush valve.
- .14 Shower Delta R10000 UNS Valve T13H133 Trim and Delta Head.
- .15 Kitchen Sink Kindred QDL 2031/7 with Delta 26C3142 Faucet.
- .16 Mop Sink Fiat MSB 2424 with 830 AA wall Faucet.
- .17 Hallway Lav Bradley TDB3103 Infrared Activation and mixing valve.
- .18 Eyewash Bradley S19314DCFW with tempering valve.

DIVISION 21 FIRE SUPPRESSION

1.0 FIRE EXTINGUISHERS

- .1 Provide 10 lb. Type ABC fire extinguishers as indicated.
- .2 Install fire extinguishers in approved cabinets.

2.0 FIRE ALARM SYSTEM

- .1 Not Applicable.

DIVISION 22 PLUMBING

1.0 PLUMBING

- .1 All work to be done as per Canadian Plumbing Code.
- .2 Sanitary piping to be DMV ABS sched 40.
- .3 Vents through roof to be 3" diameter at penetration. Provide all required flashing to make vent penetration weatherproof.
- .4 Floor drains to be Ancon FD-200 or equal.
- .5 FD - indicates floor drain.
- .6 Ensure cleanouts are spaced within maximum limit of 50 feet.
- .7 Fixture notes: see legend.
- .8 Handicapped fixtures to comply with ABC 1990 requirements for barrier-free access.
- .9 Provide water hammer arrestors at the ends of all domestic water runs.
- .10 Provide sanitary venting piping for all fixtures.
- .11 Domestic water piping to be type 'M' copper or approved poly pipe.
- .13 Provide intumescent pipe donuts at all penetrations of combustible piping at ceiling to floor fire separations.
- .14 All piping penetrations and other building services that penetrate an assembly with a fire resistance rating shall be sealed with a fire stop system with a minimum F rating and in accordance with ULC S115.

DIVISION 23 HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)

1.0 GENERAL

- .1 Regulations - All work shall be as per local codes and regulations.
- .2 Examine site - the contractor shall visit the site prior to submitting his price to familiarize himself with the work involved and to include in his price any additions that may be required to make his installation a complete and operating system.
- .3 Complete system - the mechanical contractor shall provide all labor and equipment, pay all fees, carry insurance coverage and obtain all permits required to provide a complete mechanical system without additional charge after award of contract.
- .4 Extra charges - any discrepancies and omissions discovered shall be reported to the engineer immediately and prior to tender closing for rectification by addendum.
- .5 Shop drawings - submit 3 copies to the engineer for approval. The contractor shall ensure that equals for the major equipment fit in the allocated space and meet codes and specifications.
- .6 Maintenance manuals - Contractor shall provide 2 copies complete with shop drawings. Three ring binder style is acceptable. Provide on-site operating seminar to familiarize owner with all functions of new equipment.
- .7 Warranty - mechanical contractor shall provide a written warranty on his system for one full year from time of acceptance by the owner.
- .8 Excavation - mechanical contractor shall excavate for his work and backfill to 12" above pipes with sand.
- .9 Structural - misc. steel support hangars for unit heaters, fans, heat pumps, etc. shall be by mech with clamps to structure, not welded. Structural reinforcing for equipment is by general contractor.
- .10 As-Built drawings - mechanical contractor shall keep on site an extra set of drawings and specifications on which changes shall be noted daily. As-built drawings shall also be provided showing location of access doors, clean-outs and any deviation from design drawings.

- .11 Electrical co-ordination - motor disconnect switches and starters (including magnetic starters for interlocking) shall be by electrician. unless otherwise specified. Disconnects for packaged makeup air units shall be by electrician. Electrical contractor shall wire in low voltage and line voltage thermostats, electric heaters and control transformers provided by mechanical. Mechanical Contractor shall complete low voltage controls wiring. CONFIRM VOLTAGES ON SITE BEFORE ORDERING EQUIPMENT.
- .12 Potable water copper piping shall use lead-free solder. Testing - inside water lines shall hold 100 psi air for 1 hour.
- .13 Natural Gas - plumber shall provide low pressure gas lines to appliances complete with yellow paint coating on pipe where exposed to outdoors. Confirm meter size with local gas utility company. Utility upgrade costs to be borne by Owner.
- .14 Sleeving - mechanical contractor shall be on site to sleeve mechanical openings through concrete, to flash and counter-flash and to coordinate joist locations away from mechanical shafts.
- .15 Design documents - these design documents are prepared solely for the use by the party with whom the design professional has entered into a contract and there are no representations of any kind made by the design professional to any party with whom the design professional has not entered into a contract.

2.0 HEATING AND VENTILATION

General Notes

- .1 Duct gauge - galvanized 26-gauge for up to 12" wide or 8" diameter. 24-gauge or 13" to 30" wide or for 9" to 30" diameter, all fittings to meet SMACNA design standards.
- .2 Flex connections - provide flex connections 1/4" Duradyne Canflex PVC coated polyester at inlet and outlets of all forced air units.
- .3 Flexible duct - Thermaflex S-LP-10 uninsulated. M-KE insulated, max. 10 feet connector length per air outlet.
- .4 Duct sealer - MP water-based paste sealer must be applied to seal leaking duct connections, joints and elbows.

- .5 Combustion air - shall terminate with spill box and baffle to diffuse cold air and protect water lines.
- .6 Fire dampers - shall be type "B", ULC labelled, with damper blades fully clear of the air stream, seal with Dow Corning RTV silicone foam. Provide access door at all fire dampers.
- .7 Provide sheet metal fire stops tight around ducts passing through fire separations and ceilings. Run no kitchen, WC or dryer exhaust ducts inside party or corridor rated walls.
- .8 Sewer and exhaust vents shall not penetrate roof toward front or within 36" of centre ridge.
- .9 Provide minimum 1" clearance from combustibles for "B" vent and 6" for single wall vent connections.
- .10 Air balance - Provide air balancing for all air and hydronic systems by a certified air balancer. All reports to be submitted to mechanical consultant for review. Air and water balancing shall be at +/-10% of specified complete with design vs. actual readings. Provide all required data as per AABC plus include
- .11 Fans - supply and exhaust fans, air systems amps, RPM, CFM, suction and Discharge static pressure.
- .12 Grilles - supply, return and exhaust air volumes.
- .13 Sketch layout of duct systems showing details of balance. Use mechanical drawings for report tracings not acceptable.

3.0 INSULATION

1. Piping

- .1 Domestic hot, cold water lines and hydronic heating lines shall have 2" thermal insulation complete with vapor barrier, joints to

be taped throughout facility. Hangers to have guides to allow for complete pipe insulation.

- .2 Plumbing vents within 10 feet of outside wall or roof shall have 1" thermal insulation complete with foil faced vapor barrier, joints to be taped throughout facility. Hangers to have guides to allow for complete pipe insulation.

2. Ductwork

- .1 Exhaust air ducts within 10 feet of cold outlet at attic, roof or wall shall have 1" thermal insulation complete with foil faced vapor barrier.

3. Acoustic Insulation

- .1 1" Manville "Linacoustic" insulation lining shall be provided for all air ducts. Duct sizes shown include for internal insulation. Complete make-up air unit duct system to be acoustically insulated.

4.0 NATURAL GAS SERVICES

- .1 All gas piping to be Schedule 40 black iron. Provide appliance step down regulator as required. Size as per Can/CGA-B149.1-M91 and submit to engineer for approval before installation.

DIVISION 26 ELECTRICAL

1.0 GENERAL PROVISIONS

- .1 This Division of the work shall include the furnishing of all labour, new material equipment and services necessary for, and reasonable incidental to the complete installation of the electrical work. "Provide" is intended to mean "provide and install," unless stated otherwise.
- .2 The installation is to be in accordance with the requirements of the Electrical Protection Branch, the latest edition of the Canadian Electrical Code, Part 1, local authorities, and good trade practices.
- .3 The electrical contractor to coordinate site services with the power, and telephone utilities as required.

- .4 The electrical contractor shall take out and pay for all necessary permits incidental to this work and shall arrange and pay for all fees concerned with inspection by the proper authorities.
- .5 All materials to be new and of the quality specified. All material to conform to the standards of the Canadian Standards Association and bear their CSA label. Unless otherwise called for, uniformity of manufacturers is to be maintained.
- .6 Mechanical equipment installed by others shall be connected complete under this work,
including line voltage connections, fittings, starters, disconnects, protection switches and labour required for a proper finished electrical connection.
- .7 Electrical drawings indicate general location and route for conduits/wiring. Conduit and wiring to be installed to provide a complete operating job and is to be installed physically to conserve headroom, furring space, etc. Install electrical conduit, boxes, and fittings to coordinate with architectural, structural and mechanical work. The consultant reserves the right to change location of outlets up to 3m from point indicated on the drawings without extra charge.
- .8 The electrical contractor shall warranty and guarantee electrical installation and equipment for (1) one year, commencing from date of final acceptance by the owner's representative.
- .9 Submit 3 sets of detailed manufacturer's shop drawings for review. Provide specification, data sheets, catalogue cuts, etc. for inclusion in maintenance manuals. Project name and electrical contractor's stamp and signature to appear on all shop drawings submitted for approval.
- .10 Submit 2 operation and maintenance manuals for project including all major equipment used. Submit manuals prior to completion and acceptance of project. Each system and piece of equipment requiring adjustment or maintenance or whose operation is not readily apparent to an unskilled user to be included in manual. Provide a single copy of manual for review and comments by Consultant prior to delivery of final sets. Three ring binder style is acceptable.
- .11 Electrical contractor shall refer to mechanical and interior design drawings and specifications and make allowances for same.
- .12 Test all portions of the electrical system for satisfactory operation. Prior to energizing, perform megger tests on all feeders. Upon completion of the

building, and prior to final inspection and takeover, check load balance on panel feeders. If load unbalance exceeds 15% reconnect circuits to balance loads.

- .13 Clearly identify panel, disconnect switches, starters, contactors, terminal cabinets, junction boxes, and receptacles. Provide lamicoid name tags indicating equipment designation or equipment controlled also indicate voltage and phase. For receptacle provide mechanically printed tape tags indicating circuit number.
- .14 Obtain one set of prints to be used for recording work as actually installed. Record all changes associated with the work. Included in the drawings shall be changes by addenda, change order, field changes, etc.
- .15 Drawings to be marked "AS-BUILT" and turned over to Consultant.
- .16 All devices shall be high quality commercial grade.
- .17 Remove all redundant material from space, including conduit, telephone cables, etc.
- .18 All electrical deficiencies noted on the final inspection report shall be completed. Electrical contractor to inform Engineer of the completion of the deficiencies by letter.

2.0 CONDUIT AND DUCT

- .1 Wire and cable shall be run in liquid tight conduit in car wash areas and mechanical rooms or run in galvanized electrical metallic tubing in steel construction and inside the structure unless shown or required otherwise by CEC.
- .2 Install conduit concealed in all interior areas excluding mechanical and electrical rooms where possible.
- .3 Flexible metal conduit shall be used for final connection.

3.0 WIRE AND CABLE

- .1 Wire shall be color-coded in accordance with the Canadian Electrical Code.

- .2 Unless otherwise specified, no wire smaller than #12 AWG gauge RW90 copper shall be used.
- .3 Minimum #10 AWG on all runs greater than 100'.
- .4 Unless otherwise specified, aluminum wire shall not be used.
- .5 Do not pull spliced cables inside ducts.
- .6 Conductor lengths for parallel feeder to be identical.
- .7 All ground conductors, straps to be copper.

4.0 OUTLET BOXES

- .1 Code gauge galvanized steel boxes or liquid tight in wash areas and mechanical rooms, to accommodate all wires, fittings and services.
- .2 No sectional or handy boxes unless specifically requested.
- .3 Wall outlet multiple boxes to be secured by a minimum of two (2) studs. Offset back to back wall outlets by one (1) stud space to minimize noise transmission.
- .4 Confirm outlet mounting heights, location, or orientation and color with owner's representative prior to rough-in.

5.0 PULL AND JUNCTION BOXES

- .1 Code gauge metal construction conforming to Canadian Electrical Code, with screw-on or hinged cover.
- .2 Provide pull and junction boxes in locations shown on the drawings and as required to suit job conditions.

6.0 SWITCHES

- .1 Line voltage switches: 120-volt slow make, slow break design, toggle handle, white color, with totally enclosed case, rated at 15 amp, Leviton Commercial Specification grade or equal.
- .2 Confirm switch mounting heights, location, and orientation with owner's representative prior to rough-in.

7.0 RECEPTACLES

- .1 Full gang size, polarized, duplex, parallel, blade, U-grounding slot, white color, rated at 15 amps, 125 volts, Leviton Commercial Specification grade or equal.
- .2 Mount receptacles 300 mm above finished floor unless otherwise specified. Mount 150 mm above counter tops.
- .3 Test new wall receptacles for proper polarity, voltage and grounding. Insert test results in maintenance manuals.

8.0 PLATES

- .1 White nylon, heavy duty service type, Leviton or equal.
- .2 Install cover-plates on all wiring device boxes.
- .3 For surface mounted fittings in equipment rooms and similar areas, covers to be Taylor 8300 series or equal.

9.0 LIGHTING

- .1 Install lighting fixtures complete with lamps in accordance with the fixture schedule and/or information shown on the drawings.
- .2 Align luminaries and clean diffusers prior to final acceptance.
- .3 Fixture schedule - see fixture schedule on drawings.

10. DISTRIBUTION PANELBOARDS

- .1 All panels to be complete with door front unless otherwise noted.
- .2 Terminate branch circuit neatly in panel box trimming off excess wire.
- .3 Provide isolated ground bar kit as indicated on drawings.
- .4 Acceptable products: Square 'D' Type QO, Federal Pioneer Type NBLP or equal.

11.0 MECHANICAL EQUIPMENT

- .1 All automatic control devices, control components to be provided by Mechanical contractor.
- .2 All conduit, wire and connections for line voltage connections and control wiring to be provided by Electrical contractor.

- .3 Cooperate with mechanical contractor in the connection of control conduit into control cabinets.
- .4 Refer to mechanical drawings for details and locations of all mechanical equipment.
- .5 Provide all magnetics required for interlocking of make-up air unit with the fans as indicated on the drawings. Confirm exact requirements with mechanical contractor.

12.0 EXIT LIGHTS

- .1 Provide and install new exit signs, universal mount, with emergency DC socket and lamp.
- .2 Provide wiring in a separate circuit.

13.0 EMERGENCY LIGHTING

- .1 Provide and install new devices after testing for operation.
- .2 Provide new batteries to unit. Unit to operate with all devices connected for a minimum of ½ hour.
- .3 Adjust heads to suit site conditions.
- .4 Provide separate circuit(s) for all battery packs. Mark breaker to indicate "Emergency Device - Do Not Turn Off."

14.0 GROUNDING

- .1 Provide a full and complete grounding system in accordance with the Canadian Electrical Code.
- 2. Install a separate ground conductor to all outdoor equipment requiring power connections.
- .2 Provide separate isolated ground conductor back to panel for all isolated ground receptacles as indicated on the drawings.

15.0 FIRE STOPPING

- .1 All electrical cable, wire and similar building services that penetrate an assemble with a fire resistance rating shall be sealed with a fire stop system with a minimum F rating and in accordance with ULC S 115

16.0 PANEL CONNECTIONS

- .1 See panel connections as shown on drawing E.0, E.1, E.2, E.3

DIVISION 27 COMMUNICATIONS

27100 TELEPHONE AND DATA SYSTEM

- .1 Supply and install conduit, pull wires, and outlet boxes. Conduit to stub up into ceiling space.
- .2 Provide outlet boxes at each outlet location shown on the drawings and to utility company requirements.
- .3 Mount telephone and data outlets 12" above finished floor unless noted otherwise.
- .4 Telephone min.2 pair, Data 4 pair Cat 5E