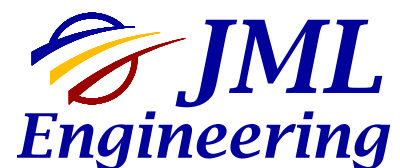




DISTRICT OF RAINY RIVER SERVICES BOARD

**STRUCTURAL AND SANITARY REPAIRS
FOTHERINGHAM COURT, ATIKOKAN**

REQUEST FOR QUOTE: DRRSB 25-49



Ref. No. JML2026001

REQUEST FOR QUOTE: DRRSB 25-49

STRUCTURAL AND SANITARY REPAIRS Fotheringham Court, Atikokan

Table of Contents		Number of Pages
Section 1	Request for Quote	1
Section 2	Quote Information	4
Section 3	Contract Requirements	4
Schedule 1	Quote Forms	3
	Bid Form	3
Schedule 2	Agreement	4
Schedule 3	Occupational Health & Safety Agreement	2
Schedule 4	Specifications (not attached, see separate document: Structural and Sanitary Repairs Technical Specifications)	168

SECTION 1 – REQUEST FOR QUOTE

STRUCTURAL AND SANITARY REPAIRS **FOTHERINGHAM COURT, ATIKOKAN**

Fotheringham court is a public housing facility located at 418 Steerola Street in Atikokan Ontario. The concrete slab located in the common room, laundry room and storage rooms on the main floor of Fotheringham Court has settled significantly. An inspection revealed that the sanitary pipes from the kitchen area in the common room and restrooms had deteriorated significantly. The purpose of these repairs is to replace the sanitary pipes, remove any contaminated soil, restore the condition of the subgrade materials and replace the concrete slab.

Sealed Quotes clearly marked: **DRRSB 25-49** will be received by the Procurement Coordinator of the District Rainy River Services Board (DRRSB) up to but not later than:

2:00 p.m. Central Daylight Time (CDT)
Thursday, September 3, 2026

The bidder is required to submit the following:

- Completed Schedule 1 – Quote Forms
- Bid Deposit in the amount of 10% of the tender price
- Agreement to Bond

Please submit completed tenders to:

District Rainy River Services Board
Attention: Tonia DeGagne, Procurement Coordinator
450 Scott Street
Fort Frances, Ontario P9A 1H2
Email: purchasing@rrdssab.ca

A copy of the *Request for Quote*, Quote Guidelines, and Specifications may be found on the DRRSB website at <https://rrdssab.ca/procurement/> or by request Monday – Friday 8:00 am – 4:00 pm (excluding lunch hour 12:00-1:00).

Please direct any questions regarding this Quote to: Tonia DeGagne, Procurement Coordinator, Phone: 807-274-5349, ext. 239, Fax: 807-274-0678 or email: purchasing@rrdssab.ca.

Lowest or any bid not necessarily accepted. The District Rainy River Services Board (DRRSB) reserves the right to reject any or all bids, to waive irregularities and informalities therein, and to award the contract in the best interest of the Board. See Quote information, Quote Forms and other Quote documents for all terms, conditions, and requirements.

SECTION 2 – QUOTE INFORMATION

- 1.1 The Rainy River District Social Services Administration Board, operating as District of Rainy River Services Board (DRRSB) is requesting Quotes to complete structural and sanitary repairs at the housing property known as Fotheringham Court, located at 418 Steerola Street in Atikokan, Ontario.
- 1.2 The DRRSB reserves the right to reject or disqualify bids not submitted in strict accordance with requirements of the Quote documents.
- 1.3 The lowest or any Quote will not necessarily be accepted and the DRRSB reserves the right to:
 - (a) reject any or all bids;
 - (b) waive irregularities and informalities;
 - (c) accept a Quote which is not the lowest Quote;
 - (d) reject a Quote that is the lowest Quote (and even if it is the only Quote received); and
 - (e) award the bid in the best interest of the Board.
- 1.4 The DRRSB reserves the right to consider, during the evaluation of Quote:
 - (a) information provided in the Quote document itself;
 - (b) information provided in response to enquiries of credit and industry references set out in the Quote;
 - (c) information received in response to enquiries made by the DRRSB of third parties, apart from those disclosed in the Quote in relation to the reputation, reliability, experience, and capabilities of the Bidder;
 - (d) the manner in which the Bidder provides services to others;
 - (e) the experience and qualification of the Bidder's staff and management; and project management;
 - (f) the compliance of the Bidder with the DRRSB's requirements and specifications; and
 - (g) any other thing or matter which the DRRSB, in its sole unfettered discretion, deems appropriate.
- 1.5 By submitting a Quote, the Bidder acknowledges the DRRSB's rights under this Section and absolutely waives any right, or cause of action against the DRRSB and its consultants, by reason of the DRRSB's failure to accept the Quote submitted by the Bidder, whether such right or cause of action arises in contract, negligence, or otherwise.
- 1.6 When bid amounts received are the same in total acquisition cost, negotiations may be entered into to achieve a lesser price without substantial change to the scope of work.
- 1.7 (a) The following schedules are attached to and form an integral part hereof:
 - (i) Schedule 1 – Quote Forms (the "Quote Forms");
 - (ii) Schedule 2 – Agreement (the "Agreement");
 - (iii) Schedule 3 – Occupational Health and Safety Agreement (the "OH&S Agreement"); and
 - (iv) Schedule 4 – Drawings and Specifications (the "Specifications").

(b) In this Quote, the Quote Information, Scope of Work, Quote Forms, Addenda (as defined in item 1.8), Agreement, and Specifications are collectively referred to as the "Quote Documents".

1.8 Quote documents may, up to two (2) business days prior to Closing Time, be advised by Addendum of, without limitation, additions to, deletions from, alterations in, or other changes to, the Quote Documents. All such Addenda will be found at DRRSB's website (<https://rrdssab.ca/procurement/>). All such changes shall become an integral part of the Quote Documents and allowed for by the Bidder in its Quote and Quote pricing. The Quote Forms provide for an acknowledgement by the Bidder of receipt of all Addenda.

1.9 All Quotes are to be submitted upon the enclosed Quote Forms.

1.10 This Quote opportunity closes at **2:00 p.m. CDT, Thursday, September 3, 2026** (herein sometimes referred to as the "Closing Time"), after which time Quotes received will be opened.

1.11 Quotes may be submitted by electronic means; however, the Board assumes no responsibility whatsoever for proper receipt of such electronic submissions and the original of such Quotes and enclosures shall be received by the DRRSB within three (3) business days of the Closing Time.

1.12 The Bidder shall examine the Quote Documents as soon as possible, and immediately notify the Procurement Coordinator, or designate of any errors, omissions or conflicts discovered.

1.13 Quotes received prior to the Closing Time may be withdrawn by the Bidder only upon, and by, written notice of withdrawal, which written notice of withdrawal must be received by the Procurement Coordinator or designate no later than the Closing Time. If such written notice of withdrawal is not so received by the Procurement Coordinator, such Quote shall be deemed as being open for the DRRSB to consider and/or accept. The last Quote received shall invalidate all previous Quotes received from the same Bidder.

1.14 Quotes shall remain open to acceptance and shall be irrevocable for a period of forty-five (45) calendar days after closing date.

1.15 Quotes will be evaluated based on the following weighted criteria:

Evaluation Criteria	Weighting
Price	60%
Schedule	40%
Total	100%

1.16 Quote award will be approved, per DRRSB Policy & Procedures.

1.17 Bidders are advised to review the Quote Documents for all terms, conditions, and requirements. For general informational purposes only, Bidders are advised that:

- (a) the DRRSB is requesting Quotes for structural and sanitary repairs at the property known as Fotheringham Court, located at 418 Steerola Street in Atikokan, Ontario (all as more fully detailed in the Quote Documents HRV replacement plan & ERV support);
- (b) All work must be completed **no later than 6:00 p.m. on Friday, December 11, 2026**; and
- (c) On-site meetings will be held as required and may be initiated by either party.

1.18 As it is the responsibility of the Bidder to determine levy and collection of Harmonized Sales Tax (HST), amounts bid shall show the HST amount and HST number, or alternatively cite the basis of exemption in lieu thereof.

- 1.19 In a case where a successful Bidder is not an Ontario resident contractor, such Bidder is required to provide either:
- (a) provide a copy of a valid Retail Sales Tax Vendor Permit; or
 - (b) file with the DRRSB a copy of the letter of compliance issued by the Ontario Retail Sales Tax Branch.

Failure to comply will result in such portion, as prescribed by law, of any payment made or to be made by the DRRSB to the Bidder to be withheld for remittance as required.

- 1.20 The DRRSB is governed by the *Municipal Freedom of Information & Protection of Privacy Act (MFIPPA)*, therefore Bidders must accept that the bid contents can be made public as a condition of the bidding process.

- 1.21 **All Bidders will be required to submit a Bid Deposit in the amount of ten percent (10%)** of the total bid price payable to the DRRSB less HST. In the case of electronic transmission, the original deposit must be received within three (3) business days of closing time. Proof of the bid deposit, acceptable to the DRRSB, must be included in the electronic submission.

- 1.22 Deposits of unsuccessful Bidders will be returned not later than three (3) weeks following the Quote award. Except as otherwise provided for herein, the Deposit of the successful Bidder will be returned with the first progress payment and must be invoiced as such.

- 1.23 The successful bidder will be required to submit an Agreement to Bond, stating that Surety is willing to supply a performance bond in the amount of twenty-five percent (25%) of the total project cost excluding HST.

- 1.24 Forthwith upon the DRRSB issuing the Letter of Intent to Award, notifying a Bidder that such Quote has been awarded and as such shall:

- (a) be prepared to complete structural and sanitary repairs at 418 Steerola Street in Atikokan, Ontario in accordance with the Quote Documents, as successfully Quoted for; and
- (b) deliver to the DRRSB upon award:
 - (i) proof of current WSIB coverage/WSIB Clearance Certificate;
 - (ii) proof of current liability insurance coverage minimum \$2 million per occurrence;
 - (iii) the name of the person responsible for administering the contractor's health and safety program;
 - (iv) proof of appropriate staff training where required, i.e. Transportation of Dangerous Goods, OHSA, WHMIS, etc.;
 - (v) proof of equipment certification where required, i.e. lifting devices, boom cranes, underwater diving, etc.;
 - (vi) copy of the contractor's health and safety policies and procedures; and
 - (vii) particulars of any convictions or orders imposed under health and safety or environmental legislation.

Some of the above documents may be provided annually and retained on file at the DRRSB. If you have recently submitted the current information, please check with the Procurement Coordinator as to what additional information may be required.

If the Bidder fails to deliver to the DRRSB the OH&S Agreement properly executed or fail to supply the specified insurance documents and health & safety policies, within five (5) business days of the date of acceptance of the Quote, or to the start of the project when directed:

- (a) the DRRSB shall be entitled, without prejudice to any other right or remedy it may have, to deem the Bidder to have abandoned the Quote made, and the DRRSB shall be entitled to retain the Deposit as liquidated damages (and not as a penalty); and
- (b) the Bidder shall pay to the DRRSB the difference between, the Total Quote Price set out in its Quote and any other Quote which the DRRSB accepts (if such other Quote is for a larger amount) and, in addition thereto, any costs which the DRRSB may incur by reason of the DRRSB re-issuing, and, further, the Bidder shall fully indemnify and save harmless the DRRSB, its officers, employees, and agents from all loss, damage, liability, cost, charge and expense whatever which it, they or any of them may suffer, incur or be put to by reason of such default or failure of the Bidder.

1.25 The successful Bidder shall take out and keep in force, throughout and for the duration of such Bidder's obligations to and/or contract with the DRRSB, but in any event for no less time than for completion of the project including any and all remedial work, a comprehensive policy (herein sometimes referred to as the "Policy") of public liability and property damage insurance in the amount of not less than two million dollars (\$2,000,000.00) inclusive per occurrence.

Such Policy shall name the DRRSB as an additional insured thereunder and shall contain:

- (a) the insurer's waiver of any rights of subrogation or indemnity or any other claim to which the insurer might otherwise be entitled as against the DRRSB and any other corporation owned, operated, or controlled by or affiliated with the DRRSB, together with a severability of interest clause and a cross liability clause; and
- (b) an undertaking by the insurer not to cancel, change, lapse or refuse to renew the insurance therein granted without first giving the parties notice of its intentions in writing of at least sixty (60) days prior to the intended change, lapse, cancellation, or termination.

A certified copy of the Policy or certificate thereof shall be deposited with the DRRSB, upon signing of the Agreement or as the DRRSB may direct.

1.26 In the Quote Documents, the singular, or masculine, or personal, pronouns herein shall be construed as meaning the plural, or feminine, or neuter, as the context requires.

SECTION 3 – CONTRACT REQUIREMENTS

Part 1 – General Requirements

Intent

- 1.1.1 This section outlines the general requirements that shall be administered by the General Contractor. While the specification section establishes the requirements for each trade, the General Contractor shall directly supervise and administer all contract requirements to ensure the provision of materials, labour, equipment, services, and incidentals necessary to complete the work on time and to the quality specified.
- 1.1.2 Provide all labour, material, equipment, services, and incidentals as necessary to perform the work as described herein.

Job Conditions

- 1.2.1 Work at the site will result in relocation of existing operating services. Conduct the operation of this contract in a cooperative manner with the DRRSB and interfere as little as possible with the normal operation and function of the project.
- 1.2.2 Verify all conditions and measurements at the site, prior to submitting the quotation. Failure to do this will not relieve the contractor of responsibility nor permit charges for extras if preliminary examinations would have indicated adverse conditions.
- 1.2.3 Notify DRRSB of any obvious errors or omissions with respect to specifications prior to submission of quote.
- 1.2.4 Adjacent areas may be occupied, and work must be carried out in such a manner as to cause as little inconvenience as possible to the occupants. Existing services to the occupants and unobstructed access must be maintained for the residents.
- 1.2.5 Apply for, obtain, and pay for all licenses, permits and inspections required for the work. Copies of all permits are to be provided to the DRRSB prior to commencement of work.

Work Schedule

- 1.3.1 Carry out work in a continuous manner. If at any time one phase falls behind schedule, take necessary measures to expedite subsequent phases to maintain or improve on completion date.
- 1.3.2 Carry out work between the hours of 8:00 a.m. and 6:00 p.m., local time, Monday through Friday only, except statutory holidays, unless alternate hours mutually agreed to by both parties.
- 1.3.3 Give DRRSB at least three (3) working days' notice prior to commencing work.
- 1.3.4 Complete all work by **6:00 p.m. on Friday, December 11, 2026.**

Temporary Services

- 1.4.1 Power: 110 volts electrical for operation of power tools.
- 1.4.2 Provide suitable coverings for materials that are to remain dry.
- 1.4.3 Deliver, store, and maintain packaged materials and equipment with manufacturer's seals and labels intact.
- 1.4.4 Prevent damage and soiling of material and equipment during delivery, handling, and storage. Immediately remove rejected materials and equipment from site.
- 1.4.5 Store and maintain materials and equipment in accordance with manufacturer and supplier's instructions.

- 1.4.6 Do not load or permit to be loaded, any part of the work with a weight or force that will endanger the work or work site.

Fire Safety Requirements

- 1.5.1 Take all necessary precautions to prevent the possibility of fire including the use of fire-resistant sheets to protect adjoining areas, when welding, brazing, grinding, and performing any operations with an open flame, combustible adhesives, or inflammable solvents.
- 1.5.2 Always keep suitable portable fire extinguisher within three (3) metres of the operation when soldering, welding, brazing, grinding, and performing operations with an open flame, combustible adhesives, or inflammable solvents.
- 1.5.3 Ensure all rags and waste containing oil, grease, or other inflammable materials are stored in an approved metal container and removed from the site at the end of each working day.
- 1.5.4 Maintain fire fighters' access.

Hazardous Substances

- 1.6.1 Hazardous substances including asbestos have been found to exist in some building materials contained within the project area.
- 1.6.2 Disturbance, removal, and disposal of hazardous materials must be completed by qualified workers and in accordance with the Occupational Health and Safety Act and all other applicable legislation.
- 1.6.3 Ensure all necessary precautions are taken to protect occupants of the project regarding the removal and disposal of this material.

Contractors' Use of Site

- 1.7.1 Limited to areas for work and storage as directed by DRRSB.
- 1.7.2 Do not unreasonably encumber site with materials or equipment.
- 1.7.3 Do not obstruct entrances, stairs, or fire exits.
- 1.7.4 Obtain permission for use of existing sanitary facilities from DRRSB and always keep such facilities clean and sanitary.
- 1.7.5 Make good damage to paving, grass, walkways, curbs, trees, planting beds, etc., caused due to the work of this contract.

Cutting, Fitting and Patching

- 1.8.1 Inspect existing conditions including elements subject to damage or movement during cutting and patching.
- 1.8.2 Where work connects with existing and where existing work is altered, cut, patch, and make good to match existing.

Layout of Work

- 1.9.1 Contractor is responsible for layout of all parts of the work.
- 1.9.2 Errors resulting from failure to verify the proper lay out of any element of the installation shall be rectified without additional cost to DRRSB.

Standards

- 1.10.1 Be familiar with and comply with or exceed the requirements of applicable CGA, CGSB, CSA, ULC or ASTM standards.

- 1.10.2 Perform work in accordance with Building Code including all amendments up to Quote closing date, and other codes of provincial or local application.
- 1.10.3 Failure to comply may result in rejection of the work and the need to replace or repair at no additional cost to DRRSB.
- 1.10.4 In case of conflict or discrepancy, the more stringent requirements shall apply.
- 1.10.5 Install all materials in accordance with manufacturers' recommendations.

Existing Conditions

- 1.11.1 If the DRRSB or contractor discovers conditions at the place of Work that are subsurface or otherwise concealed physical conditions which existed before the commencement of the Work, which differ materially from those indicated in the Quote Documents, then the observing party shall notify the other party in writing no later than five (5) working days after first observance of the conditions.
- 1.11.2 The DRRSB will promptly investigate such conditions and make a finding. If the finding is that the conditions differ materially and this would cause an increase or decrease in the contractor's cost or time to perform the Work, appropriate instructions for a change in the Work shall be issued by the DRRSB.
- 1.11.3 If the DRRSB finds that the conditions at the place of Work are not materially different, could reasonably have been inferred from the pre-bid meeting at the place of Work, or that no change in the Contract Price or duration is justified, these reasons shall be reported in writing to the contractor.

Changes in Work

- 1.12.1 The DRRSB, without invalidating the Contract, may make changes by altering, adding to, or deducting from the Work, with the Contract Price and the completion date being adjusted accordingly.
- 1.12.2 No additional Work shall be done or other changes to the Contract made without receiving prior written authorization from the DRRSB.
- 1.12.3 In the case of a reduction in Scope of Work, the DRRSB shall determine the method of valuation of any change in the Work by any one or more of the following methods:
 - (a) by estimate and acceptance of a lump sum;
 - (b) by unit prices; and/or
 - (c) by cost and percentage or by cost and a fixed fee.
- 1.12.4 In cases of an addition to the Work to be paid for the DRRSB shall certify the amount of the net cost of labour and materials, as determined by invoices and timesheets provided.

Inspections

- 1.13.1 Code compliance and other mandatory inspections shall be carried out by the designated inspector. Contractor is responsible for contacting the inspector for all inspections.
- 1.13.2 Inspections to ensure compliance with plans and specifications shall be carried out by an inspector designated by the DRRSB.

Occupational Health and Safety

- 1.14.1 It is the contractor's responsibility to provide the proper notification to the Ministry of Labour prior to the commencement of work.
- 1.14.2 Comply with all aspects of the Occupational Health and Safety Act and regulations thereunder.

- 1.14.3 The contractor will assume responsibility for all breaches of health and safety requirements including the cost of legal defense on a solicitor and own client basis should the DRRSB or any of its employees be charged with violating said Act or Regulations. If the DRRSB and/or any employee thereof are convicted and fined for any such offence as having been a deemed employer or otherwise vicariously or definitively liable, the contractor will forthwith pay any such fine on behalf of such defendant.
- 1.14.4 Maintain on site a list of all hazardous materials proposed for use on site together with current Safety Data Sheets (SDS).
- 1.14.5 Label all hazardous materials according to WHMIS requirements.
- 1.14.6 Use experienced workers, fully instructed, and trained in accordance with the requirements of WHMIS and other applicable regulations.

Coordination

- 1.15.1 Examine requirements of materials, labour, and equipment standards for the work of this contract.
- 1.15.2 Ensure where the work of one trade is to be built-in, or is to be incorporated into, or is dependent on the work of another trade, that material, labour, and equipment is provided so as to avoid work delays.
- 1.15.3 Ensure that installations, individually and collectively, comply fully with all contract requirements.

Salvage

- 1.16.1 Salvageable material shall remain the property of DRRSB unless stated otherwise.
- 1.16.2 Dispose of salvage materials as directed by DRRSB.

Cleaning

- 1.17.1 When the work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining work.
- 1.17.2 Maintain a clean site and building. Remove waste materials from site daily.
- 1.17.3 Leave work area broom clean.
- 1.17.4 Remove stains, spots, marks, and dirt from surfaces.

Part 2 – Scope of Work

- 2.1.1 Fotheringham Court is a cascading age public housing facility located in Atikokan Ontario. A cascading age facility prioritizes housing people 60 years of age and older but also houses people 50 years of age and older if space permits. The concrete slab located in the common room, laundry room and storage rooms on the main floor has settled. A downhole camera inspection revealed that the sanitary pipes from the kitchen area in the common room and restrooms had deteriorated significantly, in one area the bottom half of the lead pipe from a toilet was completely missing. The purpose of these repairs is to replace the sanitary pipes, remove any contaminated soil, restore the condition of the subgrade materials and replace the concrete slab.
- 2.1.2 The requirements are to provide all materials, labor, equipment, services, and incidentals to complete structural and sanitary repairs at the apartment complex known as Fotheringham Court, located at 418 Steerola Street in Atikokan, Ontario. This includes but is not limited to:
 - i. Provide one (1) shipping container for Owner's storage of furnishings in area of work.
 - ii. Shut off water to all fixtures in work area.

- iii. Salvage mechanical and electrical installations as indicated.
- iv. Provide temporary shoring and dispose of masonry below shoring.
- v. Remove and dispose concrete slab and soil contaminated due to broken pipes below slab.
- vi. Remove and dispose existing sanitary drainage piping and domestic water supply piping. All existing sanitary fixtures shall be carefully removed and retained for reinstallation.
- vii. Provide and install new sanitary drainage piping for all retained fixtures in the affected areas. Connect the new sanitary piping to the existing sanitary drainage system and provide new traps, supply connectors, gaskets, seals, fasteners, supports, and all accessories required for a complete, code-compliant, and fully operational installation.
- viii. Provide and install new domestic water supply piping, complete with isolation valves, serving all retained fixtures. Provide new supply stops, supply connectors, escutcheons, gaskets, seals, and all accessories necessary to ensure a complete, leak-free, and operational system.
- ix. Provide new trap seal primers (TSP) and connect them to new floor drains. Supply and install new floor drains complete with all required fittings, traps, strainers, and accessories.
- x. Backfill area to extents shown with material as indicated on drawings.
- xi. Provide new wall footing, new concrete slab and new masonry wall complete with bond beam.
- xii. Provide new masonry wall complete with bond beam.
- xiii. Remove temporary shoring and associated hardware.
- xiv. Provide new interior finishes.
- xv. Reinstall all retained sanitary fixtures and connect them to the new sanitary and water supply systems. Test, inspect, and commission all new piping systems to verify proper operation and ensure compliance with applicable codes and standards. Remove all demolition debris and leave the work area clean upon completion.
- xvi. Reinstate water.
- xvii. Remove temporary shipping container.
- xviii. All as indicated on the drawings.

2.1.3 Work is to comply with all specifications and requirements as indicated in the Drawings and Specifications found in a separate document Schedule 4 – Structural and Sanitary Repairs Technical Specifications.

For questions and requests for further information please contact Tonia DeGagne, Procurement Coordinator at (807) 274-5349 ext. 239 or purchasing@rrdssab.ca.

SCHEDULE 1 – QUOTE FORMS

(Forms to be submitted by the Bidder)

Quote No: DRRSB 25-49

“Structural and Sanitary Repairs at Fotheringham Court”

The following Quote is hereby submitted to

DISTRICT of RAINY RIVER SERVICES BOARD
("DRRSB")

1. This Quote is submitted by _____ (hereinafter sometimes referred to as the "Bidder").
2. In the Quote Documents "Work" means the total provision of all labour, materials, equipment, services, and otherwise, necessary for the proper execution and completion, in accordance with the Quote Documents, of the supply and delivery to and for the benefit and satisfaction of the DRRSB, of:
 - (a) the full and complete structural and sanitary repairs at Fotheringham Court in Atikokan, Ontario, if the DRRSB awards the Quote for the full and complete structural and sanitary repairs.
3. The Bidder acknowledges and agrees that:
 - (a) all dimensions indicated in Quote Documents are approximate. Contractor to verify sizes and quantities on site prior to ordering materials;
 - (b) the items and quantities set out in, the Drawings and Specifications (which shall be deemed to be attached to and form part of these Quote Forms) or elsewhere in the Quote Documents, are not to be and shall not be taken as a guarantee of actual quantities required;
 - (c) the DRRSB reserves the right to increase, decrease or delete quantities of any or all items set out in, the Specifications below or elsewhere in the Quote Documents, and no claim resulting from any increase, decrease or deletion in items and/or quantities will be considered; and
 - (d) the Total Unit Price(s) given or set out by the Bidder in this Quote:
 - (i) shall and does include all costs, expenses, and charges whatsoever for the performance and completion of the Work by the Bidder, including, without limitation, for all labour, materials, equipment, services, duties, taxes, patent royalties, insurance, transportation, and otherwise; and
 - (ii) shall apply for the purpose of progress payments and shall apply throughout the period or part thereof for which the Bidder may be awarded a Quote except that any increase or decrease in taxes such as HST after the date of the awarding of the Quote shall increase or decrease the Total Unit Price accordingly by the amount of such increase or decrease in tax.
4. The undersigned Bidder:

- (a) confirms that the Bidder has examined the Quote Documents and ascertained all necessary particulars of and regarding the Work to the Bidder's satisfaction; and
 - (b) submits the following Quote and agrees, if such Quote is accepted, to:
 - (i) enter into the Agreement and OH&S Agreement and provide same to the DRRSB duly executed; and
 - (ii) perform and complete the Work for the respective Total Unit Price(s) and Total Prices quoted by the Bidder herein except as may be increased or decreased by increase or decrease in taxes (such as HST) as set out in paragraph 3 hereof.
5. The forms below allow for a Quote for the Work relating to the full and complete structural and sanitary repairs at Fotheringham Court in Atikokan, Ontario.
6. The Bidder encloses herewith the Deposit.
7. The Bidder shall, forthwith upon request of the DRRSB, provide a "Statement of Good Standing" and/or clearance certificate and/or such other evidence of compliance (regarding workers' compensation insurance, including payments due thereunder) satisfactory to the DRRSB, from the WSIB of Ontario.

Dated at _____
(city, town)

this _____ day of _____, 2026.

Witness to signature of Bidder

Print name of Witness:

Address of Witness:

Phone Number of Witness:

Signature of Bidder:

If a corporation, the person signing has authority to
bind such corporation.

Print Name and Title of Bidder Signing:

If a corporation, print proper name of Corporation:

Address of Bidder:

Phone Number of Bidder:

BID FORM

Quote: DRRSB 26-49	Project Name: Structural and Sanitary Repairs Address: 418 Steerola St., Atikokan, ON	Closing Date: Thursday, September 3, 2026	Time: 2:00 pm CDT
Submitted to: District Rainy River Services Board 450 Scott Street Fort Frances, ON P9A 1H2		To supply all labor, materials, and equipment necessary for the description, per the Request for Quote, all Schedules, Drawings & Specifications.	

Name/Title: _____

Business Legal Name: _____

Address: _____

City: _____ Province of _____, Postal Code _____

Email Address: _____

1. Quote Price

Having examined the Request for Quote: Structural and Sanitary Repairs at Fotheringham Court, as issued by District Rainy River Services Board; I hereby offer to enter a Contract to perform the Work required by the Request for Quote and attached Specifications/Scope of Work for the stipulated price of:

Item No.	Description	Unit	Approx Qty.	Unit Price	Total Amount
001	MOBILIZATION, DEMOBILIZATION, INSURANCE AND BONDS	l.s.	100%		
002	ASBESTOS REMOVAL	l.s.	100%		
003	DEMOLITION - WALLS	sf	2030		
004	DEMOLITION - SLAB	sf	870		
005	EXCAVATION – CONTAMINATED SOILS	yd ³	64		
006	SANITARY PIPING	l.s	100%		
007	GRANULAR B	tons	50		

008	CONCRETE - SLAB	yd ³	15		
009	CONCRETE – WALL FOOTING	yd ³	5		
010	PLUMBING	l.s	100%		
011	6" CMU BLOCK WALL	s.f.	400		
012	4" CMU BLOCK WALL	s.f	300		
013	FINISHES - CARPET	s.f.	360		
014	FINISHES – VINYL COMPOSITE TILE	s.f.	490		
015	PAINTING	s.f.	1900		
016	RESETTING PAVING STONES	s.f.	200		
SUB TOTAL					
H.S.T					
TOTAL PRICE ITEMS 1-16 (INCLUDING H.S.T.)					

Additional Information: _____

Attachments Provided: ☐ Yes ☐ No

2. Acknowledgement of Addenda

I have received and included the following Addendum(s) in my quoted price as presented above:

Addendum # ____ Date Received: _____

Addendum # ____ Date Received: _____

If not applicable, please state N/A.

3. Work Schedule

Work is to be completed by December 11, 2026. Preference will be given to an earlier completion date.

Provide a schedule of work including period until work commencement after receipt of approvals, total down-time, and estimated completion date:

Receipt of Building Permit: _____

Mobilization to Site: _____

Substantial Completion: _____

Total Completion: _____

4. Insurance Information

WSIB #: _____

Insurance Provider: _____

Insurance Policy #: _____

5. Performance Security

Proponent agrees to provide performance security as per 1.23 in Section 2: ☐ Yes ☐ No

6. Signatures

SIGNED AND SUBMITTED:

Signature

Name and Title of Proponent

Dated at _____ on _____ day of _____, 2026.

SCHEDULE 2 – AGREEMENT

THIS AGREEMENT made this _____ day of _____, 20__.

BETWEEN:

(herein sometimes referred to as the "Bidder" or the "Contractor")

- and -

The Rainy River District Social Services Administration Board operating as the District Rainy River
Services Board
("DRRSB")

Whereas the Contractor has represented to the DRRSB that the Contractor is well able to perform the Work described in the Quote Documents for the respective Total Unit Price(s) and Total Prices quoted by the Bidder in the Proposal.

Now therefore the Contractor and the DRRSB (herein sometimes referred to as the "Parties") undertake and agree as follows:

1. The Contractor shall perform and complete the Work:
 - (a) to, and for, the benefit and satisfaction of the DRRSB, in accordance with the Quote Documents;
 - (b) for the respective Total Unit Price(s) and Total Prices quoted by the Contractor in the Quote Forms except as may be increased or decreased by increase or decrease in taxes (such as HST) as set out in paragraphs 3 and 4 of the Quote Forms; and
 - (c) with the project being **completed by 6:00 p.m. on or before December 11, 2026**, unless otherwise agreed to in writing by the parties.
2. The Quote Documents shall collectively be and the whole shall constitute the Contract between the Parties.
3. The DRRSB agrees to pay to the Contractor in lawful money of Canada for the performance of the Work, upon receipt of invoice from the Contractor.

The amounts to be paid are subject to adjustments, additions, deductions, and deletions as provided in and by the Quote Documents. The DRRSB shall pay on account thereof upon the approval of the Infrastructure Manager or designate.

Ten percent (10%) of each payment will be withheld to a total of ten percent (10%) of the total project. This holdback will be retained for forty-five (45) days following completion of the project. Upon receipt of invoices, any adjustments to monies owing will be made with notification to the Contractor.

4. If the DRRSB fails to make payments to the Contractor as they become due under the terms of the Quote Documents, interest equal to the current bank prime rate + 2% per annum on such unpaid amounts shall become due and payable until payment.

5. If:

- (a) the Contractor should be adjudged bankrupt, or becomes insolvent, or makes a general assignment for the benefit of creditors, or if a receiver is appointed of the Contractor or the Contractor's business or any part thereof.
- (b) a petition in bankruptcy for liquidation, reorganization, or other proceeding, is filed by or against the Contractor; or
- (c) the Contractor fails or neglects to properly perform or complete the Work or otherwise fails to comply with the requirements of the Quote Documents (including, without limitation, failure to meet specifications, or to meet delivery dates, or otherwise)

The DRRSB may, without prejudice to any other right or remedy it may have, terminate this Agreement by giving the Contractor written notice.

The Contractor's obligation under the Quote Documents as to quality, correction and warranty of the work performed by him up to the time of termination shall continue in force after such termination.

6. The Contractor will comply with all aspects of the Occupational Health and Safety Act and regulations thereunder.

7. The Contractor will assume responsibility for all breaches of health and safety requirements including the cost of legal defense on a solicitor and own client basis should the DRRSB or any of its employees be charged with violating said Act or Regulations. If the DRRSB and/or any employee thereof are convicted and fined for any such offence as having been a deemed employer or otherwise vicariously or definitively liable, the Contractor will forthwith pay any such fine on behalf of such defendant.

8. Time shall in all respects be of the essence.

9. All delays encountered by the Contractor that are not a direct result of changes by the DRRSB shall be reported in writing to the Owner within five (5) days of discovery of delay. The Contractor shall not be entitled to any extension of the completion date, or any additional incurred costs should such a delay not be reported to the DRRSB.

10. Neither this Agreement nor any rights or entitlements under it shall be assignable or transferable by the Contractor without the prior written consent of the DRRSB.

11. Any notice required or permitted to be given hereunder shall be in writing and shall be effectively given if:

- (a) delivered personally.
- (b) sent by prepaid courier service or mail; or
- (c) sent by means of electronic communication (confirmed on the same or following day by prepaid mail) addressed,

(i) in case of notice to the DRRSB, as follows:

450 Scott Street
FORT FRANCES, Ontario
P9A 1H2
Attention: Tonia DeGagne, Procurement Coordinator

(ii) in case of the Contractor, as follows:

Any notice so given shall be deemed conclusively to have been given and received when so personally delivered or sent by telecopier or other electronic communication or on the second day following the sending thereof by private courier or mail. Any Party hereto or others mentioned above may change any particulars of its address for notice by notice to the others in the manner previously mentioned.

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement.

Witness to signature of Contractor

Print name of Witness:

Address of Witness:

Phone Number of Witness:

Signature of Contractor:

If a corporation, the person signing has the authority to bind such corporation.

Print Name and Title of Person Signing:

If a corporation, print proper name of Corporation:

Address of Contractor:

Phone Number of Contractor:

Fax Number: _____

Cell Number: _____

District of Rainy River Services Board

per: _____

per: _____

I/we have authority to bind the DRRSB.

SCHEDULE 3 – OCCUPATIONAL HEALTH & SAFETY AGREEMENT



Contractor's Undertaking to Comply

Name of Contractor: _____

Quote #: _____

Name of Authorized Representative of the Contractor: _____

1. I/We hereby undertake:
 - a) To comply with all health and safety and environment legislation in the performance of this *Agreement*.
 - b) To maintain a safe and healthy work environment during the performance of this *Agreement*; and
 - c) To adhere to the specifications identified in the respective Request form(s).
2. I/We hereby agree:
 - a) That compliance with all health and safety and environment legislation is a condition of the *Agreement* and that non-compliance with same may, in the discretion of District Rainy River Services Board (hereinafter referred to as the DRRSB), lead to the termination of this *Agreement*; and
 - b) That compliance with WSIB legislation is followed and acknowledge that I cannot bring in other staff or individuals to complete work who are not covered by my *WSIB Certificate of Clearance* and my *Liability Insurance Policy*. I understand that non-compliance will result in the following:
 - i) Immediate termination of the Contract.
 - ii) The Contractor will be eliminated from the DRRSB Vendor of Record, if appropriate; and
 - iii) The Contractor may not be considered for future employment opportunities, at the discretion of the Chief Administrative Officer of the DRRSB.
 - c) To permit DRRSB or its designate to audit my/our health and safety and environmental records during the term of the *Agreement* and upon its conclusion and to cooperate fully with such audit(s).
3. a) I/We understand that Contractor safety deficiencies will be addressed by DRRSB in the following progressive steps:
 - i) The problem will be identified to the Contractor (site supervisor).
 - ii) The Contractor's head office will be contacted about the problem, orally and in writing.
 - iii) If required by law to immediately report the problem to a provincial and/or federal Ministry, the DRRSB may report the problem to the appropriate Ministry(s).

- iv) If not required by law to immediately report the problem, and the problem remains unresolved, the DRRSB may report the problem to the appropriate Ministry(s); and
- v) The Agreement may, in the DRRSBs discretion, be suspended or terminated and/or payment withheld by the DRRSB.

- b) I/We acknowledge and agree that, depending upon the nature and/or seriousness of the deficiency, the DRRSB reserves the right to bypass any or all the steps described in *Subsection 3 (a)*.

4. I/We hereby understand:

- a) That I/We will adhere to the terms of this *Agreement* and cooperate with the DRRSB in its efforts to ensure compliance thereunder.

We have the authority to bind the Contractor.

SIGNED, SEALED AND DELIVERED on the _____ day of _____, 20_____.

[NAME OF CONTRACTOR]

Witness Name (Please Print)

Contractor Name (Please Print)

Witness Signature

Signature on Behalf of the Contractor

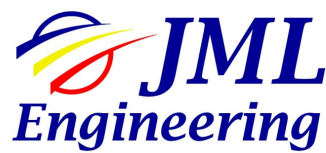
Revised: June/2010

**STRUCTURAL AND SANITARY REPAIRS
FOTHERINGHAM COURT
418 STEEROLA STREET
ATIKOKAN, ONTARIO**

FOR

DISTRICT OF RAINY RIVER SERVICES BOARD

TECHNICAL SPECIFICATIONS



<u>Section Number</u>	<u>Section Title</u>	<u>No. of Pages</u>
<u>Division 00</u>		
00 01 07	Seals Page	1
<u>Division 01</u>		
01 14 00	Work Restrictions	2
01 33 00	Submittal Procedures	4
01 35 29.06	Health and Safety Requirements	4
01 35 43	Environmental Procedures	2
01 41 00	Regulatory Requirements	2
01 45 00	Quality Control	2
01 51 00	Temporary Utilities	2
01 52 00	Construction Facilities	3
01 56 00	Temporary Barriers and Enclosures	2
01 61 00	Common Product Requirements	4
01 71 00	Examination and Preparation	2
01 73 00	Execution	2
01 74 00	Cleaning	2
01 74 19	Waste Management and Disposal	2
01 77 00	Closeout Procedures	2
01 78 00	Closeout Submittals	7
<u>Division 02</u>		
02 41 00.08	Demolition – Minor Works	3
02 82 00.02	Asbestos Abatement – Intermediate Precautions	8
<u>Division 03</u>		
03 30 00.09	Cast-in-Place Concrete – Short Form	7
<u>Division 04</u>		
04 20 00.08	Masonry for Minor Works	5
<u>Division 07</u>		
07 92 00	Joint Sealing	5
<u>Division 09</u>		
09 21 16	Gypsum Board Assemblies	4
09 65 19	Resilient Tile Flooring	7
09 68 16	Sheet Carpeting	7
09 91 00.08	Painting for Minor Works	4

Division 20

20 05 01	Shop Drawings, Product Data and Samples	9
20 05 10	Basic Mechanical Materials and Methods	15
20 05 25	Mechanical Insulation	5

Division 22

22 05 00	Common Work Results for Plumbing	2
22 42 01	Plumbing Specialties and Accessories	6

Division 31

31 23 33	Excavating, Trenching and Backfilling	4
31 32 19	Geotextiles	3

Division 32

32 11 23	Aggregate Base Courses	3
----------	------------------------	---

APPENDICES

Appendix A	DSS – Certificate of Analysis	
Appendix B	Drawings	

END OF SECTION

STRUCTURAL



Andrew Olesen, P.Eng.
Project Engineer
JML Engineering Ltd.

MECHANICAL



Steven McMillan, P.Eng.
Principal, Mechanical Engineer
MCW Consultants Ltd.

END OF SECTION

Part 1 General

1.1 ACCESS AND EGRESS

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

1.2 WORK RESTRICTION

- .1 All work and access at the site is to be coordinated through the Facility Manager. This included, but is not limited to:
 - .1 Parking for Staff
 - .2 Parking for Visitors
 - .3 Deliveries
- .2 Pedestrian access to the building is to be provided at all times.
- .3 Egress must be maintained for residents at all times through the hallway adjacent to the work area.
- .4 All disruptions to utilities to the building to take place outside of business hours.

1.3 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Consultant to facilitate work as stated.
- .2 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Where security is reduced by work provide temporary means to maintain security.
- .4 No access to the building will be granted for facilities. Contractor to provide own washroom, lunchroom and office facilities.

1.4 EXISTING SERVICES

- .1 Provide for personnel, pedestrian and vehicular traffic.
- .2 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.5 SECURITY

- .1 Where security has been reduced by Work of Contract, provide temporary means to maintain security.
- .2 Security clearances:
 - .1 All personnel on this project require Security Clearances in accordance with Infrastructure Ontario requirements.

1.6 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions. Smoking is permitted in designated areas only.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

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

1.2 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Submit drawings stamped and signed by professional engineer registered or licensed in Ontario, Canada.
- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .4 Allow five days for Consultant's review of each submission.
- .5 Adjustments made on shop drawings by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.

- .6 Make changes in shop drawings as Consultant may require, consistent with Contract Documents. When resubmitting, notify Consultant in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
- .8 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
- .9 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents
- .10 Details of appropriate portions of Work as applicable
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
- .11 After Consultant's review, distribute copies.
- .12 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Consultant may reasonably request.
- .13 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Consultant where shop drawings will not be prepared due to standardized manufacture of product.

- .14 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Consultant.
 - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
 - .2 Testing must have been within 3 years of date of contract award for project.
- .15 Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Consultant.
 - .1 Pre-printed material describing installation of product, system or material, including special notices and Safety Data Sheets concerning impedances, hazards and safety precautions.
- .16 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Consultant.
- .17 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .18 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Consultant.
- .19 Delete information not applicable to project.
- .20 Supplement standard information to provide details applicable to project.
- .21 If upon review by Consultant, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
 - .1 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.3 SAMPLES

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

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

1.4 MOCK-UPS

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

1.5 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.
- .2 Submit transcription of insurance immediately after award of Contract.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks.
- .3 Submit electronic copies of Contractor's authorized representative's work site health and safety inspection reports to Consultant weekly.
- .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Submit WHMIS Safety Data Sheets (SDS) in accordance with Section 01 33 00 – Submittal Procedures.
- .7 Consultant will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 7 days after receipt of plan. Revise plan as appropriate and resubmit plan to Consultant within 7 days after receipt of comments from Consultant.
- .8 Consultant's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .9 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Consultant.
- .10 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

1.2 FILING OF NOTICE

- .1 File Notice of Project with Provincial authorities prior to beginning of Work.
- .2 Contractor shall be responsible and assume the Principal Contractor role for each work zone location and not the entire complex. Contractor shall provide a written acknowledgement of this responsibility with 3 weeks of contract award.
- .3 Work zone locations include:
 - .1 Fotheringham Court – Common Room, Laundry Room, and Storage Areas.
- .4 Contractor shall agree to install proper site separation and identification in order to maintain time and space at all times throughout life of project.

1.3 SAFETY ASSESSMENT

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

1.4 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Consultant prior to commencement of Work.

1.5 REGULATORY REQUIREMENTS

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

1.6 PROJECT/SITE CONDITIONS

- .1 Work at site will involve contact with:
 - .1 Designated Substances.

1.7 GENERAL REQUIREMENTS

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Consultant may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.8 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Contractor will be responsible and assume the role Constructor as described in the Ontario Occupational Health and Safety Act and Regulations for Construction Projects.
- .3 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.9 COMPLIANCE REQUIREMENTS

- .1 Comply with Ontario Occupational Health and Safety Act R.S.O. 1990, c. 0.1 and Ontario Regulations for Construction Projects, O. Reg. 213/91.
- .2 Comply with Occupational Health and Safety Regulations, 1996.

1.10 UNFORSEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Consultant verbally and in writing.

- .2 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, advise Health and Safety co-ordinator and follow procedures in accordance with Acts and Regulations of Province having jurisdiction and advise Consultant verbally and in writing.

1.11 HEALTH AND SAFETY CO-ORDINATOR

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

1.12 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Consultant.

1.13 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Consultant.
- .2 Provide Consultant with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Consultant may stop Work if non-compliance of health and safety regulations is not corrected.

1.14 POWDER ACTUATED DEVICES

- .1 Use powder actuated devices only after receipt of written permission from Consultant.

1.15 WORK STOPPAGE

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

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 45 00 - Quality Control.

1.2 DEFINITIONS

- .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.
- .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.3 FIRES

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

1.4 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.
 - .1 Provide temporary enclosures where directed by Consultant as required.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.5 NOTIFICATION

- .1 Consultant will notify Contractor in writing of observed noncompliance with Federal, Provincial environmental laws and regulations or Municipal environmental bylaws or regulations, permits, and other elements of Contractor's Environmental Protection Plan.
- .2 Contractor after receipt of such notice, shall inform Consultant of proposed corrective action and take such action to obtain the approval of Consultant.
 - .1 Do not take action until after receipt of written approval by Consultant.
- .3 Consultant will issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
- .2 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

END OF SECTION

Part 1 General

1.1 REFERENCES TO REGULATORY REQUIREMENTS

- .1 Department of Justice Canada (Jus)
 - .1 SOR/2018-196 Prohibition of Asbestos and Products Containing Asbestos Regulations.
- .2 Perform Work in accordance with 2024 Ontario Building Code Compendium (OBCC) including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .3 Specific design and performance requirements listed in specifications or indicated on Drawings may exceed minimum requirements established by referenced Building Code; these requirements will govern over the minimum requirements listed in Building Code
 - .1 Meet or exceed requirements of:
 - .1 Contract documents.
 - .2 Specified standards, codes and referenced documents.

1.2 HAZARDOUS MATERIAL DISCOVERY

- .1 Asbestos: demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work. Notify Consultant.
- .2 PCB: Polychlorinated Biphenyl: stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work. Notify Consultant.
- .3 Mould: stop work immediately when material resembling mould is encountered during demolition work. Notify Consultant.

1.3 BUILDING SMOKING ENVIRONMENT

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

1.4 QUALITY ASSURANCE

- .1 Regulatory Requirements: Except as otherwise specified, Constructor shall apply for, obtain, and pay fees associated with, permits, licenses, certificates, and approvals required by regulatory requirements and Contract Documents, based on General Conditions of Contract and the following:
 - .1 Regulatory requirements and fees in force on date of Bid submission, and
 - .2 A change in regulatory requirements or fees scheduled to become effective after date of tender submission and of which public notice has been given before date of tender submission

Part 2 Products

2.1 NOT USED

- .1 Not Used.

2.2 EASEMENTS AND NOTICES

- .1 Owner will obtain permanent easements and rights of servitude that may be required for performance of Work.
- .2 Constructor shall give notices required by regulatory requirements.

2.3 PERMITS

- .1 Building Permit:
- .1 Constructor shall apply for, obtain and pay for building permit on behalf of Owner, and other permits required for Work and its various parts.
- .2 Constructor shall display building permit and other permits in a conspicuous location at Place of Work.
- .2 Occupancy Permits:
- .1 Constructor shall apply for, obtain, and pay for occupancy permits, including partial occupancy permits where required by authority having jurisdiction.
- .2 Consultant will issue appropriate instructions to Constructor for correction to Work where Contract Document deficiencies are required to be corrected in order to obtain occupancy permits, including partial occupancy permits.
- .3 Constructor shall correct deficiencies in accordance with Consultant's instructions. Where deficiency is not corrected, Owner reserves the right to make correction and charge Constructor for costs incurred.
- .4 Constructor shall turn occupancy permits over to Owner.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 INSPECTION

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

1.2 ACCESS TO WORK

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

1.3 PROCEDURES

- .1 Notify appropriate agency and Consultant in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.4 REJECTED WORK

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

1.5 REPORTS

- .1 Submit electronic copies of inspection and test reports to Consultant.

- .2 Provide copies to subcontractor of work being inspected or tested.

1.6 TESTS AND MIX DESIGNS

- .1 Furnish test results and mix designs as requested.
- .2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Consultant and may be authorized as recoverable.

1.7 MOCK-UPS

- .1 Prepare mock ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock ups.
- .2 Construct in locations Consultant as specified in specific Section.
- .3 Prepare mock ups for Consultant's review with reasonable promptness and in orderly sequence, to not cause delays in Work.
- .4 Failure to prepare mock ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .5 If requested, Consultant will assist in preparing schedule fixing dates for preparation.
- .6 Remove mock up at conclusion of Work or when acceptable to Consultant.
- .7 Mock ups may remain as part of Work.
- .8 Specification section identifies whether mock up may remain as part of Work or if it is to be removed and when.

1.8 EQUIPMENT AND SYSTEMS

- .1 Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.
- .2 Refer to Drawings and Specifications for definitive requirements.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 52 00 - Construction Facilities.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

1.3 INSTALLATION AND REMOVAL

- .1 Provide temporary utilities controls in order to execute work expeditiously.
- .2 Remove from site all such work after use.

1.4 WATER SUPPLY

- .1 Owner will provide continuous supply of potable water for construction use.
- .2 Owner will pay for utility charges at prevailing rates.

1.5 TEMPORARY HEATING AND VENTILATION

- .1 Provide temporary heating required during construction period, including attendance, maintenance, and fuel.
- .2 Construction heaters used inside building must be vented to outside or be flameless (vent free) type. Solid fuel salamanders are not permitted.
- .3 Provide temporary heat and ventilation in enclosed areas as required to:
 - .1 Facilitate progress of Work.
 - .2 Protect Work and products against dampness and cold.
 - .3 Prevent moisture condensation on surfaces.
 - .4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
 - .5 Provide adequate ventilation to meet health regulations for safe working environment.
- .4 Maintain temperatures of minimum 10 degrees Celsius in areas where construction is in progress.
- .5 Ventilating:
 - .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
 - .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
 - .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
 - .4 Ventilate storage spaces containing hazardous or volatile materials.
 - .5 Ventilate temporary sanitary facilities.

- .6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.
- .6 Permanent heating system of building, to be used when available. Be responsible for damage to heating system if use is permitted.
- .7 On completion of Work for which permanent heating system is used, replace filters, clean and service.
- .8 Ensure Date of Substantial Performance and Warranties for heating system do not start until entire system is in as near original condition as possible and is certified by Consultant.
- .9 Pay costs for maintaining temporary heat, when using permanent heating system. Owner will pay utility charges when temporary heat source is the existing building equipment.
- .10 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
 - .1 Conform with applicable codes and standards.
 - .2 Enforce safe practices.
 - .3 Prevent abuse of services.
 - .4 Prevent damage to finishes.
 - .5 Vent direct-fired combustion units to outside.
- .11 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.6 TEMPORARY POWER AND LIGHT

- .1 General Contractor can utilize the onsite power of the facility during the summer. Power is available inside and at outlets along the exterior of the building.

1.7 FIRE PROTECTION

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.
- .2 Burning rubbish and construction waste materials is not permitted on Site.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SUBMITTALS

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

1.2 INSTALLATION AND REMOVAL

- .1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.
- .2 Identify areas which have to be gravelled to prevent tracking of mud.
- .3 Indicate use of supplemental or other staging area.
- .4 Provide construction facilities in order to execute work expeditiously.
- .5 Remove from site all such work after use.

1.3 SCAFFOLDING

- .1 Scaffolding in accordance with CAN/CSA-S269.2-2016.
- .2 Provide and maintain scaffolding, ramps, ladders, swing staging, platforms and temporary stairs.

1.4 HOISTING

- .1 Provide, operate and maintain hoists and cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.
- .2 Hoists and cranes to be operated by qualified operator.

1.5 SITE STORAGE/LOADING

- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

1.6 CONSTRUCTION PARKING

- .1 Parking will be permitted on site provided it does not disrupt performance of Work and as directed by Owner.
- .2 Provide and maintain adequate access to project site.

1.7 SECURITY

- .1 Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays as required by Owner.

1.8 OFFICES

- .1 No offices inside the building will be provided. Contractor to provide own job site trailer as required. Maintain space in neat and clean order.
- .2 Provide marked and fully stocked first-aid case in a readily available location.
- .3 Subcontractors to share space as required.

1.9 EQUIPMENT, TOOL AND MATERIALS STORAGE

- .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials as required. Owner will provide storage space on site as directed.
- .2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

1.10 SANITARY FACILITIES

- .1 Washroom facilities shall be co-ordinated by the General Contractor with the Facility Manager. Maintain space in clean and neat order.
- .2 Additional requirements for washroom facilities shall be the responsibility of the Contractor.

1.11 CONSTRUCTION SIGNAGE

- .1 No other signs or advertisements, other than warning signs, are permitted on site unless approved.
- .2 Signs and notices for safety and instruction in both official languages Graphic symbols to CAN/CSA-Z321.
- .3 Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project or earlier if directed by Consultant.

1.12 PROTECTION AND MAINTENANCE OF TRAFFIC

- .1 Provide access as necessary to maintain traffic.
- .2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Consultant.
- .3 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs as required.

- .4 Protect travelling public from damage to person and property.
- .5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
- .6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
- .7 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
- .8 Dust control: adequate to ensure safe operation at all times.
- .9 Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.

1.13 CLEAN-UP

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways.
- .3 Store materials resulting from demolition activities that are salvageable.
- .4 Stack stored new or salvaged material not in construction facilities.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 INSTALLATION AND REMOVAL

- .1 Provide temporary controls in order to execute Work expeditiously.
- .2 Remove from site all such work after use.

1.2 GUARD RAILS AND BARRICADES

- .1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs.
- .2 Provide as required by governing authorities.

1.3 DUST TIGHT SCREENS

- .1 Provide dust tight screens or partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.
- .2 Maintain and relocate protection until such work is complete.

1.4 ACCESS TO SITE

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

1.5 PUBLIC TRAFFIC FLOW

- .1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect public.
- .2 Co-ordinate sidewalk closure in accordance with the Town of Atikokan and comply with the Accessibility for Ontarians with Disabilities Act (AODA).

1.6 FIRE ROUTES

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

1.7 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

- .1 Protect surrounding private and public property from damage during performance of Work.
- .2 Be responsible for damage incurred.

1.8 PROTECTION OF BUILDING FINISHES

- .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- .2 Provide necessary screens, covers, and hoardings.
- .3 Confirm with Consultant locations and installation schedule 3 days prior to installation.
- .4 Be responsible for damage incurred due to lack of or improper protection.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 QUALITY

- .1 Refer to Canadian Construction Documents Committee (CCDC).
 - .1 CCDC 2-2020, Stipulated Price Contract.
- .2 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .3 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
- .4 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .5 Should disputes arise as to quality or fitness of products, decision rests strictly with Consultant based upon requirements of Contract Documents.
- .6 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .7 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.2 AVAILABILITY

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

1.3 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.

- .4 Store sheet materials, and lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .5 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .6 Remove and replace damaged products at own expense and to satisfaction of Consultant.
- .7 Touch-up damaged factory finished surfaces to Consultant's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.4 TRANSPORTATION

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

1.5 MANUFACTURER'S INSTRUCTIONS

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

1.6 QUALITY OF WORK

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

1.7 CO-ORDINATION

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

1.8 CONCEALMENT

- .1 Before installation inform Consultant if there is interference. Install as directed by Consultant.

1.9 REMEDIAL WORK

- .1 Refer to Canadian Construction Documents Committee (CCDC).
 - .1 CCDC 2-2020, Stipulated Price Contract.

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

1.10 LOCATION OF FIXTURES

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

1.11 FASTENINGS

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

1.12 FASTENINGS - EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
- .3 Bolts may not project more than one diameter beyond nuts.
- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.13 PROTECTION OF WORK IN PROGRESS

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

1.14 EXISTING UTILITIES

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

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

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.3 EXISTING SERVICES

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

1.4 LOCATION OF EQUIPMENT AND FIXTURES

- .1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3 Inform Consultant of impending installation and obtain approval for actual location.
- .4 Submit field drawings to indicate relative position of various services and equipment when required by Consultant.

1.5 RECORDS

- .1 Maintain a complete, accurate log of control and survey work as it progresses.
- .2 On completion of foundations and major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of Work.
- .3 Record locations of maintained, re-routed and abandoned service lines.

1.6 ACTION AND INFORMATIONAL SUBMITTALS

- .1 On request of Consultant, submit documentation to verify accuracy of field engineering work.

1.7 SUBSURFACE CONDITIONS

- .1 Promptly notify Consultant in writing if subsurface conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.
- .2 After prompt investigation, should Consultant determine that conditions do differ materially, instructions will be issued for changes in Work as provided in Changes and Change Orders.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit written request in advance of cutting or alteration which affects:
 - .1 Structural integrity of elements of project.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of operational elements.
 - .4 Visual qualities of sight-exposed elements.
 - .5 Work of Owner or separate contractor.
- .3 Include in request:
 - .1 Identification of project.
 - .2 Location and description of affected Work.
 - .3 Statement on necessity for cutting or alteration.
 - .4 Description of proposed Work, and products to be used.
 - .5 Alternatives to cutting and patching.
 - .6 Effect on Work of Owner or separate contractor.
 - .7 Written permission of affected separate contractor.
 - .8 Date and time work will be executed.

1.2 MATERIALS

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

1.3 PREPARATION

- .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering, inspect conditions affecting performance of Work.
- .3 Beginning of cutting or patching means acceptance of existing conditions.
- .4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.4 EXECUTION

- .1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.
- .2 Fit several parts together, to integrate with other Work.

- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .7 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- .8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- .9 Restore work with new products in accordance with requirements of Contract Documents.
- .10 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .11 At penetrations of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material in accordance with mechanical specifications, full thickness of construction element.
- .12 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.
- .13 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site, unless approved by Consultant.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Provide on-site containers for collection of waste materials and debris.
- .5 Provide and use marked separate bins for recycling. Refer to Section 01 74 19 - Waste Management and Disposal.
- .6 Dispose of waste materials and debris off site.
- .7 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .8 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .9 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .10 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .11 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.2 FINAL CLEANING

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris other than that caused by Owner or other Contractors.
- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

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

1.3 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 51 00 - Temporary Utilities
- .2 Section 01 52 00 - Construction Facilities
- .3 Clean Waste: Untreated and unpainted; not contaminated with oils, solvents, sealants or similar materials.
- .4 Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, repair and demolition operations.
- .5 Hazardous: Exhibiting the characteristics of hazardous substances including properties such as ignitability, corrosiveness, toxicity or reactivity.
- .6 Non hazardous: Exhibiting none of the characteristics of hazardous substances, including properties such as ignitability, corrosiveness, toxicity, or reactivity.
- .7 Non toxic: Not poisonous to humans either immediately or after a long period of exposure.
- .8 Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- .9 Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- .10 Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form; recycling does not include burning, incinerating, or thermally destroying waste.
- .11 Return: To give back reusable items or unused products to vendors for credit.
- .12 Reuse: To reuse a construction waste material in some manner on the project site.
- .13 Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- .14 Sediment: Soil and other debris that has been eroded and transported by storm or well production run off water.
- .15 Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- .16 Toxic: Poisonous to humans either immediately or after a long period of exposure.
- .17 Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- .18 Volatile Organic Compounds (VOC's): Chemical compounds common in and emitted by many building products over time through outgassing:
 - .1 Solvents in paints and other coatings;
 - .2 Wood preservatives; strippers and household cleaners;
 - .3 Adhesives in particleboard, fiberboard, and some plywood; and foam insulation.

- .4 When released, VOC's can contribute to the formation of smog and can cause respiratory tract problems, headaches, eye irritations, nausea, damage to the liver, kidneys, and central nervous system, and possibly cancer.

- .19 Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.2 DELIVERY, STORAGE AND HANDLING

- .1 Storage Requirements: Implement a recycling/reuse program that includes separate collection of waste materials as appropriate to the project waste and the available recycling and reuse programs in the project area.
- .2 Handling Requirements: Clean materials that are contaminated before placing in collection containers and ensure that waste destined for landfill does not get mixed in with recycled materials:
 - .1 Deliver materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to recycling process.
 - .2 Arrange for collection by or delivery to the appropriate recycling or reuse facility.
- .3 Hazardous Waste and Hazardous Materials: Handle in accordance with applicable regulations.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

- .1 Acceptance of Work Procedures:
 - .1 Contractor's Inspection: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Consultant 2 days in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
 - .2 Request Consultant's inspection.
 - .2 Consultant's Inspection:
 - .1 Consultant and Contractor to inspect Work and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.
 - .3 Completion Tasks: submit written certificates in English that tasks have been performed as follows:
 - .1 Work: completed and inspected for compliance with Contract Documents.
 - .2 Defects: corrected and deficiencies completed.
 - .3 Equipment and systems: tested, adjusted and balanced and fully operational.
 - .4 Certificates required by Fire Commissioner, Fire Chief: submitted.
 - .5 Operation of systems: demonstrated to Owner's personnel.
 - .6 Commissioning of mechanical systems: completed in accordance with Requirements and copies of final Commissioning Report submitted to Consultant.
 - .7 Work: complete and ready for final inspection.
 - .4 Final Inspection:
 - .1 When completion tasks are done, request final inspection of Work by Consultant, and Contractor.
 - .2 When work is incomplete according to Owner and Consultant, complete outstanding items and request re-inspection.
 - .5 Declaration of Substantial Performance: when Consultant considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.
 - .6 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.
 - .7 Final Payment:
 - .1 When Consultant considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.

- .8 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.2 FINAL CLEANING

- .1 Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 **Two weeks prior to Substantial Performance of the Work**, submit to the Consultant, two final hard copies and one digital copy of operating and maintenance manuals in English.
- .3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.
- .4 Provide evidence, if requested, for type, source and quality of products supplied.

1.2 FORMAT

- .1 Organize data as instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
- .3 When multiple binders are used correlate data into related consistent groupings.
 - .1 Identify contents of each binder on spine.
- .4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .5 Arrange content by systems, under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab.
 - .1 Bind in with text; fold larger drawings to size of text pages.
- .9 Provide scaled CAD files in hard copy format in binder.
- .10 Provide two hard copies of Operation and Maintenance (O & M) Manuals and one digital copy on USB drive.

1.3 CONTENTS - PROJECT RECORD DOCUMENTS

- .1 Table of Contents for Each Volume: provide title of project;
 - .1 Date of submission; names.
 - .2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.
 - .3 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
 - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

- .3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Typewritten Text: as required to supplement product data.
 - .1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.
- .6 Training: provide adequate training for Owner's staff so that they are comfortable with the operation of any and all new equipment and procedures.

1.4 AS -BUILT DOCUMENTS AND SAMPLES

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

1.5 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- .1 Record information on set of black line opaque drawings, provided by Consultant.
- .2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress.
 - .1 Do not conceal Work until required information is recorded.

- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
 - .1 Measured depths of elements of foundation in relation to finish first floor datum.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .4 Field changes of dimension and detail.
 - .5 Changes made by change orders.
 - .6 Details not on original Contract Drawings.
 - .7 Referenced Standards to related shop drawings and modifications.
- .5 Specifications: mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.
- .6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.
- .7 Provide digital photos, if requested, for site records.

1.6 EQUIPMENT AND SYSTEMS

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

- .10 Provide installed control diagrams by controls manufacturer.
- .11 Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.
- .12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .14 Include test and balancing reports as specified in Section 01 45 00 - Quality Control.
- .15 Additional requirements: as specified in individual specification sections.

1.7 MATERIALS AND FINISHES

- .1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.
 - .1 Provide information for re-ordering custom manufactured products.
- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .3 Moisture-protection and weather-exposed products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .4 Additional requirements: as specified in individual specifications sections.

1.8 MAINTENANCE MATERIALS

- .1 Extra Stock Materials:
 - .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
 - .2 Provide items of same manufacture and quality as items in Work.
 - .3 Deliver to site; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Consultant.
 - .2 Include approved listings in Maintenance Manual.
 - .5 Obtain receipt for delivered products and submit prior to final payment.
- .2 Special Tools:
 - .1 Provide special tools, in quantities specified in individual specification section.
 - .2 Provide items with tags identifying their associated function and equipment.
 - .3 Deliver to site; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Consultant.
 - .2 Include approved listings in Maintenance Manual.

1.9 DELIVERY, STORAGE AND HANDLING

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

1.10 WARRANTIES AND BONDS

- .1 Submit, warranty information made available during construction phase, to Consultant for approval prior to each monthly pay estimate.
- .2 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
 - .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
 - .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
 - .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
 - .4 Verify that documents are in proper form, contain full information, and are notarized.
 - .5 Co-execute submittals when required.
 - .6 Retain warranties and bonds until time specified for submittal.
- .3 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .4 Conduct joint 6 month warranty inspection, measured from time of acceptance, by Consultant.
- .5 Include information contained in warranty management plan as follows:
 - .1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.
 - .2 Listing and status of delivery of Certificates of Warranty for extended warranty items, to include HVAC balancing, motors, transformers, and commissioned systems such as fire protection, alarm systems, and lightning protection systems.
 - .3 Provide list for each warranted equipment, item, feature of construction or system indicating:
 - .1 Name of item.
 - .2 Model and serial numbers.
 - .3 Location where installed.
 - .4 Name and phone numbers of manufacturers or suppliers.
 - .5 Names, addresses and telephone numbers of sources of spare parts.

- .6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
- .7 Cross-reference to warranty certificates as applicable.
- .8 Starting point and duration of warranty period.
- .9 Summary of maintenance procedures required to continue warranty in force.
- .10 Cross-Reference to specific pertinent Operation and Maintenance manuals.
- .11 Organization, names and phone numbers of persons to call for warranty service.
- .12 Typical response time and repair time expected for various warranted equipment.
- .4 Contractor's plans for attendance at 6 month post-construction warranty inspections.
- .5 Procedure and status of tagging of equipment covered by extended warranties.
- .6 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.
- .6 Respond in timely manner to oral or written notification of required construction warranty repair work.
- .7 Written verification to follow oral instructions.
- .1 Failure to respond will be cause for the Consultant to proceed with action against Contractor.

1.11 WARRANTY TAGS

- .1 Tag, at time of installation, each warranted item. Provide durable, oil and water resistant tag approved by Consultant.
- .2 Attach tags with copper wire and spray with waterproof silicone coating.
- .3 Leave date of acceptance until project is accepted for occupancy.
- .4 Indicate following information on tag:
 - .1 Type of product/material.
 - .2 Model number.
 - .3 Serial number.
 - .4 Contract number.
 - .5 Warranty period.
 - .6 Inspector's signature.
 - .7 Construction Contractor.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.

1.2 SITE CONDITIONS

- .1 Maintain access to existing means of egress, walkways, corridors, exits, and other adjacent occupied or used facilities:
 - .1 Do not close or obstruct means of egress, walkways, corridors, exits, or other occupied or used facilities without written acceptance from authorities having jurisdiction.

1.3 EXISTING CONDITIONS

- .1 Hazardous Materials: Suspected hazardous materials were sampled during the field investigation. The following hazardous materials were sought during the inspection:
 - .1 Asbestos containing materials.
 - .2 Lead.
 - .3 Crystalline silica.
 - .4 Mercury.
 - .5 Polychlorinated Biphenyls (PCB).
 - .6 Mould.
 - .7 Cellulose fibres.
 - .8 Other man made vitreous fibres.
- .2 Results are contained within Appendix A. Asbestos was detected in the following locations:
 - .1 Janitor closet floor tile.
 - .2 Water closet drywall.
 - .3 Water closet drywall joint compound.
 - .4 Storage room ceiling.
- .2 If material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify Consultant immediately.
 - .1 Proceed only after receipt of written instructions have been received from Consultant.
- .3 Notify Consultant before disrupting building access or services.

Part 2 Products

2.1 TEMPORARY SUPPORT STRUCTURES

- .1 Design temporary support structures required for demolition work and underpinning and other foundation supports necessary for the project using a qualified professional engineer licensed in Ontario.

Part 3 Execution

3.1 EXAMINATION

- .1 Survey existing conditions and correlate with requirements indicated to determine extent of demolition required.
- .2 Review Project Record Documents of existing construction provided by Consultant.
- .3 Consultant does not guarantee that existing conditions are the same as those indicated in Project Record Documents.
- .4 Inventory and record the condition of items being removed and salvaged.
- .5 When unanticipated mechanical, electrical, or structural elements are encountered, investigate and measure the nature and extent of the element.
- .6 Promptly submit a written report to Consultant.
- .7 Verify that hazardous materials have been remediated before proceeding with demolition operations.

3.2 PREPARATION

- .1 Protection of In-Place Conditions:
 - .1 Prevent movement, settlement, or damage to adjacent structures, utilities, and parts of building to remain in place. Provide bracing and shoring required.
 - .2 Keep noise, dust, and inconvenience to occupants to minimum.
 - .3 Protect building systems, services and equipment.
 - .4 Provide temporary dust screens, covers, railings, supports and other protection as required.
- .2 Demolition/Removal:
 - .1 Remove parts of existing building to permit new construction.
 - .2 Trim edges of partially demolished building elements to tolerances as defined by Consultant to suit future use.
 - .3 At end of each day's work, leave Work in safe and stable condition.
 - .4 Protect interiors of parts not to be demolished from exterior elements at all times.
 - .5 Demolish to minimize dusting. Keep materials wetted as directed by Consultant.
 - .6 Only dispose of material specified by selected alternative disposal option as directed by Consultant for own use.

3.3 SITE RESTORATION & REPAIRS

- .1 Provide a smooth transition between adjacent existing grades and new grades.
- .2 General: Promptly repair damage to adjacent construction caused by demolition operations.
- .3 Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
- .4 Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

3.4 CLEANING

- .1 Progress Cleaning:
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.
- .3 Waste Management: separate waste materials for reuse and recycling.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit proof satisfactory to Consultant that suitable arrangements have been made to dispose of asbestos containing waste in accordance with requirements of authority having jurisdiction.
- .3 Submit Provincial/Territorial and/or local requirements for Notice of Project Form.
- .4 Submit proof of Contractor's Asbestos Liability Insurance.
- .5 Submit to Consultant necessary permits for transportation and disposal of asbestos containing waste and proof that asbestos containing waste has been received and properly disposed.
- .6 Submit proof satisfactory to Consultant that all asbestos workers have received appropriate training and education by a competent person in the hazards of asbestos exposure, good personal hygiene, entry and exit from Asbestos Work Area, aspects of work procedures and protective measures while working in Asbestos Work Areas, and the use, cleaning and disposal of respirators and protective clothing.
- .7 Submit proof that supervisory personnel have attended asbestos abatement course. Minimum of one supervisor for every ten workers.
- .8 Submit Worker's Compensation Board status and transcription of insurance.
- .9 Submit documentation including test results, fire and flammability data, and WHMIS Safety Data Sheets (SDS) for chemicals or materials including:
 - .1 Encapsulants;
 - .2 Amended water;
 - .3 Slow drying sealer.
- .10 Submit proof satisfactory to Consultant that employees have respirator fitting and testing. Workers must be fit tested (irritant smoke test) with respirator that is personally issued.

1.2 EXISTING CONDITIONS

- .1 Hazardous Materials: Suspected hazardous materials were sampled during the field investigation. Results are contained within Appendix A. Asbestos was detected in the following items
 - .1 Janitor closet floor tile.
 - .2 Water closet drywall.
 - .3 Water closet drywall joint compound.
 - .4 Storage room ceiling.
- .2 If material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify Consultant immediately.

- .1 Proceed only after receipt of written instructions have been received from Consultant.
- .3 Notify Consultant before disrupting building access or services.

1.3 QUALITY ASSURANCE

- .1 Regulatory Requirements: comply with Federal, Provincial/Territorial and local requirements pertaining to asbestos, provided that in case of conflict among these requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at the time work is performed.
- .2 Health and Safety:
 - .1 Do construction occupational health and safety in accordance with Section 01 35 29.13 - Health, Safety, and Emergency Response Procedures for Contaminated Sites.
 - .2 Safety Requirements: worker and visitor protection.
 - .1 Protective equipment and clothing to be worn by workers while in Asbestos Work Area include:
 - i. As a minimum, air purifying respirator with P-100 particulate filter, personally issued to worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to Provincial Authority having jurisdiction. The respirator to be fitted so that there is an effective seal between the respirator and the worker's face, unless the respirator is equipped with a hood or helmet. The respirator to be cleaned, disinfected and inspected after use on each shift, or more often if necessary, when issued for the exclusive use of one worker, or after each use when used by more than one worker. The respirator to have damaged or deteriorated parts replaced prior to being used by a worker; and, when not in use, to be stored in a convenient, clean and sanitary location. The employer to establish written procedures regarding the selection, use and care of respirators, and a copy of the procedures to be provided to and reviewed with each worker who is required to wear a respirator. A worker not to be assigned to an operation requiring the use of a respirator unless he or she is physically able to perform the operation while using the respirator.

- ii. Disposable-type protective clothing (high-density polyethylene protective clothing (Tyvek or similar) that does not readily retain or permit penetration of asbestos fibres. Protective clothing to be provided by the employer and worn by every worker who enters the work area, and the protective clothing shall consist of a head covering and full body covering that fits snugly at the ankles, wrists and neck, in order to prevent asbestos fibres from reaching the garments and skin under the protective clothing to include suitable footwear, and to be repaired or replaced if torn.
- .3 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.
- .4 Before leaving Asbestos Work Area, the worker can decontaminate his or her protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing, or, if the protective clothing will not be reused, place it in a container for dust and waste. The container to be dust tight, suitable for asbestos waste, impervious to asbestos, identified as asbestos waste, cleaned with a damp cloth or a vacuum equipped with a HEPA filter immediately before removal from the work area, and removed from the work area frequently and at regular intervals.
- .5 Ensure workers wash hands and face when leaving Asbestos Work Area.
- .6 Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.
- .7 Visitor Protection:
 - .1 Provide protective clothing and approved respirators to Authorized Visitors to work areas.
 - .2 Instruct Authorized Visitors in the use of protective clothing, respirators and procedures.
 - .3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Asbestos Work Area.

1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard and packaging material for recycling in accordance with Waste Management Plan.
- .4 Place materials defined as hazardous or toxic in designated containers.
- .5 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.
- .6 Fold up metal banding, flatten and place in designated area for recycling.

- .7 Disposal of asbestos waste generated by removal activities must comply with Federal, Provincial/Territorial and Municipal regulations. Dispose of asbestos waste in sealed double thickness 6 mils bags or leak proof drums. Label containers with appropriate warning labels.
- .8 Provide manifests describing and listing waste created. Transport containers by approved means to licenced landfill for burial.

1.4 EXISTING CONDITIONS

- .1 Reports and information pertaining to ACMS to be handled, removed, or otherwise disturbed and disposed of during this Project are bound into this specification in Appendix A.
- .2 Notify Consultant of friable material discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material until instructed by Consultant.

1.5 PERSONNEL TRAINING

- .1 Before beginning Work, provide Consultant satisfactory proof that every worker has had instruction and training in hazards of asbestos exposure, in personal hygiene and work practices, in use of glove bag procedures, and in use, cleaning, and disposal of respirators and protective clothing.
- .2 Instruction and training related to respirators includes, at minimum:
 - .1 Fitting of equipment.
 - .2 Inspection and maintenance of equipment.
 - .3 Disinfecting of equipment.
 - .4 Limitations of equipment.
- .3 Instruction and training must be provided by competent, qualified person.

Part 2 Products

2.1 MATERIALS

- .1 Drop and Enclosure Sheets:
 - .1 Polyethylene: 0.15 mm thick.
 - .2 FR polyethylene: 0.15 mm thick woven fibre reinforced fabric bonded both sides with polyethylene.
- .2 Wetting Agent: 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with water in concentration to provide thorough wetting of asbestos containing material.
- .3 Waste Containers: contain waste in two separate containers.
 - .1 Inner container: 0.15 mm thick sealable polyethylene bag, or where glove bag method is used, glove bag itself.

- .2 Outer container: sealable metal or fibre type where there are sharp objects included in waste material; otherwise outer container may be sealable metal or fibre type or second 0.15 mm thick sealable polyethylene bag.
- .3 Labelling requirements: affix preprinted cautionary asbestos warning, in both official languages, that is visible when ready for removal to disposal site.
- .4 Glove bag:
 - .1 Acceptable materials: safe-T-Strip products in configuration suitable for Work, or Alternative material approved by addendum during tendering period in accordance with Instructions to Tenderers.
 - .2 The glove bag to be equipped with:
 - .1 Sleeves and gloves that are permanently sealed to the body of the bag to allow the worker to access and deal with the insulation and maintain a sealed enclosure throughout the work period.
 - .2 Valves or openings to allow insertion of a vacuum hose and the nozzle of a water sprayer while maintaining the seal to the pipe, duct or similar structure.
 - .3 A tool pouch with a drain.
 - .4 A seamless bottom and a means of sealing off the lower portion of the bag.
 - .5 A high strength double throw zipper and removable straps, if the bag is to be moved during the removal operation.
- .5 Tape: tape suitable for sealing polyethylene to surfaces under both dry and wet conditions using amended water.
- .6 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for purpose of trapping residual asbestos fibres.
 - .1 Sealer: flame spread and smoke developed rating less than 50 and be compatible with new fireproofing.
- .7 Encapsulant: penetrating type conforming to CAN/CGSB-1.205 and Ontario Regulation 278/05 Asbestos on Construction Projects and in Buildings and Repair Operations.

Part 3 Execution

3.1 SUPERVISION

- .1 Minimum of one Supervisor for every ten workers is required.
- .2 Approved Supervisor must remain within Asbestos Work Area during disturbance, removal, or other handling of asbestos-containing materials.

3.2 PROCEDURES

- .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

- .2 Before beginning Work, at each access to Asbestos Work Area, install warning signs in upper case 'Helvetica Medium' letters reading as follows, where number in parentheses indicates font size to be used: 'CAUTION ASBESTOS HAZARD AREA (25 mm) / NO UNAUTHORIZED ENTRY (19 mm) / WEAR ASSIGNED PROTECTIVE EQUIPMENT (19 mm) / BREATHING ASBESTOS DUST MAY CAUSE SERIOUS BODILY HARM (7 mm)'.
- .3 Before beginning Work remove visible dust from surfaces in work area where dust is likely to be disturbed during course of work.
 - .1 Use HEPA vacuum or damp cloths where damp cleaning does not create hazard and is otherwise appropriate.
 - .2 Do not use compressed air to clean up or remove dust from any surface.
- .4 Prevent spread of dust from Asbestos Work Area using measures appropriate to work to be done.
 - .1 Use FR polyethylene drop sheets over flooring such as carpeting that absorbs dust and over flooring in work areas where dust or contamination cannot otherwise be safely contained.
 - .2 When removing suspended ceilings and walls themselves do not enclose work area and when removing asbestos containing material from piping or equipment and "glove bag" method is not used, erect enclosure of polyethylene sheeting around work area, shut off mechanical ventilation system serving work area and seal ventilation ducts to and from work area.
- .5 Before removing suspended ceilings, remove friable material on upper surfaces using HEPA vacuum equipment.
- .6 Remove loose material by HEPA vacuum; thoroughly wet friable material containing asbestos to be removed or disturbed before and during Work unless wetting creates hazard or causes damage.
 - .1 Use garden reservoir type low - velocity sprayer or airless spray equipment capable of producing mist or fine spray.
 - .2 Perform Work in a manner to reduce dust creation to lowest levels practicable.
- .7 Pipe Insulation Removal Using Glove Bag:
 - .1 A glove bag not to be used to remove insulation from a pipe, duct or similar structure if:
 - .1 It may not be possible to maintain a proper seal for any reason including, without limitation:
 - .2 The bag could become damaged for any reason including, without limitation.
 - .2 Upon installation of the glove bag, inspect bag for any damage or defects. If any damage or defects are found, the glove bag is to be repaired or replaced. The glove bag to be inspected at regular intervals for damage and defects, and repair or replaced, as appropriately. The asbestos containing contents of the damaged or defective glove bag found during removal are to be wetted and the glove bag and its contents are to be removed and disposed of in an appropriate waste disposal container. Any damaged or defective glove bags are not be reused.

- .3 Place tools necessary to remove insulation in tool pouch. Wrap bag around pipe and close zippers. Seal bag to pipe with cloth straps.
- .4 Place hands in gloves and use necessary tools to remove insulation. Arrange insulation in bag to obtain full capacity of bag.
- .5 Insert nozzle of garden reservoir type sprayer into bag through valve and wash down pipe and interior of bag thoroughly. Wet surface of insulation in lower section of bag.
- .6 To remove bag after completion of stripping, wash top section and tools thoroughly. Remove air from top section through elasticized valve using a HEPA vacuum. Pull polyethylene waste container over glove bag before removing from pipe. Release one strap and remove freshly washed tools. Place tools in water. Remove second strap and zipper. Fold over into waste container and seal.
- .7 After removal of bag ensure that pipe is free of residue. Remove residue using HEPA vacuum or wet cloths. Ensure that surfaces are free of sludge which after drying could release asbestos dust into atmosphere. Seal exposed surfaces of pipe and ends of insulation with slow drying sealer to seal in any residual fibres.
- .8 Upon completion of Work shift, cover exposed ends of remaining pipe insulation with polyethylene taped in place.
- .8 Work is subject to visual inspection and air monitoring. Contamination of surrounding areas indicated by visual inspection or air monitoring will require complete enclosure and clean-up of affected areas.
- .9 Cleanup:
 - .1 Frequently during Work and immediately after completion of work, clean up dust and asbestos containing waste using HEPA vacuum or by damp mopping.
 - .2 Place dust and asbestos containing waste in sealed dust tight waste bags. Treat drop sheets and disposable protective clothing as asbestos waste and wet and fold to contain dust and then place in waste bags.
 - .3 Immediately before their removal from Asbestos Work Area and disposal, clean each filled waste bag using damp cloths or HEPA vacuum and place in second clean waste bag.
 - .4 Seal and remove double bagged waste from site. Dispose of in accordance with requirements of Provincial/Territorial and Federal authority having jurisdiction. Supervise dumping and ensure that dump operator is fully aware of hazardous nature of material to be dumped and that guidelines and regulations for asbestos disposal are followed.
 - .5 Perform final thorough clean-up of Asbestos Work Areas and adjacent areas affected by Work using HEPA vacuum.

3.3 AIR MONITORING

- .1 From beginning of Work until completion of cleaning operations, Contractor to take air samples on daily basis outside of Asbestos Work Area enclosure in accordance with Ontario Occupational Health and Safety Regulations requirements.
 - .1 Contractor will be responsible for monitoring inside enclosure in accordance with applicable Provincial/Territorial Occupational Health and Safety Regulations.

- .2 If air monitoring shows that areas outside Asbestos Work Area enclosures are contaminated, enclose, maintain and clean these areas in same manner as that applicable to Asbestos Work Area.
- .3 Ensure that respiratory safety factors are not exceeded.
- .4 During the course of Work, Contractor to measure fibre content of air outside Work areas by means of air samples analyzed by Phase Contrast Microscopy (PCM).
- .1 Stop Work when PCM measurements exceed 0.05 f/cc and correct procedures.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 ASTM International
 - .1 ASTM D1751-23, Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non extruding and Resilient Bituminous Types).
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-19.24-M90, Multicomponent, Chemical-Curing Sealing Compound.
- .3 CSA International
 - .1 CSA-A23.1/A23.2-24, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA A3000-23, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
 - .3 CAN/CSA-G30.18-21, Billet-Steel Bars for Concrete Reinforcement.
 - .4 CAN/CSA-A23.3-24, Design of Concrete Structures.
 - .5 CSA-G30.18-21, Carbon Steel Bars for Concrete Reinforcement.
 - .6 CSA-G40.20/G40.21-13 (R2023), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .7 CSA W186-21, Welding of Reinforcing Bars in Reinforced Concrete Construction.
- .4 Reinforcing Steel Institute of Canada (RSIC)
 - .1 RSIC-2004, Reinforcing Steel Manual of Standard Practice.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 Submittal Procedures.
- .2 Shop Drawings:
 - .1 Submit placing drawings prepared in accordance with plans to clearly show size, shape, location and necessary details of reinforcing.
 - .2 Submit drawings showing formwork and falsework design to: CSA A23.1/A23.2.
 - .3 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario.
- .3 Provide testing and inspection results reports for review by Engineer upon request and do not proceed without written approval when deviations from mix design or parameters are found.
- .4 Concrete hauling time: provide for review by Engineer deviations exceeding maximum allowable time of 120 minutes for concrete to be delivered to site of Work and discharged after batching.
- .5 Prepare reinforcement drawings in accordance with RSIC Manual of Standard Practice.

- .6 Reinforcement Shop Drawings:
 - .1 Submit drawings.
 - .1 Indicate placing of reinforcement and:
 - .1 Bar bending details.
 - .2 Lists.
 - .3 Quantities of reinforcement.
 - .4 Sizes, spacings, locations of reinforcement and mechanical splices if approved by Engineer, with identifying code marks to permit correct placement without reference to structural drawings.
 - .2 Detail lap lengths and bar development lengths to CAN/CSA-A23.3, unless otherwise indicated.
 - .1 Provide Type B unless otherwise indicated.

1.3 QUALITY ASSURANCE

- .1 Provide to Engineer, four weeks minimum prior to starting concrete work, valid and recognized certificate from plant delivering concrete.
 - .1 Quality Control Plan: provide written report to Engineer verifying compliance that concrete in place meets performance requirements.
- .2 Minimum four weeks prior to starting concrete work, provide proposed quality control procedures for review by Consultant on following items:
 - .1 Falsework erection.
 - .2 Hot weather concrete.
 - .3 Cold weather concrete.
 - .4 Curing.
 - .5 Finishes.
 - .6 Formwork removal.
 - .7 Joints.
- .3 Submit in accordance with Section 01 45 00 - Quality Control.
 - .1 Mill Test Report: upon request, provide Engineer with certified copy of mill test report of reinforcing steel, minimum four weeks prior to beginning reinforcing work.
 - .2 Upon request submit in writing to Engineer proposed source of reinforcement material to be supplied.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Delivery and Acceptance Requirements:
 - .1 Concrete hauling time: deliver to site of Work and discharged within 120 minutes maximum after batching.

- .1 Do not modify maximum time limit without receipt of prior written agreement from Engineer and concrete producer as described in CSA A23.1/A23.2.
 - .2 Deviations to be submitted for review by the Engineer.
- .2 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.
- .3 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .4 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .5 Storage and Handling Requirements:
 - .1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.

1.5 SITE CONDITIONS

- .1 Placing concrete during rain or weather events that could damage concrete is prohibited.
- .2 Protect newly placed concrete from rain or weather events in accordance with CSA A23.1/A23.2
- .3 Cold weather protection:
 - .1 Maintain protection equipment, in readiness on Site.
 - .2 Use such equipment when ambient temperature below 5°C, or when temperature may fall below 5°C before concrete cured.
 - .3 Placing concrete upon or against surface at temperature below 5°C is prohibited.
- .4 Hot weather protection:
 - .1 Protect concrete from direct sunlight when ambient temperature above 27°C.
 - .2 Prevent forms of getting too hot before concrete placed. Apply accepted methods of cooling not to affect concrete adversely.
- .5 Protect concrete from drying.

Part 2 Products

2.1 DESIGN CRITERIA

- .1 To CSA A23.1/A23.2.

2.2 PERFORMANCE CRITERIA

- .1 Quality Control Plan: ensure concrete supplier meets performance criteria of concrete as established by Engineer and provide verification of compliance as described in PART 1 - QUALITY ASSURANCE.

2.3 MATERIALS

- .1 Use Type 10 cement for all applications.
- .2 Compressive strength of interior concrete when tested in accordance with CAN/CSA-A23.2, (9°C): average 28 day compressive strength to be minimum 25 MPa (3625 psi).
- .3 Cementing materials content: 290 to 335 kg/m³ of concrete mix.
- .4 Air content when tested in accordance with CAN/CSA-A23.2, (4C), immediately after discharge: in accordance with CSA A23.1 Table 10.
- .5 Class of exposure: Class N (interior).
- .6 Use of chemical admixture will be approved only when specified mix requirements or workability cannot be achieved by proportioning of aggregates, water, cement and air entraining admixture.
- .7 Water: to CSA A23.1/A23.2.
- .8 Other concrete materials: to CSA A23.1/A23.2.
- .9 Substitute different size bars only if permitted in writing by Engineer.
- .10 Reinforcing steel: billet steel, grade 400, deformed bars to CSA-G30.18, unless indicated otherwise.
- .11 Cold-drawn annealed steel wire ties: to ASTM A82/A82M.
- .12 Chairs, bolsters, bar supports, spacers: to CSA-A23.1/A23.2.
- .13 Mechanical splices: subject to approval of Engineer.
- .14 Plain round bars: to CSA-G40.20/G40.21.

2.4 FABRICATION

- .1 Fabricate reinforcing steel in accordance with CSA-A23.1/A23.2 and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada.
- .2 Obtain Engineer's written approval for locations of reinforcement splices other than those shown on placing drawings.
- .3 Upon approval of Engineer's, weld reinforcement in accordance with CSA W186.
- .4 Ship bundles of bar reinforcement, clearly identified in accordance with bar bending details and lists.

Part 3 Execution

3.1 FIELD BENDING

- .1 Do not field bend or field weld reinforcement except where indicated or authorized by Engineer.
- .2 When field bending is authorized, bend without heat, applying slow and steady pressure.
- .3 Replace bars, which develop cracks or splits.

3.2 PLACING REINFORCEMENT

- .1 Cutting or puncturing vapour retarder is not permitted; repair damage and reseal vapour retarder before placing concrete.
- .2 Place reinforcing steel as indicated on placing drawings in accordance with CSA-A23.1/A23.2.
- .3 Prior to placing concrete, obtain Engineer's approval of reinforcing material and placement.
- .4 Ensure cover to reinforcement is maintained during concrete pour.
- .5 Reinforcing steel in the slab may be supported off the granular base using small pieces of concrete block.

3.3 PREPARATION

- .1 Obtain Consultant's written approval before placing concrete.
 - .1 Provide Engineer 24 hours notice before each concrete pour.
- .2 Place concrete reinforcing in accordance with Contract Documents.
- .3 During concreting operations:
 - .1 Development of cold joints not allowed.
 - .2 Ensure concrete delivery and handling facilitates placing with minimum of rehandling, and without damage to existing structure or Work.
- .4 Disturbing reinforcement and inserts during concrete placement is prohibited.
- .5 Before placing of concrete obtain Consultant's approval of proposed method for protection of concrete during placing and curing.
- .6 Protect previous Work from staining.
- .7 Clean and remove stains prior to application for concrete finishes.

3.4 FORMWORK

- .1 Install in accordance with the following requirements:
 - .1 Provide forms of sufficient strength to support and keep alignment under weight of spreading and finishing machines.
 - .2 Set forms true to line and grade, join neatly and tightly and secure to resist concrete pressure and impact from tampers without springing.
 - .3 Clean and oil forms before each use.
 - .4 Obtain Engineers approval of forms before placing concrete.

3.5 INSTALLATION/APPLICATION

- .1 Do cast-in-place concrete work in accordance with CSA A23.1/A23.2.
- .2 Place concrete to lines, grades and depths as indicated.
- .3 Discharge concrete into forms as soon as practical after mixing.
- .4 Use hand placing where machine spreading is not feasible.

- .5 Spread uniformly with approved equipment to thickness sufficient to allow for proper consolidation and finishing.
- .6 When completing concrete placement for day, carry placement through to scheduled control joint location.
- .7 Where concrete placement is stopped for more than 30 minutes due to breakdowns, weather or other reasons, construct extra bulkhead and construction joint as directed by Engineer.
- .8 Do not place concrete on frozen surface.
- .9 No concrete shall be placed during rain.
- .10 When rain appears imminent pouring operation should cease. Protect freshly laid concrete from rain damage and adverse weather condition and in accordance with CAN/CSA A23.1. Extend protective coverings over edges of concrete and arrange so as not to bear on unprotected edges.
- .11 Concrete placed when the ambient temperature is at or above 27 degrees C to be cured by continuous water curing from soaker hoses providing complete coverage of the pavement to minimize the temperature rise of the concrete.
- .12 When concrete has been placed in cold weather and the air temperature is expected to drop below 5 degrees C, insulating curing blankets or other suitable material shall be placed on the concrete pavement and weighted to prevent movement. Curing to continue until the cumulative number of days, or fraction thereof, during which the temperature of the concrete is 10 degrees C, has totalled a minimum of 7 days.

3.6 FINISHES

- .1 Formed surfaces exposed to view: in accordance with CSA A23.1/A23.2.
- .2 Interior concrete to receive tile: wood float or broom finish, level and true to a tolerance of 3 mm in 2.4 m in walls and 3 mm in 3 m for floors and in accordance with CSA A23.1/A23.2 Table 21, finish classification Class C.
- .3 Interior concrete to receive carpet: steel trowel finished.

3.7 CURING

- .1 Use curing compounds compatible with applied finish on concrete surfaces free of bonding agents and to CSA A23.1/A23.2.

3.8 FIELD QUALITY CONTROL

- .1 Concrete testing: to CSA A23.1/A23.2 by testing laboratory designated and arranged and paid for by the Contractor.

3.9 CLEANING

- .1 Clean in accordance with Section 01 74 00 - Cleaning.
- .2 Divert unused concrete materials from landfill to local facility after receipt of written approval from Owner
- .3 Provide appropriate area on job site where concrete trucks can be safely washed.

- .4 Disposal of unused admixtures and additive materials, concrete, concrete washwater, or cleaning materials and residues into sewer systems, into lakes, streams, onto ground or in other location to pose health or environmental hazard is prohibited.
- .5 Prevent admixtures and additive materials from entering drinking water supplies or streams.
- .6 Using appropriate safety precautions, collect liquid or solidify liquid with inert, noncombustible material and remove for disposal.
- .7 Dispose of waste in accordance with applicable local, Provincial/Territorial and National regulations.
- .8 Leave Work area clean at end of each day.
- .9 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for unit masonry products, mortar and grout, connectors, anchorage and reinforcing, and accessories. Include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit 2 copies of WHMIS SDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.
 - .3 Submit Shop Drawings for pre-blended cementitious grout for Consultant's review and approval.

1.2 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect masonry mortar packages from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

1.3 COLD WEATHER REQUIREMENTS

- .1 Supplement requirements of CAN3-A371 as follows:
 - .1 Maintain temperature of mortar between -5°C and 50°C until used.

1.4 HOT WEATHER REQUIREMENTS

- .1 Supplement requirements of CAN3-A371 as follows:
 - .1 Protect freshly laid masonry from drying too rapidly by means of waterproof, non-staining coverings.

Part 2 Products

2.1 MASONRY UNITS

- .1 Standard concrete block units: to CAN/CSA-A165.1
 - .1 Size: modular.
 - .2 Dimensions: as shown on Drawings.

- .3 Texture(s) / Profile(s): smooth.
- .4 Special shapes: provide square units for exposed corners. Provide purpose-made shapes for lintels and bond beams. Provide additional special shapes as indicated.

2.2 CONNECTORS

- .1 Bar reinforcement: to CAN/CSA-A371 and CSA G30.18, Grade 400.
- .2 Wire reinforcement: plain wire to CAN/CSA-A371 and ASTM A 1064/A 1064M, ladder type.
- .3 Connectors: to CAN/CSA-A370.
 - .1 Corrosion resistance: to CAN/CSA-A370.
 - .1 Interior: Level I.
 - .2 Ties:
 - .1 Conventional adjustable wire tie.
 - .3 Anchors: as indicated.
 - .4 Repair anchors: epoxy adhesive type to suit application.

2.3 MORTAR

- .1 Mortar: to CAN/CSA-A179.
 - .1 Use aggregate passing 1.18 mm sieve where 6 mm thick joints are indicated.
 - .2 Colour: to match existing.
- .2 Mortar Type:
 - .1 Exterior non-loadbearing walls and parapet walls: N based on proportion specifications.
 - .1 Use low VOC products in compliance with SCAQMD Rule 1168.
- .3 Water: clean and potable.
- .4 Polymer Latex: organic polymer latex admixture of butadiene-styrene type non-emulsifiable bonding admixture.

2.4 GROUT

- .1 Pre-blended, cementitious grout: non-shrink, non-metallic with minimum compressive strength of 50 MPa at 28 days, conforming to ASTM C1107 Grade Classification A.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate.
 - .2 Inform Consultant of unacceptable conditions immediately upon discovery.

- .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

3.2 INSTALLATION

- .1 Do masonry work in accordance with CAN/CSA-A371 except where specified otherwise.
 - .1 Bond: running stretcher bond with vertical joints in perpendicular alignment and centred on adjacent stretchers above and below.
 - .2 Coursing height: 200 mm for one block and one joint.
 - .3 Jointing: tool where exposed or where paint or other finish coating is specified to provide smooth compressed surface.
- .2 Build masonry plumb, level, and true to line, with vertical joints in alignment.
- .3 Layout coursing and bond to achieve correct coursing heights, and continuity of bond above and below openings, with minimum of cutting.

3.3 CONSTRUCTION

- .1 Exposed masonry:
 - .1 Remove chipped, cracked, and otherwise damaged units, in exposed masonry and replace with undamaged units.
 - .2 Cut out for electrical switches, outlet boxes, and other recessed or built-in objects. Make cuts straight, clean, and free from uneven edges.
- .2 Building-in:
 - .1 Install masonry connectors and reinforcement where indicated on drawings.
 - .2 Build in items required to be built into masonry.
 - .3 Prevent displacement of built-in items during construction. Check plumb, location and alignment frequently, as work progresses.
- .3 Support of loads:
 - .1 Use 32 MPa concrete to Section 03 30 00 - Cast-in-Place Concrete, where concrete fill is used in lieu of solid units.
 - .2 Use grout to CAN/CSA-A179 where grout is used in lieu of solid units
 - .3 Install building paper below voids to be filled with grout; keep paper 25 mm back from faces of units.
- .4 Provision for movement:
 - .1 Leave 6 mm space below shelf angles.
 - .2 Leave 6 mm space between top of non-load bearing walls and partitions and structural elements. Do not use wedges.
 - .3 Built masonry to tie in with stabilizers, with provision for vertical movement.
 - .4 Build expansion and control joints where and as indicated.
- .5 Interface with other work:
 - .1 Cut openings in existing work as indicated.

- .2 Openings in walls: approved by Consultant.
- .3 Make good existing work. Use materials to match existing.
- .7 Interface with other work:
 - .1 Cut openings in existing work as indicated.
 - .2 Make good existing work. Use materials to match existing.
- .8 Install weep hole vents in vertical joints immediately over flashings, in exterior wythes of cavity wall and masonry veneer wall construction, at maximum horizontal spacing of 610 mm on center.
- .9 Place drainage mesh in cavity as indicated as construction progresses.

3.4 REINFORCING AND CONNECTING

- .1 Install masonry connectors and reinforcement in accordance with CAN/CSA-A370, CAN/CSA-A371 and CSA S304.1 unless indicated otherwise.
- .2 Prior to placing mortar, obtain Consultant's approval of placement of connectors.

3.5 BONDING AND TYING

- .1 Bond walls of two or more wythes using metal connectors in accordance with CAN/CSA-A371, and as indicated

3.6 MODIFICATIONS TO EXISTING MASONRY

- .1 Match existing bond and coursing height of adjacent masonry to remain.
- .2 Tooth new masonry into existing masonry in run of wall and at intersections with existing partitions.
- .3 At new openings in masonry walls, remove units, clean and re-install rotated to conceal cut and expose finish surface.
- .4 Clean bond areas of adjacent masonry to remain, remove loose material and prepare masonry to receive new masonry toothed in.
- .5 Install reinforcement as necessary to provide continuity of reinforcing and stability between existing and new masonry work.
- .6 Provide repair anchors as necessary to stabilize existing masonry adjacent to and affected by the Work.

3.7 REINFORCED LINTELS AND BOND BEAMS

- .1 Reinforce masonry lintels and bond beams as indicated.
- .2 Provide bond beams at all openings reinforced with two (2) 15M bars.
- .3 Provide grouted core each side of opening reinforced with one (1) 15M bar for each grouted core.
- .4 Place and grout reinforcement in accordance with CAN/CSA-A179 and CAN/CSA-A371.

3.8 GROUTING

- .1 Grout masonry in accordance with CAN/CSA-A179, CAN/CSA-A371 and as indicated.

3.9 ANCHORS

- .1 Supply and install metal anchors as indicated.

3.10 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Remove droppings and splashings using clean sponge and water.
- .3 Clean masonry with low pressure clean water and soft natural bristle brush.
- .4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

3.11 PROTECTION

- .1 Keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect from wind-driven rain until masonry work is completed and protected by flashings or other permanent construction.
- .2 Protect masonry and other work from marking and other damage. Protect completed work from mortar droppings. Use non-staining coverings.
- .3 Repair damage to adjacent materials caused by masonry products installation.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 03 00 00.09 – Cast-in-Place Concrete – Short Form
- .2 Section 04 20 00.08 – Masonry for Minor Works
- .3 Section 09 65 99 – Resilient Flooring for Minor Works

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM C919-19, Standard Practice for Use of Sealants in Acoustical Applications.
- .2 Canadian General Standards Board (CGSB)
 - .1 CGSB 19-GP-5M-1984, Sealing Compound, One Component, Acrylic Base, Solvent Curing (Issue of 1976 reaffirmed, incorporating Amendment No. 1).
 - .2 CAN/CGSB-19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.
 - .3 CAN/CGSB-19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.
 - .4 CAN/CGSB-19.24-M90, Multicomponent, Chemical-Curing Sealing Compound

1.3 SUBMITTALS

- .1 Submit product data.
- .2 Manufacturer's product to describe.
 - .1 Caulking compound.
 - .2 Primers.
 - .3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.
- .3 Submit manufacturer's instructions.
 - .1 Instructions to include installation instructions for each product used.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Place materials defined as hazardous or toxic in designated containers.

- .2 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.
- .3 Unused sealant material must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.
- .4 Divert unused joint sealing material from landfill to official hazardous material collections site.
- .5 Empty plastic joint sealer containers are not recyclable. Do not dispose of empty containers with plastic materials destined for recycling.
- .6 Fold up metal banding, flatten, and place in designated area for recycling.

1.6 PROJECT CONDITIONS

- .1 Environmental Limitations:
 - .1 Do not proceed with installation of joint sealants under following conditions:
 - .1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4 degrees C.
 - .2 When joint substrates are wet.
- .2 Joint-Width Conditions:
 - .1 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
- .3 Joint-Substrate Conditions:
 - .1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

1.7 ENVIRONMENTAL REQUIREMENTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labeling and provision of Safety Data Sheets (SDS) acceptable to Labour Canada.
- .2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

Part 2 Products

2.1 SEALANT MATERIALS

- .1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.
- .2 When low toxicity caulks are not possible, confine usage to areas which offgas to exterior, are contained behind air barriers, or are applied several

months before occupancy to maximize offgas time.

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

2.2 SEALANT MATERIAL DESIGNATIONS

- .1 Polyurethanes One Part (Sealant Type 1):

- .1 Non-Sag to CAN/CGSB-19.24, Type 2, Class A, colour to match existing (site verify).

- .2 Acceptable Material: Tremco Dymonic.

- .2 Silicones One Part (Sealant Type 2):

- .1 To CAN/CGSB-19.13, ASTM C920 Type S, Grade NS, single component, acetoxysilicone, containing fungicide, clear colour.

- .2 Acceptable Material: Tremco Tremsil 200; GE Sanitary SCS1700.

- .3 Siliconized Acrylic Latex One Part (Sealant Type 3):

- .1 To CAN/CGSB-19.17, siliconized acrylic latex.

- .2 Acceptable Material: Tremco Tremflex 834.

- .4 Preformed Compressible and Non-Compressible back-up materials.

- .1 Polyethylene, Urethane, Neoprene or Vinyl Foam.

- .1 Extruded closed cell foam backer rod.

- .2 Size: oversize 30 to 50 %.

- .2 High Density Foam.

- .1 Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m³ density, or neoprene foam backer, size as recommended by manufacturer.

- .3 Bond Breaker Tape.

- .1 Polyethylene bond breaker tape that will not bond to sealant.

2.3 SEALANT SELECTION

- .1 Perimeters of exterior openings, where frames meet exterior facade of building: Sealant Type 1.

- .2 Seal interior perimeters of exterior openings: Sealant Type 1.

- .3 Perimeters of interior frames, as detailed and itemized: Sealant Type 2.

- .4 Perimeter of plumbing fixtures (e.g. sinks, basins, vanities): Sealant Type 2.

- .5 Perimeter / edges of countertops / backsplashes: Sealant Type 2.

- .6 Perimeter of gypsum board partitions: Sealant Type 3.

- .7 Control joints in concrete slab: Sealant Type 1

2.4 JOINT CLEANER

- .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.
- .2 Primer: as recommended by manufacturer.

Part 3 Execution

3.1 PROTECTION

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

3.2 SURFACE PREPARATION

- .1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
- .2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.
- .3 Ensure joint surfaces are dry and frost free.
- .4 Prepare surfaces in accordance with manufacturer's directions.

3.3 PRIMING

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

3.4 BACKUP MATERIAL

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

3.5 MIXING

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

3.6 APPLICATION

- .1 Sealant.
 - .1 Apply sealant in accordance with manufacturer's written instructions.
 - .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
 - .3 Apply sealant in continuous beads.
 - .4 Apply sealant using gun with proper size nozzle.
 - .5 Use sufficient pressure to fill voids and joints solid.
 - .6 Form surface of sealant with full bead, smooth, free from ridges,

- wrinkles, sags, air pockets, embedded impurities.
- .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
- .8 Remove excess compound promptly as work progresses and upon completion.
- .2 Curing.
 - .1 Cure sealants in accordance with sealant manufacturer's instructions.
 - .2 Do not cover up sealants until proper curing has taken place.
- .3 Cleanup.
 - .1 Clean adjacent surfaces immediately and leave Work neat and clean.
 - .2 Remove excess and droppings, using recommended cleaners as work progresses.
 - .3 Remove masking tape after initial set of sealant.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 07 92 00 – Joint Sealing.
- .2 Section 09 91 99 – Painting for Minor Works.

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM C36/C36M01, Standard Specification for Gypsum Wallboard.
 - .2 ASTM C475/C475M-17, Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
 - .3 ASTM C840-25, Standard Specification for Application and Finishing of Gypsum Board.
 - .4 ASTM C1002-22, Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
 - .5 ASTM C1047-19, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
- .2 Canadian Standards Association
 - .1 CAN/CSA A82.31-M91, Gypsum Board Application.
- .3 Gypsum Association
 - .1 GA-214-2021, Recommended Levels of Gypsum Board Finish.
 - .2 GA-216-2024, Application and Finishing of Gypsum Panel Products.
- .3 Underwriters' Laboratories of Canada (ULC)
 - .1 ULC-S102-2019 (R:2024), Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Deliver materials in original packages, containers or bundles bearing manufacturers brand name and identification.
- .2 Store materials inside, level, under cover. Keep dry. Protect from weather, other elements and damage from construction operations and other causes.
- .3 Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trim from being bent or damaged.

1.4 SITE ENVIRONMENTAL REQUIREMENTS

- .1 Maintain temperature minimum 10 degrees C, maximum 21 degrees C for 48 hours prior to and during application of gypsum boards and joint treatment, and for at least 48

hours after completion of joint treatment.

- .2 Apply board and joint treatment to dry, frost free surfaces.
- .3 Ventilation: Ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials, to the maximum extent economically possible.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper and corrugated cardboard packaging material for recycling.
- .4 Divert unused paint and caulking material from landfill to official hazardous material collections site.
- .5 Do not dispose of unused paint and caulking materials into sewer systems, into lakes, streams, onto ground or in other locations where it will pose health or environmental hazard.

Part 2 Products

2.1 MATERIALS

- .1 Standard board: to ASTM C36/C36M regular, 16 mm thick regular as per wall types, 1220 mm wide x maximum practical length, ends square cut, edges beveled.
- .2 Laminating compound: as recommended by manufacturer, asbestos-free.
- .3 Sealants: in accordance with Section 07 92 00 - Joint Sealing.
- .4 Insulating strip: rubberized, moisture resistant, 3 mm thick cork or closed cell neoprene strip, 12 mm wide, with self-sticking permanent adhesive on one face, lengths as required.
- .5 Joint compound: to ASTM C475, asbestos-free.

Part 3 Execution

3.1 ERECTION

- .1 Do application and finishing of gypsum board in accordance with ASTM C840 and GA 216 except where specified otherwise.
- .2 Install work level to tolerance of 1:1200.
- .3 Install wall furring for gypsum board wall finishes in accordance with ASTM C840, except where specified otherwise.

3.2 APPLICATION

- .1 Do not apply gypsum board until bucks, anchors, blocking, sound attenuation,

electrical and mechanical work is approved.

- .2 Apply single layer gypsum board to wood furring or framing using screw fasteners for first layer, laminating adhesive or screw fasteners for second layer. Maximum spacing of screws 300 mm on centre.
 - .1 Single-Layer Application:
 - .1 Apply gypsum board on ceilings prior to application of walls in accordance with ASTM C840.
 - .2 Apply gypsum board vertically or horizontally, providing sheet lengths that will minimize end joints.
- .3 Install gypsum board on walls vertically to avoid end-butt joints. At high walls, install boards horizontally with end joints staggered over studs, except where local codes or fire-rated assemblies require vertical application.
- .4 Install gypsum board with face side out.
- .5 Do not install damaged or damp boards.
- .6 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

3.3 INSTALLATION

- .1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 200 mm on centre using contact adhesive for full length.
- .2 Install casing beads where gypsum board butts against surfaces having no trim concealing junction.
- .3 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.
- .4 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.
- .5 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with Gypsum Association GA-214:
 - .1 Levels of finish:
 - .2 Concealed areas: Level 2
 - .3 Exposed areas: Level 5
- .6 Finish corner beads and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.
- .7 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after surface finish is completed.
- .8 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.

- .9 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.
- .10 Provide protection that ensures gypsum drywall work will remain without damage or deterioration at time of substantial completion.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and data sheets for resilient tile flooring and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit 2 copies of WHMIS SDS in accordance with Section 01 35 29.06 - Health and Safety Requirements 01 35 43 - Environmental Procedures.
- .3 Samples:
 - .1 Submit duplicate full size samples of each specified tile.
 - .2 Submit 300 mm long base strips.
- .4 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, and cleaning procedures.

1.2 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for resilient flooring for incorporation into manual, including:
 - .1 WHMIS Safety Data Sheets (SDS).
 - .2 Product data and manufacturer's installation, maintenance and cleaning instructions for each product used on this project.
- .3 Record Documentation
 - .1 Submit a list of all materials installed, including adhesives, accessories and bases clearly indicating material and manufacturer's names, type, pattern and colour name and numbers for Owner's future reference.
- .4 Bonds
 - .1 Floor covering contractor to provide a 100%-two-year maintenance bond.

1.3 MAINTENANCE MATERIAL SUBMITTALS

- .1 Extra materials :
 - .1 Provide maintenance materials of resilient tile flooring, base and adhesive in accordance with Section 01 78 00 - Closeout Submittals.
 - .2 Provide a minimum of one box of each resilient tile type, pattern and colour installed, or the amount equivalent to 2 % of total area for each product installed, or minimum 5 m² of each resilient tile type, pattern and colour installed.
 - .3 Provide sufficient amount of adhesive to install extra material provided.

- .4 Ensure extra materials are from same production run as installed materials.
- .5 Identify each box of resilient floor tile, each roll of base, and each container of adhesive.
- .6 Deliver to Owner, upon completion of the Work of this Section.
- .7 Store where directed by Owner.

1.4 QUALITY ASSURANCE

- .1 Quality Assurance: in accordance with Section 01 45 00 – Quality Control.
- .2 All preparation, materials and workmanship in accordance with NFCA QAP requirements. Repair or replace deficient work in accordance with NFCA QAP requirements at no additional cost to Owner.
- .3 Qualifications
 - .1 Floor Covering Contractor:
 - .1 Documentation proving a minimum of 3 years local experience and successfully completed a minimum 5 projects of similar quantity, materials and complexity.
 - .2 Member in good standing of Resilient Flooring Contractors Association of Ontario (RFCAO), at time of bidding and throughout the performance of work.
 - .2 Installers: trade qualifications to NFCA Floor Covering Reference Manual of Canada.
 - .1 Apprentices: may be employed provided they work under direct supervision of qualified journey person in accordance with applicable trade regulation.
- .4 Mock-ups:
 - .1 Provide mock-up in accordance with Section 01 45 00 – Quality Control.
 - .2 Before installation, provide 600 mm x 600 mm mock-up of each specified resilient tile flooring for review by Owner. Mock-up to demonstrate:
 - .1 selected material
 - .2 pattern, texture and colour schemes
 - .3 direction of lay
 - .4 finish fits to walls and doorways
 - .5 welded seam finish
 - .6 inside corner and outside corner toeless base.
 - .3 Location of mock-ups as directed by the Owner.
 - .4 Flooring contractor to be present during review of mock-ups.
 - .5 Correct mock-up deficiencies, at no additional cost to Owner, as directed by Consultant.
 - .6 When accepted, mock-ups will demonstrate minimum standard of quality required for this work. Proceed with remainder of installation only after receiving written approval of Consultant.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, temperature controlled, well-ventilated area.
 - .2 Store and protect specified materials from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
 - .4 Co-ordinate delivery of materials with scheduled installation to allow minimum conditioning time on site.
 - .5 Comply with recommended procedures, precautions and measures described in WHMIS SDS.

1.6 SITE CONDITIONS

- .1 Unless otherwise stated in manufacturer's written instructions, for minimum 48 hours before, during and minimum 48 hours after installation maintain site conditions to occupancy service conditions or according to requirements in NFCA Floor Covering Reference Manual of Canada including:
 - .1 Ambient, substrate and material temperatures between 18 °C and 29 °C. Temperatures may be reduced to 13 °C 72 hours beyond installation.
 - .2 Subfloor surface temperature for adhesive application between 16 °C and 29 °C.
 - .3 Relative humidity (RH) between 40 % and 60 % assuming a temperature between 18 °C to 29 °C.
- .2 Ventilation:
 - .1 Provide high ventilation rate, with maximum outside air, 24 to 48 hours before, during and 48 to 72 hours after installation. If possible, vent directly to outside. Do not let contaminated air recirculate through air distribution system. Maintain extra ventilation for at least 1 month following building occupation.
 - .2 Co-ordinate operation of existing ventilation system with Owner and ensure its operation before, during and after flooring installation as required.
 - .3 Provide temporary ventilation where existing systems are not available or inadequate to meet minimum requirements in accordance with Section 01 51 00 – Temporary Utilities.
- .3 Substrate moisture content and alkalinity: to ASTM F710, unless otherwise stated in manufacturer's instructions.
- .4 Substrate surface tolerance: $F_F = 20$, $F_L = 15$ to CSA A23.1 Class A.
- .5 Substrate Porosity: porous to ASTM F3191.
- .6 Concrete Surface Profile (CSP): CSP 2 to ICRI 310.2.

Part 2 Products

2.1 RESILIENT TILE FLOORING MATERIALS

- .1 Vinyl composition tile: to ASTM F1066, Composition 1 - non asbestos Class 3 - surface patterned, 2.5 mm, 300 x 300 mm size, in standard colour indicated by Owner.

2.2 BASES

- .1 Resilient base: continuous, top set, complete with premoulded end stops and external corners :
 - .1 Type: rubber, thermoplastic to ASTM F1861.
 - .2 Style: Flex with toe.
 - .3 Thickness: 3.17 mm.
 - .4 Height: 108 mm.
 - .5 Colour: Burnt Umber.

2.3 ACCESSORIES

- .1 Primers and adhesives: waterproof, recommended by flooring manufacturer for specific material on applicable substrate, above, at or below grade.
 - .1 Flooring adhesives:
 - .1 Adhesive: maximum VOC limit 50 g/L to SCAQMD Rule 1168.
 - .2 Cove base adhesives:
 - .1 Adhesive: maximum VOC limit 50 g/L to SCAQMD Rule 1168.
- .2 Sub-floor filler and leveller: white premix latex requiring water only to produce cementitious paste 2 part latex-type filler requiring no water as recommended by flooring manufacturer for use with their product.
- .3 Metal edge strips: aluminum extruded, smooth, polished with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.
- .4 External corner protectors: type recommended by flooring manufacturer.
- .5 Edging to floor penetrations: type recommended by flooring manufacturer.
- .6 Sealer: type recommended by flooring manufacturer.
 - .1 Sealant:
 - .1 Sealant: maximum VOC limit 50 g/L to SCAQMD Rule 1168.
- .7 Wax: type recommended by flooring manufacturer.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions:

- .1 Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for resilient tile flooring installation in accordance with manufacturer's written instructions.
 - .1 Ensure concrete floors are clean and dry by using test methods recommended by flooring manufacturer.
 - .2 Ensure that moisture and alkalinity, porosity, surface tolerance and surface profile of substrate are within manufacturer's recommendation.
 - .3 Ensure that paint, varnish, dust, oils, release agents, waxes, sealers and curing and hardening compounds not compatible with adhesives employed have been removed.
- .2 Report in writing to Consultant any defective surfaces and conditions affecting installation, immediately upon discovery and before beginning any installation.
- .3 Proceed with installation only after any defective surface and conditions have been remedied and after receipt of written approval to proceed from Consultant.

3.2 PREPARATION

- .1 Protection of In-Place Conditions
 - .1 Provide adequate means to protect face of doors, door frames and walls from marring due to supply and installation of new resilient flooring or removal of existing flooring.
- .2 Surface Preparation
 - .1 Substrate surface preparation: in accordance with NFCA Floor Covering Reference Manual of Canada, Part A13 and ASTM F1482 ASTM F710, manufacturer's instructions and as follows:
 - .1 Remove existing resilient flooring.
 - .2 Remove or treat old adhesives to prevent residual, old flooring adhesives from bleeding through to new flooring and/or interfering with the bonding of new adhesives.
 - .3 Remove pen and marker lines from concrete surface that may bleed through to the surface of the resilient flooring.
 - .4 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.
 - .5 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.
 - .6 Prime concrete slab to resilient flooring and flooring adhesive manufacturer's printed instructions.
 - .7 Remove toilet bowls to ensure resilient flooring material butts to toilet flange, replace wax seals and provide new brass anchor bolts and plastic cover caps as necessary. Install specified silicone sealant around toilet bowl and bath tub or shower edge, neatly with even and smooth concave surface.
 - .2 Ensure work by other trades is acceptable before beginning installation of all materials.

- .3 After remedial work has been done to subfloors ensure all surfaces to receive resilient flooring are vacuumed clean and are dry, smooth and free from substances detrimental to filler and adhesive bond.

3.3 TILE APPLICATION

- .1 Install all resilient flooring and accessories using tools, materials, methods and sequence of work in accordance with NFCA Floor Covering Reference Manual of Canada recommendations and manufacturer's recommendations, and as follows:
- .2 Mix and apply adhesive uniformly in accordance with manufacturer's instructions, using manufacturer recommended trowel notching, spread, coverage rate, open times and safety precautions. Do not spread more adhesive than can be covered by flooring before initial set takes place.
- .3 Lay flooring with joints parallel to building lines to produce symmetrical tile pattern. Border tiles minimum half tile width, but not less than 150 mm wide.
- .4 Install flooring to square grid pattern with joints aligned.
- .5 During, and after installation, roll flooring in 2 directions with minimum 45 kg roller to ensure full adhesion and prevent visible adhesive or trowel marks.
- .6 Cut tile and fit neatly around fixed objects.
- .7 Cut and install resilient flooring to fit tightly in pan type floor access covers and to frames, with hardware cut-outs as required. Maintain floor pattern.
- .8 Continue flooring over areas which will be under built-in furniture.
- .9 Continue flooring through areas to receive movable type partitions without interrupting floor pattern.
- .10 Install all resilient flooring continuous through doorways and scribed to fit all projection and vertical surfaces. Terminate flooring at centerline of door in openings where adjacent floor finish or colour is dissimilar.
- .11 Install edging at floor penetrations, and metal edge strips at unprotected or exposed edges where flooring terminates to suit conditions, securely bond to substrate and in a straight line.
 - .1 Co-ordinate edging adjacent to carpet with Section 09 68 16 – Sheet Carpeting as applicable.
- .12 When necessitated by material size, locate cross seams and seams at doors and pivot points in accordance with approved shop drawings.
- .13 Caulk abutting walls, millwork bases and other projections in wet areas with vandal proof and waterproof sealant.

3.4 BASE APPLICATION

- .1 Lay out base to keep number of joints at minimum. Base joints at longest practical lengths or at internal or premoulded corners.
- .2 Clean substrate and prime with one coat of adhesive.
- .3 Apply adhesive to back of base.

- .4 Set base against floor and vertical surfaces, including walls, columns and millwork tightly by using 3 kg hand roller.
- .5 Install straight and level to variation of 1:1000.
- .6 Scribe and fit to door frames and other obstructions. Use premoulded end pieces at flush door frames.
- .7 Fit base at exterior and interior corners in accordance with manufacturer's recommendations and as follows:
 - .1 Butt and cope lip of base on one side of internal corners. For external corners, V-groove back of base, wrap around outside corners a minimum 300 mm and bond to vertical surfaces with contact adhesive.
 - .2 Unless otherwise pre-approved by Consultant, provide matching pre-fabricated external corners that wrap around outside corners a minimum 300 mm and matching internal corners cope internal corners.
- .8 Install toeless type base before installation of carpet on floors.

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
 - .1 Clean flooring and base surfaces to flooring manufacturer's printed instructions.
- .3 Remove excess adhesive from floor, base and wall surfaces without damage.
- .4 Clean, seal and wax floor and base surface to flooring manufacturer's instructions. In carpeted areas clean, seal and wax base surface before carpet installation.

3.6 PROTECTION

- .1 Protect new floors with non-marring covering from after initial waxing until final inspection.
- .2 Prohibit traffic on all installed resilient flooring for 48 hours after installation.
- .3 Use only water-based coating for linoleum.
- .4 Protect finished resilient flooring from damage during construction with hardboard or other protection compatible with finished flooring.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for each carpet, undercushion, adhesive, carpet protection, and subfloor patching compound and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit 2 copies of WHMIS SDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Samples:
 - .1 Submit for review and acceptance of each unit.
 - .2 Samples will be returned for inclusion into work.
 - .3 Submit duplicate 675 x 900 mm pieces of carpet specified, duplicate 225 x 225 mm pieces for each colour selected, 300 mm square pieces of undercushion, 150 mm lengths of carpet gripper and binder bars.
- .4 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .5 Test and Evaluation Reports:
 - .1 Certified test reports showing compliance with specified performance characteristics and physical properties.
- .6 Manufacturer's Instructions: submit manufacturer's installation and storage instructions.

1.2 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Maintenance Data: submit maintenance data for installed products for incorporation into manual.

1.3 MAINTENANCE MATERIAL SUBMITTALS

- .1 Extra Stock Materials: deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Section 01 78 00 - Closeout Submittals.
 - .1 Quantity: provide minimum 5% of each type and colour of carpet required for project for maintenance use.
 - .2 Delivery, storage and protection: comply with Owner's requirements for delivery and storage of extra materials.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 - .3 Store and protect carpet and adhesive in original containers or wrapping with manufacturer's seals and labels intact.
 - .4 Store carpet and adhesive at minimum temperature of 18 degrees C and relative humidity of maximum 65% for minimum of 48 hours before installation.
 - .5 Prevent damage to materials during handling and storage. Keep materials under cover and free from dampness.
 - .6 Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.
 - .7 Replace defective or damaged materials with new.

1.5 WARRANTY

- .1 Manufacturer's warranty: submit, for Consultant's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to and does not limit other rights Owner may have under Contract Documents.
- .2 Warranty period: 1 year, commencing on date of substantial performance of work.
 - .1 Warranty covers labour and repair or replacement of defective components for 1 year after date of substantial performance.

Part 2 Products

2.1 MATERIALS

- .1 Manufacturers:
 - .1 Ensure manufacturer has minimum 5 years experience in manufacturing components similar to or exceeding requirements of project.
- .2 Description:
 - .1 Carpet: Patcraft 'Pace' or approved equivalent.

2.2 PERFORMANCE

- .1 Flammability: certified for flammability to Health Canada regulations under "Hazardous Products - Carpet Regulations", Part II of Schedule 1.

- .2 Flame Spread: maximum flame spread rating 300, maximum smoke developed classification 500, when tested to CAN/ULC S102.2.
- .3 Smoke Development: 450 or less per ASTM E662.
- .4 Dry Breaking Strength: to ASTM D2661, minimum acceptable tear strength in both length and width:
 - .1 11.3 kg for carpets installed by glue down installation.
 - .2 15.9 kg for carpet installed by power stretch.
- .5 Wear: maximum 10% of pile face fibre by weight for 10 years.
- .6 Edge Ravel: none for 10 years.
- .7 Static Resistance: permanent static control to AATCC 134, 3000 V maximum at 20% RH and 22 degrees C
- .8 Static Generation: less than 3.5 kV per AATCC 134 for 10 years.
- .9 Tuft Bind: Tuft Lock: to ASTM D1335, CAN/CGSB-4.129, minimum acceptable 1.6 kilograms for cut pile product, 3.6 for loop pile product.
- .10 De-lamination of Secondary Backing: Lamination Strength of Secondary Backing: to ASTM D3936, minimum acceptable peel strength of 1.6 kg/25 mm.
- .11 Stain resistance: to AATCC 175.
- .12 Soil Resistance: 350 ppm fluorine minimum, Fluorine Durability Level to AATCC 189.
- .13 Colourfastness to light: to CAN/CGSB 4.2 No.18.3 AATCC 16.
- .14 Colourfastness to atmosphere: to AATCC 129 and AATCC 23.
- .15 Colourfastness to crocking: to CAN/CGSB 4.2 No. 22.
- .16 Indoor Air Quality Certification: certified to CRI Green Label Plus requirements

2.3 FABRICATION

- .1 Face construction:
 - .1 Pattern Loop
- .2 Pile fibre: to CAN/CGSB 4.129.
 - .1 Nylon: BCF or staple.
 - .1 Type: Nylon 6.
- .3 Face Fiber Denier: minimum 18.
- .4 Dyeing Method: solution dyed.
- .5 Stitches: 10 per inch.
- .6 Gauge: 1/10 inch.
- .7 Pile Weight Density: 7009 oz/yd.
- .8 Finished Pile Height: minimum 2.8 mm average.

2.4 ACCESSORIES

- .1 Carpet Tack Strips: type in accordance with carpet manufacturer's written instructions.
- .2 Seaming Tape: type in accordance with carpet manufacturer's written instructions for purpose intended.
- .3 Seaming Sealer Adhesive:
 - .1 Type in accordance with carpet manufacturer's written instructions for purpose intended.
- .4 Binder bars: aluminum.
- .5 Adhesive:
 - .1 Multi-purpose adhesive type: in accordance with carpet manufacturer's written instructions for direct glue down installation.
 - .2 Pressure sensitive type: in accordance with carpet manufacturer's written instructions for direct glue down installation of speciality backed carpets.
- .6 Carpet protection: non-staining heavy duty kraft paper.
- .7 Concrete floor primer:
 - .1 Shaw 9050

Part 3 Execution

3.1 INSTALLERS

- .1 Use experienced and qualified technicians to carry out assembly and installation of sheet carpet.

3.2 PREPARATION

- .1 Subfloor Preparation:
 - .1 Inspect concrete and determine special care required to make it suitable for carpet.
 - .2 Fill and level cracks 3 mm wide or protrusions over 0.8 mm with appropriate and compatible latex patching compound.
 - .3 Comply with manufacturer's written recommendations for maximum patch thickness.
 - .4 Prime large patch areas with compatible primer.
 - .5 Ensure concrete substrates are cured, clean and dry.
 - .6 Ensure concrete substrates are free of paint, dirt, grease, oil, curing or parting agents, and other contaminants, including sealers, that interfere with the bonding of adhesive.
 - .7 Where powdery or porous concrete surface is encountered, apply primer compatible with adhesive to provide a suitable surface for glue-down installation.
- .2 Surface Preparation: prepare surface in accordance with manufacturer's written recommendations and co-ordinate with Section 01 71 00 - Examination and Preparation.

- .1 Prepare floor surfaces in accordance with CRI Carpet Installation Standard
- .3 Sheet Carpet Preparation:
 - .1 Pre-condition carpeting: following manufacturer's written instructions.
- .4 Demolition / Removal:
 - .1 Vacuum used carpet before removal.
 - .2 Maintain possession of removed used carpet.
 - .3 Sort only clean, dry carpet sheets for reclamation. Clean is defined as carpet free from demolition debris, asbestos contamination, garbage, knife blades and tack strips.
 - .4 Carpet undercushion: provide recycling of carpet padding where locally available or as designated by carpet reclamation program.

3.3 INSTALLATION

- .1 Install sheet carpet in accordance with manufacturer's written instructions, and CRI Carpet Installation Standard and co-ordinate with Section 01 73 00 - Execution.
- .2 Co-ordinate sheet carpet work with work of other trades, for proper time and sequence to avoid construction delays.
- .3 Install carpeting and undercushion using minimum of pieces.
- .4 Install carpet and undercushion after finishing work is completed but before demountable office partitions and telephone and electrical pedestal outlets are installed.
- .5 Inspect finished installation for smooth wearing surface free from conspicuous seams, burring and other faults.
- .6 Use material from same dye lot.
 - .1 Ensure colour, pattern and texture match within visual areas.
 - .2 Maintain constant pile direction.
- .7 Adhesive seams and cross-joints.
 - .1 Ensure seams are sealed.
- .8 Fit around architectural, mechanical, electrical and telephone outlets, and furniture fitments, around perimeter of rooms into recesses, and around projections.
- .9 Install carpeting to underfloor duct system and to access covers.
- .10 Install carpeting in pan type floor access covers.
- .11 Extend carpet into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- .12 Install carpet smooth and free from bubbles, puckers, and other defects.

3.4 CARPET TACK STRIPS AND BINDER BARS

- .1 Carpet grippers: install carpet grippers at junctions of walls and vertical surfaces. Secure gripper to prevent movement.

- .1 Secure gripper to prevent movement.
- .2 Binder bars: install binder bars at exposed carpet edges and centre under doors in door openings.

3.5 CARPET TRANSITION STRIPS

- .1 Protect exposed carper edges at transition to other flooring materials with suitable transition strips.

3.6 UNDERCUSHION INSTALLATION

- .1 Install undercushion fully adhered using minimum number of pieces. Secure undercushion to prevent shifting.
- .2 Butt edges firmly together.
 - .1 Install to edge of gripper and tape top of joints.
 - .2 Remove bubbles and slightly stretch.
- .3 Secure undercushion at projections and penetrations, and where cut to contours and ramps.
- .4 Offset undercushion seams at least 300 mm from carpet seams.

3.7 DIRECT GLUE DOWN CARPET

- .1 Apply adhesive and install carpeting over undercushion in accordance with manufacturer's written instructions, by direct glue-down method.

3.8 STRETCH-IN CARPET

- .1 Install carpeting over undercushion and secure to carpet grippers in accordance with manufacturer's written instructions.

3.9 SEAMS

- .1 Seal edges of cut-outs with latex.
- .2 Ensure visibility of carpet seams and joints are acceptable industry standards.

3.10 BASE INSTALLATION

- .1 Install bound edge carpet base to match adjacent carpeting.
 - .1 Install cove at junction of floor and wall.
- .2 Attach carpet to wall with adhesive.
 - .1 Neatly fit against floor carpet.
- .3 Extend floor carpeting over cove, up wall and into capstrip to form cove carpet base.

3.11 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

.1 Vacuum carpets clean immediately after completion of installation.

3.12 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Prohibit traffic on carpet for period of 24 hours minimum after installation and until adhesive is completely cured.
- .3 Install carpet protection to satisfaction of Consultant.
- .4 Repair damage to adjacent materials caused by sheet carpeting installation.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for paint and coating products and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit 2 copies of WHMIS SDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Certificates:
 - .1 As requested, submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.2 QUALIFICATIONS

- .1 Ensure that 50% of persons, who perform concrete and steel surfaces preparation and coating applications, are certified by a recognized Applicator Certification Agency, in accordance with NACE 13 /SSPC ACS-I, Applicator Certification Standard (ACS).
- .2 Maintain a current and valid ACS certification during project period.
 - .1 Application specialists who perform surface preparation and coating application work on this project must have a current ACS.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Provide and maintain dry, temperature controlled, secure storage.
 - .2 Store painting materials and supplies away from heat generating devices.
 - .3 Store materials and equipment in well ventilated area within temperature as recommended by manufacturer.
- .4 Fire Safety Requirements:
 - .1 Supply one 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.
 - .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.

- .3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada (NFC) requirements.

1.4 SITE CONDITIONS

- .1 Heating, Ventilation and Lighting:
 - .1 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities
 - .2 Coordinate use of existing ventilation system with Consultant and ensure its operation during and after application of paint as required.
 - .3 Provide minimum lighting level of 323 Lux on surfaces to be painted.
- .2 Temperature, Humidity and Substrate Moisture Content Levels:
 - .1 Apply paint finishes when ambient air and substrate temperatures at location of installation can be satisfactorily maintained during application and drying process, within MPI and paint manufacturer's prescribed limits.
 - .2 Test concrete, masonry and plaster surfaces for alkalinity as required.
 - .3 Apply paint to adequately prepared surfaces, when moisture content is below paint manufacturer's prescribed limits.
- .3 Additional application requirements:
 - .1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.
 - .2 Apply paint in occupied facilities during silent hours only. Schedule operations to approval of Consultant such that painted surfaces will have dried and cured sufficiently before occupants are affected.

Part 2 Products

2.1 MATERIALS

- .1 Supply paint materials for paint systems from single manufacturer.
- .2 Conform to latest MPI requirements for painting work including preparation and priming
- .3 Materials in accordance with MPI - Maintenance Repainting Manual "Approved Product" listing.
 - .1 Primer: VOC limit 100 g/L maximum SCAQMD Rule 1113.
 - .2 Paint: VOC limit 100 g/L maximum to SCAQMD Rule 1113.
- .4 Colours:
 - .1 Match existing wall colours.
- .5 Mixing and tinting:
 - .1 Perform colour tinting operations prior to delivery of paint to site, in accordance with manufacturer's written recommendations. Obtain written approval from Consultant for tinting of painting materials.
 - .2 Use and add thinner in accordance with paint manufacturer's recommendations.

- .1 Do not use kerosene or similar organic solvents to thin water-based paints.
- .3 Thin paint for spraying in accordance with paint manufacturer's written recommendations.
- .4 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.
- .6 Gloss/sheen ratings:
 - .1 Paint gloss is defined as sheen rating of applied paint, in accordance with following values:
 - .2 Gloss level ratings of painted surfaces as indicated.
- .7 Interior re-painting:
 - .1 Concrete Masonry Units: smooth and split face block and brick
 - .1 INT 4.2E – Low VOC latex, gloss level G3 finish.

Part 3 Execution

3.1 GENERAL

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheets.
- .2 Perform preparation and operations for interior painting in accordance with MPI - Maintenance Repainting Manual except where specified otherwise.

3.2 EXAMINATION

- .1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Consultant damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.
- .2 Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test". Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

3.3 PREPARATION

- .1 Protection of in-place conditions:
 - .1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore surfaces as directed by Consultant.
 - .2 Protect items that are permanently attached such as Fire Labels on doors and frames.
 - .3 Protect factory finished products and equipment.
- .2 Surface Preparation:

- .1 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.
- .2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
- .3 Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Consultant.
- .4 Clean and prepare surfaces in accordance with MPI - Maintenance Repainting Manual specific requirements and coating manufacturer's recommendations.
- .5 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.
- .6 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.
- .7 Touch up of shop primers with primer as specified.

3.4 APPLICATION

- .1 Paint only after prepared surfaces have been accepted Consultant.
- .2 Use method of application approved by Consultant.
 - .1 Conform to manufacturer's application recommendations.
- .3 Apply coats of paint in continuous film of uniform thickness.
 - .1 Repaint thin spots or bare areas before next coat of paint is applied.
- .4 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .5 Sand and dust between coats to remove visible defects.
- .6 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.
- .7 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Place paint, primer defined as hazardous or toxic waste, including tubes and containers, in containers or areas designated for hazardous waste.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

- .1 Submit Shop Drawings, Product Data and Samples as specified herein.
- .2 Designate in the Construction Schedule, or in a separate coordination schedule, dates for submission and dates that reviewed Shop Drawings, Product Data and Sample will be required. Give due consideration for review time required by the Consultant, with a minimum of fifteen (15) working days required. The submission of Appendix 'B' will be considered an acceptable submittal schedule.
- .3 All shop drawings will be submitted directly to our office, at wpg.shopdrawings@mcw.com; with a copy of the transmittal sent to the Engineer. All shop drawings will be returned through the Engineer office. In order to expedite the process, MCW requests that all shop drawings be submitted electronically in pdf format. Upon MCW's review stamped shop drawings will be returned electronically in pdf format.
- .4 Prepare a schedule of shop drawings, not later than four weeks after the award of the Contract, indicating drawing submission and equipment delivery dates. Refer to specification and to the attached Shop Drawing Submittal Schedule for equipment requiring shop drawing submission.
- .5 All data and dimensions on shop drawings, product data and sample information to be based on units (Imperial or Metric) as shown on the contract documents.
- .6 Shop Drawings with errors or omissions and deviations will be returned "Not Reviewed".
- .7 The Contractor's responsibility for deviations in submission from the requirements of Contract Documents is not relieved by the Consultant's review of submittals, unless a deviation on the submittal is noted as such in writing and has been accepted by the Consultant.
- .8 Keep one (1) reviewed copy of each submission on site.
- .9 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) material Safety Data sheets (MSDS) in accordance with Division 01.

1.02 SHOP DRAWINGS

- .1 Review and stamp Shop Drawings, Product Data and Samples prior to submission to the Consultant. Confirm that necessary requirements have been determined and verified and that each submittal has been checked and co-ordinated with requirements of the Work and the Contract Documents. Submittals not stamped, signed, dated and identified as to the specific project, will be returned without being examined and shall be re-submitted when completed.
- .2 Submit drawings in a clear and thorough manner:
 - .1 Identify details by reference to drawing No. and detail, schedule or room numbers as shown on Contract Documents.
 - .2 Include manufacturer installation instructions and details.
 - .3 Minimum sheet size and larger sheets to be multiples of 8½" x 11".
 - .4 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated. Indicate cross references to design drawings and specification.

- .5 Adjustments to shop drawings by the Consultant do not change the cost of the work. If adjustments affect the cost of Work, advise through normal channels in writing prior to proceeding with the Work.
- .6 Make changes in shop drawings as directed by the Consultant. Resubmit and note any revisions other than those requested.
- .7 If only minor adjustments are made, shop drawings to be returned and fabrication and installation of work to proceed.
- .3 Determine and verify:
 - .1 Field measurements.
 - .2 Field construction criteria.
 - .3 Catalogue numbers and similar data.
 - .4 Conformance with Specifications.
- .4 Co-ordinate each submittal with requirements of the Contract documents.
- .5 Each Shop Drawing will be stamped by the Consultant in the following format:
 - ☐ NOT REVIEWED ☐ REVIEWED
 - ☐ RESUBMIT ☐ REVIEWED AS MODIFIED
 - ☐ NOT SPECIFIED BY MCW, REVIEWED FOR MEP ONLY
- .6 This review by the Consultant is for the sole purpose of ascertaining conformance with the general design concept. This review shall not mean that the Consultant approved the detail design inherent in the shop drawings, responsibility for which shall remain with this Subcontractor submitting same, and such review shall not relieve this Subcontractor of his responsibility for errors or omissions in the shop drawings or of his responsibility for meeting all requirements of the contract documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication.
- .7 Products not specified by MCW are reviewed to confirm compliance with services provided only. Any changes required between provided services and shop drawing requirements will be identified for coordination between trades.
- .8 Shop drawings shall be accompanied by a complete copy of the attached "Shop Drawing Submittal Sheet" Section 20 05 01, Appendix 'A'.
- .9 "Resubmit" Shop Drawings or Shop Drawings requiring additional information will have to be forwarded or returned to our office, at wpg.shopdrawings@mcw.com; in a timely fashion to allow time for review again, along with revised scheduling or delivery date changes as a result of having to provide additional information or resubmission.
- .10 Shop drawings must bear the stamp and signature of the submitting sub-contractor as well as the general contractor to indicate that the shop drawings or catalogue cuts are in conformance with all requirements of the drawings, that they have co-ordinated this equipment with other equipment which is related and/or connected and that they have verified all dimensions to ensure the proper installation of equipment including recommended service space and without interference with the work of other trades. Ensure that mechanical and electrical co-ordination is complete before submitting drawings for review. Incomplete or improperly submitted shop drawings will be returned as "Resubmit".
- .11 Begin no fabrication or work which requires submittals until return of submittals reviewed by Consultant.
- .12 Quality assurance Submittals:

- .1 Make all submittals in accordance with Section 20 05 05 and Division 01, to suit submittal procedures.
- .2 Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .13 Submit manufacturer installation instructions.
- .14 All submittals **MUST** be submitted using the same units (IP/SI) as shown on equipment schedules and drawings.

1.03 PRODUCT DATA

- .1 Where specified, Manufacturer's standard schematic drawings, catalogue sheets, diagrams, schedules, performance charts, illustrations and other standard descriptive data is acceptable provided there is conformance with the following:
 - .1 Clearly identify pertinent products or models.
 - .2 Show performance characteristics and capacities.
 - .3 Show dimensions and clearances required.
 - .4 Show wiring or piping diagrams and controls.
- .2 Manufacturer's standard schematic drawings and diagrams may require modifications to drawings and diagrams to provide information applicable to the Work.
- .3 Provide information specifically applicable to the Work.

1.04 SAMPLES

- .1 Samples are to be provided in accordance with Division 01.
- .2 Samples to be labelled, of sufficient size and quantity to clearly illustrate:
 - .1 Functional characteristics integrally related parts and attachment devices.
 - .2 Full range of colour, texture and pattern.
- .3 Field Samples and mock-ups:
 - .1 Erect, at the project site and in location acceptable to the Consultant.
 - .2 Fabricate each sample and mock-up complete and finished.
 - .3 Remove mock-ups at conclusion of Work or as specified by the Consultant.

1.05 CLOSE-OUT SUBMITTALS

- .1 Make all submittals in accordance with Division 01, to suit submittal procedures.

1.06 SUBMISSION REQUIREMENTS

- .1 Submit promptly to approved schedule and in sequence to prevent submission delay in the Work.
- .2 Submission requirements:
 - .1 Shop Drawings: Acceptable submissions are: Submit shop drawings electronically as agreed to during the kick off meeting with the Consultant.
 - .2 Product Data: Submit a copy for each O & M Manual.
 - .3 Samples: Submit as specified, or as requested during the shop drawing review period.

1.07 RESUBMISSION REQUIREMENTS

- .1 Make corrections or changes to the submittals noted by the Consultant and resubmit.
- .2 Shop Drawings and Product Data:
 - .1 Revise drawings or data, and resubmit as noted on the initial submittal.
 - .2 Indicate any changes which have been made other than those noted by the Consultant.
- .3 Samples: Submit new samples as required for initial submittal as soon as possible after notification of the rejection of the original submission and mark "resubmitted samples".

1.08 DISTRIBUTION

- .1 Distribute reproductions of Shop Drawings and copies of Product Data which carry the Consultant's stamp to all parties as specified by Division 01 General Requirements.
 - .1 Job site file
 - .2 Project record document file
 - .3 Other affected contractors
 - .4 Subcontractors
 - .5 Supplier or fabricator (as applicable)
 - .6 Operations Manual

PART 2 - PRODUCTS

2.01 NIL

PART 3 - EXECUTION

3.01 NIL

END OF SECTION 20 05 01

SHOP DRAWING SUBMITTAL SHEET

Project: _____ Date: _____

Project No. _____ Submittal No. _____

Section: _____

Equipment
Description _____

Contractor: _____

Sub-Contractor: _____

Suppliers Name: _____

Manufacturer: _____

Catalogue No.: _____

Variations From
Tender Documents _____

Engineer: MCW Consultants Ltd.
131 Court St N,
Thunder Bay, Ontario
P7A 4V1

MECHANICAL GENERAL REQUIREMENTS SECTION 20 05 01 – APPENDIX 'B' PROJECT: _____ PROJECT No: _____		SHOP DRAWING SUBMITTAL SCHEDULE DIVISION 20, 21 22, 23 & 25						Date: _____	
SECTION	DESCRIPTION (List Equipment Example only Edit to Suit)	MANUFACTURER	SHOP DRAWING				DELIVERY		COMMENTS
			SUBMITTED		RETURNED				
			SCHED	ACTUAL	SCHED	ACTUAL	SCHED	ACTUAL	
Specified by others	Pool Equipment								

PART 1 - GENERAL

1.01 DESCRIPTION

- .1 Comply with Requirements of Division 01, General Requirements and all documents referred to therein.
- .2 Comply with requirements of Section 20 05 05 Mechanical Work General Instructions.

1.02 SUBMITTALS

- .1 Submit shop drawings on access doors, valves, strainers, expansion tanks, thermometers and gauges, expansion compensators, piping restraints, grooved end components, motor starters and motor control centers in accordance with Section 20 01 05.

PART 2 - PRODUCTS

2.01 ACCESS DOORS

- .1 Provide rounded safety corners hinged access doors as constructed of primed 16 gauge steel as manufactured by William Brothers or Acudor equal to fire rating of wall or ceiling in which installed.
- .2 Provide doors with minimum size of 300mm x 300mm (12" x 12"). Access doors to be sized of adequate size to permit service of equipment and/or resetting dampers. Provide minimum size of 600mm x 460mm (24" x 18") where personnel entry is required. Provide minimum size of 600mm x 750mm (24" x 30") where personnel entry is required for regular equipment maintenance.
- .3 Provide for tiled surfaces, recessed type 16 ga. primed steel (stainless steel for ceramic tile and shower areas) doors to suit type and dimension of tile used. Size door to be as close as possible to 300mm x 300mm (12" x 12") by fitting to single or multiple tile dimensions. Provide with concealed hinges and stainless steel studs with brass sleeves.
- .4 Provide, to suit wall surface or type of construction, other factory prime coated access doors of welded 16 gauge steel, flush type with concealed hinges, lock and anchor straps.
- .5 Lay in type ceiling tiles, properly marked, may serve as access panels.
- .6 Access doors in fire rated construction shall be ULC listed and labelled, meeting the requirements of Authorities having jurisdiction and rated to maintain the fire separation integrity.

2.02 PIPE AND FITTINGS

- .1 Sanitary Drainage Piping:
 - .1 Buried sanitary drainage piping shall be service weight cast iron pipe and fittings conforming to CSA B70.
 - .2 Where accepted by the Authority Having Jurisdiction, PVC DWV pipe and fittings conforming to CSA B181.2 or ABS DWV pipe and fittings conforming to CSA B181.1 may be used below slab.
 - .3 Suspended sanitary drainage piping shall be service weight cast iron pipe and fittings conforming to CSA B70.
 - .4 Shielded transition couplings shall be stainless steel with elastomeric sleeves suitable for joining dissimilar piping materials.

- .5 Traps shall be cast brass or ABS/PVC as applicable to the pipe material and conform to applicable code requirements.
- .6 Suspended:
 - .1 Cast iron pipe and fittings to CSA B70.
 - .2 DWV copper to ASTM B306 with 50/50 soldered cast brass drainage fittings to CSA B158.1 or wrought copper fittings to ANSI B16.29.
- .2 Vent Piping:
 - .1 Vent piping shall be DWV copper tube conforming to ASTM B306 with wrought copper drainage fittings conforming to ASME B16.29 and cast brass drainage fittings conforming to CSA B158.1.
 - .2 Alternatively, vent piping may be service weight cast iron pipe and fittings conforming to CSA B70 where indicated on the drawings or where required to match existing systems.
 - .3 Joints for copper vent piping shall be soldered using lead-free solder acceptable for plumbing applications.
 - .4 Cast iron vent piping joints shall be mechanical coupling type suitable for drainage, waste and vent systems.
 - .5 Provide all fittings, couplings, supports, hangers, flashings, sleeves, escutcheons, seals, and accessories required for a complete installation.
- .3 Domestic Water:
 - .1 Domestic hot and cold water piping above grade shall be Type L hard drawn copper tube conforming to ASTM B88.
 - .2 Domestic hot and cold water piping below grade shall be Type K soft copper tube conforming to ASTM B88.
 - .3 Fittings shall be wrought copper solder-joint fittings conforming to ASME B16.22 or cast bronze solder-joint fittings conforming to ASME B16.18.
 - .4 Solder shall be lead-free and approved for potable water service.
 - .5
 - .6 Code and Standards:
 - .1 ASTM B88 Standard Specification for Seamless Copper Water Tube.
 - .2 ASME B16.15 Cast Bronze Threaded Fittings, Class 150 and 250
 - .3 ASME B16.18 Cast Copper Alloy Solder Joint Pressure Fittings
 - .4 ASME B16.22 Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
 - .5 ASME B16.24 Cast Copper Alloy Pipe Flanges and Flanged fittings Class 150, 300, 400 and 600.
 - .6 CSA B242 Groove and Shouldered Type Mechanical Couplings
 - .7 AWS A5.8 Brazing Filler Material
 - .8 ASTM B32 Specification for Solder Metal
 - .9 ASTM B-312 Standard Specification for Stainless Steel Piping.

2.03 VALVES

- .1 Domestic water valves:
 - .1 Isolation valves 50 mm (2") and smaller shall be full-port ball valves rated for minimum 1380 kPa (200 psi) WOG.
 - .2 Valves shall be two-piece bronze body construction with chrome-plated brass ball, blowout-proof stem, and reinforced PTFE seats and seals.
 - .3 Valves shall have solder ends for copper piping systems.
 - .4 Valve handles shall be vinyl-covered steel lever type.
 - .5 Provide valves suitable for domestic hot and cold water service.
 - .6 Acceptable Manufacturers:
 - .1 Kitz Series 58

- .2 Nibco S-585-70-LF
- .3 Crane 9311
- .4 Apollo 77CLF
- .5 Watts LFB6000

.2 Fixture Stops:

- .1 .1 Provide new quarter-turn angle or straight pattern fixture stops at each plumbing fixture connection.
- .2 .2 Stops shall be chrome-plated brass with compression or solder connections as required.
- .3 .3 Provide with matching chrome-plated escutcheons.

.3 Check Valves:

- .1 .1 Provide spring-loaded silent check valves where indicated on drawings or required for trap seal primer connections.
- .2 .2 Body shall be bronze suitable for domestic water service.

.4 Trap Seal Primer:

- .1 Valves serving trap seal primers shall be supplied by the trap seal primer manufacturer and shall be compatible with the complete primer assembly.

2.04 HANGERS AND PIPING SUPPORTS

- .1 Provide hangers, supports, inserts, anchors, brackets, guides, and accessories necessary to adequately support all piping systems.
- .2 Adjustable clevis hangers shall be provided for horizontal piping 50 mm (2") and smaller and shall conform to MSS SP-58.
- .3 Hanger rods shall be galvanized steel and sized in accordance with MSS SP-58 and MSS SP-69.
- .4 Copper piping shall be supported with copper-plated hangers or with hangers incorporating dielectric isolation to prevent direct contact between copper tubing and ferrous metals.
- .5 Where insulated piping is supported, provide insulation protection shields and oversized hangers to prevent compression of insulation.
- .6 Supports and hanger spacing shall conform to MSS SP-69, manufacturer's recommendations, and applicable code requirements.
- .7 In damp, corrosive, or exposed environments, provide galvanized or stainless-steel supports and accessories suitable for the installation conditions.
- .8 Provide all nuts, bolts, washers, structural attachments, inserts, clamps, and accessories required for a complete installation.

2.05 INSERTS

- .1 Provide factory-manufactured inserts, anchors, and support attachments suitable for the imposed loads and construction conditions.
- .2 Cast-in-place inserts shall be used where practical.
- .3 Expansion anchors may be used in existing concrete construction where cast-in inserts cannot be installed.

- .4 Anchors and supports shall be sized and selected to safely support piping loads including operating, testing, and thermal expansion loads.
- .5 Powder-actuated fasteners shall not be used without prior approval of the Consultant.

2.06 SLEEVES

- .1 Provide sleeves for piping passing through floors, walls, partitions, foundations, and other building elements.
- .2 Sleeves shall be Schedule 40 steel pipe, galvanized steel pipe, or cast iron, sized to permit installation of insulation and maintain required clearances.
- .3 Sleeve diameters shall accommodate pipe movement and insulation thickness where applicable.
- .4 Seal annular spaces between sleeve and piping with approved materials compatible with the fire rating, waterproofing, and acoustic requirements of the assembly.
- .5 Where piping penetrates fire-rated assemblies, provide firestop systems tested and listed for the applicable rating.
- .6 Where piping penetrates exterior walls or below-grade construction, provide watertight seals.

2.07 ANCHORS, GUIDES AND EXPANSION COMPENSATORS

- .1 Provide anchors, guides, restraints, and supports required to maintain piping alignment and control movement.
- .2 Piping systems shall be installed with sufficient flexibility to accommodate expansion, contraction, vibration, and building movement.
- .3 Domestic hot water piping shall be installed with offsets, changes in direction, or expansion provisions to accommodate thermal expansion.
- .4 Provide expansion compensation devices where indicated on the drawings or where required by the piping layout.
- .5 Expansion compensation devices shall be suitable for the operating temperature, pressure, and service conditions.
- .6 Submit product data for expansion joints, expansion loops, and expansion compensation devices proposed for use.

2.08 MECHANICAL IDENTIFICATION

- .1 Valve Tags
 - .1 Valve tags are to be coloured, 40 mm (1-½") square, 2-ply laminated plastic with bevelled edges, red-white, green-white, yellow-black, etc., to match piping identification colour, each complete with a 3.2 mm (1/8") diameter by 100 mm (4") long brass plated steel bead chain, and four lines of engraved maximum size identification wording, i.e.:
VALVE V12
200 mm (8")
CHILLED WATER
NORMALLY OPEN
- .2 Pipe Identification

- .1 Standard pipe identification to be Smillie McAdams Summerlin Ltd., Brady or Primark Manufacturing Inc. vinyl plastic with indoor/outdoor type vinyl ink lettering and directional arrows, as follows:
 - .1 For pipe less than or equal to 150 mm (6") diameter, coiled type snap-on markers of a length to wrap completely around pipe or pipe insulation;
 - .2 For pipe larger than 150 mm (6") diameter, saddle type strap-on markers with 2 opposite identification locations and complete with nylon cable ties.
- .2 All pipe identification tags must include the pipe size.
- .3 Identification wording and colours for pipe identification materials are to be as follows:

PIPE SERVICE	IDENTIFICATION COLOUR	LEGEND
domestic cold water	Green	XØ -DOM. COLD WATER
domestic hot water supply	Green	XØ -DOM. HW SUPPLY
domestic hot water recirculation	Green	XØ -DOM. HW RECIRC.
tempered domestic water	Green	XØ -TEMP. DOM. WATER
chilled drinking water	Green	XØ -CH. DRINK WTR.
storm drainage	Green	XØ -STORM
sanitary drainage	Green	XØ -SAN.
plumbing vent	Green	XØ -SAN. VENT
irrigation water	Green	XØ -IRRIGATION
ground water	Green	XØ -GROUNDWATER
acid sanitary drainage	Yellow	XØ -ACID DRAIN
acid drainage vent	Yellow	XØ -ACID VENT

PART 3 - EXECUTION

3.01 DEMOLITION

- .1 Demolish and remove existing sanitary drainage, vent piping, and domestic hot and cold water piping serving Storage Room 117, Janitor Room 118, Laundry Room 119, WC 120, WC 121 and Kitchen 123 as indicated on the drawings.
- .2 Remove existing plumbing fixtures scheduled for retention and protect from damage during construction.
- .3 Cap and maintain existing systems remaining in service during construction.
- .4 Remove demolished materials from site and dispose of in accordance with applicable regulations.

3.02 SANITARY AND VENT PIPING INSTALLATION

- .1 Install sanitary and vent piping in accordance with the Ontario Building Code, applicable plumbing codes, and manufacturer's recommendations.
- .2 Install piping true to line and grade and maintain required slopes throughout the system.

- .3 Install piping to permit complete drainage of the system.
- .4 Provide cleanouts as required by code and as indicated on drawings.
- .5 Connect new sanitary piping to existing sanitary systems using approved transition fittings and couplings.
- .6 Connect new vent piping to existing vent systems as indicated on the drawings.
- .7 Install new traps for all reinstalled plumbing fixtures.
- .8 Plug or cap all piping openings during construction.

3.03 BELOW GRADE INSTALLATION

- .1 Install below-grade sanitary piping in trenches prepared in accordance with trade best practices and pipe manufacturer requirements.
- .2 Trench bottoms shall be smooth and provide continuous support along the length of the pipe.
- .3 Remove unsuitable material including organic matter, soft spots, debris, frozen material, and oversized rock and replace with approved granular material.
- .4 Provide a minimum 150 mm thick granular bedding layer beneath piping.
- .5 Compact bedding to provide continuous support beneath pipe haunches.
- .6 Following installation and testing, place backfill evenly on both sides of the pipe.
- .7 Granular embedment shall extend a minimum of 150 mm above the crown of the pipe.
- .8 Backfill material shall be free of frozen material, organic matter, debris and rocks which may damage piping.
- .9 Compact backfill sufficiently to prevent settlement of floor slabs and finishes.
- .10 Do not conceal piping until inspections and testing have been completed.

3.04 DOMESTIC HOT AND COLD WATER PIPING INSTALLATION

- .1 .1 Install domestic hot and cold water piping in accordance with applicable codes and manufacturer's recommendations.
- .2 .2 Route piping parallel and perpendicular to building lines where practical.
- .3 .3 Install piping to provide adequate clearance for operation, maintenance, insulation, and future replacement.
- .4 .4 Install isolation valves at branch connections and where indicated on the drawings.
- .5 .5 Provide new fixture stops, supply connectors, escutcheons, gaskets, seals, and accessories at all plumbing fixtures.
- .6 .6 Protect piping from physical damage during construction.
- .7 .7 Sleeve piping passing through walls, floors, and partitions.

3.05 FLOOR DRAINS AND TRAP SEAL PRIMERS

- .1 Install new floor drains in locations indicated on the drawings.
- .2 Provide trap seal primers for all new floor drains.
- .3 Install trap seal primer piping in accordance with manufacturer requirements.
- .4 Verify proper operation of all trap seal primer connections before project completion.

3.06 FLUSHING, DISINFECTION AND CLEANING

- .1 Flush domestic water piping systems until water runs clear and free of debris.
- .2 Disinfect all potable water piping in accordance with AWWA C651.
- .3 Maintain chlorination levels and contact times in accordance with AWWA C651 requirements.
- .4 Arrange for bacteriological testing by an independent testing laboratory.
- .5 Repeat disinfection procedures if test results are unsatisfactory.

3.07 TESTING

- .1 Test sanitary and vent piping systems in accordance with applicable plumbing code requirements.
- .2 Test domestic water piping systems hydrostatically at 1100 kPa (150 psi) or 1.5 times operating pressure, whichever is greater.
- .3 Maintain test pressure for a minimum of two hours with no visible leakage.
- .4 Repair all leaks and retest until satisfactory results are obtained.
- .5 Record all test results and submit copies to the Consultant.

3.08 REINSTALLATION OF EXISTING FIXTURES

- .1 Reinstall retained plumbing fixtures.
- .2 Connect fixtures to new sanitary, vent and domestic water systems.
- .3 Provide new traps, fixture stops, supply connectors, escutcheons, gaskets, seals, and fastening hardware.
- .4 Adjust fixtures and accessories to ensure proper operation.
- .5 Leave all fixtures clean, watertight and fully operational.

3.09 HANGERS

- .1 Hanger rods may be attached to beam or joist clamps, brackets, or concrete inserts. Explosive actuated tools are not permitted. Do not weld to structural steel unless accepted by the Consultant.
- .2 Install hangers and supports in accordance with MSS SP-58 and MSS SP-69.
- .3 Support piping to prevent sagging, vibration, and excessive stresses.
- .4 Do not suspend piping from roof deck or unsupported building elements.
- .5 Provide insulation protection shields at supports for insulated piping.

- .6 Install hangers to the following table.

STEEL PIPE	
Nominal Pipe Size	Distance Between Supports
Up to 32mm (1¼")	2,400mm (8 ft.)
40mm (1½") - 65mm (2½")	3,000mm (10 ft.)
75mm (3") and over	3,600mm (12 ft.)

COPPER TUBING	
Nominal Pipe Size	Distance Between Supports
Up to 20mm (¾")	1,800mm (6 ft.)
20mm (¾") - 25mm (1")	2,400mm (8 ft.)
32mm (1¼") - 50mm (2")	3,000mm (10 ft.)
65mm (2½") and over	3,600mm (12 ft.)

3.10 ANCHORS, GUIDES AND EXPANSION COMPENSATORS

- .1 Install hangers, supports, anchors and guides in accordance with the manufacturer's recommendations and MSS standards.
- .2 Install domestic hot water piping with sufficient flexibility to accommodate thermal expansion and contraction.
- .3 Provide expansion offsets and changes in direction as required by piping layout.

3.11 PROTECTION

- .1 Protect existing fixtures, piping, equipment and building finishes from damage during construction.
- .2 Cap or plug piping openings during construction to prevent entry of dirt and debris.
- .3 Protect floor drains, cleanouts and plumbing fixtures during construction activities.

3.12 CONCRETE

- .1 Except as specifically indicated on the Mechanical Drawings or where indicated on the Architectural or Structural Drawings as provided by other Sections, provide all concrete work required for mechanical work (bases, curbs, anchors, thrust blocks, manholes, catch basins) in accordance with requirements of Division 3. Provide reinforced concrete housekeeping pads (equipment bases) at least 100 mm (4") high under all floor mounted equipment. Provide 150 mm (6") high bases under equipment with cooling coils to provide sufficient clearance for deep seal condensate traps.
- .2 Provide in good time, all inserts, sump frames, anchors etc., required to be built into forming for mechanical services.

3.13 METALS

- .1 Steel construction required solely for the work of Mechanical trades and not shown on Architectural or Structural Drawings: Provided by Divisions 22 to the acceptance of the Consultant. Prepare and submit installation drawings on any steel construction for acceptance of the Consultant. Provide one coat of primer on all steel supports located outdoors.

3.14 CUTTING AND PATCHING

- .1 Provide all cutting and patching required for plumbing work.
- .2 Obtain approval prior to cutting structural components.

- .3 Restore walls, floors, ceilings and finishes to match adjacent construction.
- .4 Firestop all penetrations through rated assemblies.

3.15 LINTELS

- .1 Lintels for openings in masonry to conform to requirements given on structural drawings and as required by laws.
- .2 Pay all costs for lintels over openings required solely by the mechanical trades.

3.16 FLASHING

- .1 Flash all mechanical parts passing through or built into an outside wall, roof or a waterproof floor.
- .2 Provide copper flashing for sleeves passing through exterior walls or water proof floors.
- .3 Provide counter flashing on stacks, ducts and pipes passing through roofs to fit over flashing or curb.

3.17 INSERTS, SLEEVES AND ESCUTCHEONS

- .1 Provide sleeves wherever piping passes through floors, walls and partitions.
- .2 Provide chrome-plated escutcheons at exposed piping penetrations.
- .3 Firestop all penetrations through fire-rated assemblies.
- .4 Seal penetrations through waterproof assemblies watertight.

3.18 ACCESS PANELS AND DOORS

- .1 Install all concealed Mechanical equipment requiring adjustment or maintenance in locations easily accessible through access panels and doors. Install systems and components to result in a minimum number of access panels.
- .2 Access doors are required in walls, ceilings and ductwork for the following:
 - .1 Fire dampers and motorized dampers (for inspection, repair and resetting). Provide access doors on both upstream and downstream sides of automatic dampers.
 - .2 Duct mounted coils (duct access upstream and downstream sides for cleaning).
 - .3 Fan inlets and outlets (for inspection of impellers and vanes).
 - .4 At VAV terminal inlets for access to air flow measurement devices and for cleaning and servicing.
 - .5 Unitary heating/cooling equipment, such as heat pumps and fan coils, in ceiling spaces.
 - .6 Duct mounted smoke detectors (for inspection of in-duct sensors).
 - .7 Control valves and temperature control components.
 - .8 Expansion compensators, guides and anchors.
- .3 Indicate access panels on "As built" drawings and note at each location the items (i.e. equipment or valve no.) that access is being provided for.
- .4 Supply the Division 08 Subtrade with panels, doors or the frames therefore, complete with all pertinent information and pay that trade for installation.
- .5 Prepare detail drawings showing location and type of all access doors in co-ordination with other trades before proceeding with installation and submit for review.

- .6 Size access doors to provide adequate access and be commensurate with type of structure and architectural finish.
- .7 Ensure proper rating of doors in fire separations.
- .8 Provide lamacoid labels (white on black), screwed in place, on all access doors and access tiles listing items or equipment which access is being provided for.

3.19 EXCAVATION AND BACKFILL

- .1 Perform portions of excavation, bedding, backfill and related work required for mechanical Work in accordance with requirements of Division 02 except as supplemented by this Article. Ensure all services are buried a minimum of 2 ft (0.6m) below the frost line where piping is located outside the building perimeter walls.
- .2 Where excavation and backfill is required outside perimeter foundation walls, provide all required layout of mechanical services trenches
- .3 Provide all required information to Division 02 Subtrade during excavation.
- .4 Perform carving and trimming of final 150 mm (6") of trench bottom excavation.
- .5 Perform bedding, installation of services, backfilling and testing to 300 mm (12") above uppermost buried service.
- .6 The balance of backfilling to be performed by Division 02 Subtrade after receiving clearance from Divisions 20 and 22.
- .7 Grade the bottom of the pipe trench excavation as required.
- .8 In firm undisturbed soil, lay pipes directly on the soil and shape soil to fit the lower ½ segment of all pipes and pipe bells. Ensure even bearing along the barrels.
- .9 In rock and shale excavate to 150mm (6") below and a minimum of 200mm (8") to either side of the pipe. Fill back with a bedding of 10mm (13/32") crushed stone or granular 'A' gravel.
- .10 Prepare new bedding under pipe in unstable soil, in fill, and in all cases where pipe bedding has been removed in earlier excavation, particularly near perimeter walls of buildings, at manholes and catch basins. Compact to maximum possible density and support the pipe by 200mm (8") thick concrete cradle, spanning full length between firm supports. Install reinforcing steel in cradle and construct piers every 2400mm (8 ft.) or closer, down to solid load bearing strata. Provide a minimum of one pier per length of pipe. Use the same method where pipes cross.
- .11 Where excavation is necessary in proximity to and below the level of any footing, bed with 14,000 kPa (2000 psi) concrete to the level of the highest adjacent footing. Proximity is determined by the angle of repose as established by the Consultant.
- .12 Provide support over at least the bottom one third segment of the pipe in all bedding methods.
- .13 Do not open trench ahead of pipe laying and bedding more than weather will permit. Break up rocks and boulders and remove by drilling and wedging. Do not use blasting unless specifically approved by the Consultant.
- .14 Perform all or required portions of backfilling as specified in Division 03 150mm (6") layers with clean selected materials acceptable to the Consultant.

- .15 At a point where backfilling has been completed to 24 in. [600 mm] above the top of the pipe, lay in three strips of 75mm [3 in.] wide yellow polyethylene or copolymer tape with repeating black letters every 600 mm [24 in] "Caution – fire Main" or similar notification acceptable to the Consultant. Refer to the Detail Drawings.
- .16 Replace all paving removed for the installation of buried fire mains, post indicator valves and hydrants. Refer to Section 21 05 05.
- .17 Backfill and compact to the following standard Proctor percentages:

Sodded area	85%
Under paving	95%
Under Floor slabs	100%
- .18 Dispose of excavated material as directed by the Contractor.

3.20 PAINTING

- .1 Provide all exposed ferrous metal work on equipment with at least one factory prime coat, or paint one prime coat on job. Clean up or wire brush all equipment before painting. Finish painting is specified in Division 09. This Division is not required to prime coat or paint ductwork or piping.
- .2 Co-ordinate with Division 09 Subcontractor and provide all required assistance in identifying all piping circuits requiring colour coding in addition to natural gas, propane and fire protection piping.
- .3 For factory applied finishes, repaint or refinish surfaces damaged during shipment, erection or construction work.

3.21 MECHANICAL WORK IDENTIFICATION

- .1 Identify new exposed piping and ductwork in locations as follows:
 - .1 At every end of every piping or duct run;
 - .2 Adjacent to each valve, strainer, damper and similar accessory;
 - .3 At each piece of connecting equipment;
 - .4 On both sides of every pipe and duct passing through a floor, wall or partition, unless otherwise specified;
 - .5 At 6 m (20') intervals on pipe and duct runs exceeding 6 m (20') in length;
 - .6 At least once in each room, and at least once on pipe and duct runs less than 6 m (20') in length.
- .2 Unless otherwise specified identify new concealed piping and ductwork in locations as follows:
 - .1 At points where pipes or ducts enter and leave rooms, shafts, pipe chases, furred spaces, and similar areas;
 - .2 At maximum 6 m (20') intervals on piping and ductwork above suspended accessible ceilings, and at least once in each room;
 - .3 At each access door location;
 - .4 At each piece of connected equipment, automatic valve, etc.
- .3 Provide an identification nameplate for equipment provided as part of this project, including items such as control valves, motorized dampers, instruments, and similar products. Secure nameplates in place, approximately at eye level if possible, with stainless steel screws unless such a practice is prohibitive, in which case use epoxy cement applied to cleaned surfaces. Locate nameplates in the most conspicuous and readable location. Where equipment is locally switched (e.g. Room exhaust fans) provide identification plate at switch.

- .4 Paint new natural and/or propane gas piping with primer and 2 coats of yellow paint in accordance with local governing code requirements and requirements of Division 09. Identify piping at intervals as specified above.
- .5 Provide an identification nameplate for each motor starter or disconnect switch located in a motor control centre or on a motor starter panel, and on each individually mounted starter provided as part of mechanical work, and on each disconnect switch provided as part of the electrical work for motorized equipment provided as part of mechanical work.
- .6 Co-ordinate with Section 25 01 01 Building Automation System subcontractor and obtain list of automatically operated equipment and provide warning identification on lamacoid plate for each item as follows:

"Warning: This equipment may start at any time. Do not service without disconnecting power."
- .7 For electrically traced mechanical work, identification wording is to include "ELECTRICALLY TRACED".
- .8 Tag valves and prepare a valve tag chart in accordance with following requirements:
 - .1 Attach a valve tag to each new valve, except for valves located immediately at equipment they control;
 - .2 Prepare a computer printed valve tag chart to list tagged valves, with, for each valve, the tag number, location, valve size, piping service, and valve attitude (normally open or normally closed);
 - .3 If an existing valve tag chart is available at site, valve tag numbering is to be an extension of existing numbering and new valve tag chart is to incorporate existing chart;
 - .4 Frame and glaze one copy of chart and, unless otherwise directed, affix to a wall in each main Mechanical and/or Equipment Room;
 - .5 Include a copy of valve tag chart in each copy of operating and maintenance instruction manuals;
 - .6 Hand an identified USB of valve tag chart to Owner at same time O&M Manuals are submitted.
- .9 Where shut-off valves, control dampers, sensors, and similar items which will or may need maintenance and/or repair are located above accessible suspended ceilings, provide round coloured ceiling tacks in ceiling panel material, or stickers equal to Brady "Quick Dot" on ceiling grid material to indicate locations of items. Unless otherwise specified, ceiling tack or sticker colours are to be as follows:
 - .1 HVAC piping valves and equipment: Yellow
 - .2 Fire protection valves and equipment: Red
 - .3 Plumbing valves and equipment: Green
 - .4 HVAC ductwork dampers and equipment: Blue
 - .5 Control system hardware and equipment: Orange

3.22 EXPOSED WORK

- .1 Wherever any mechanical work (plumbing, heating and sprinkler piping, ductwork, and associated thermal insulation) is exposed in finished areas, co-ordinate the work with the Consultant prior to installation. If unsatisfactory installation results due to not following this procedure, perform remedial work to the Consultant's acceptance.
- .2 For purposes of the foregoing, finished areas do not include parking garages and equipment rooms.
- .3 General Procedures for Systems Cleaning and Inhibiting

- .1 Perform cleaning and chemical treatment activities in a continuous process without interruption.
 - .2 Perform a complete water analysis of the domestic water source before cleaning and filling. Submit report to Consultant.
 - .3 Submit a detailed written procedural report to Consultant before system cleaning, outlining the following:
 - .1 System status and description.
 - .2 Cleaning procedures, flow rates, elapsed time.
 - .3 Chemical cleaners and concentrations.
 - .4 Inhibitors and concentrations.
 - .5 Specific requirements to complete work.
 - .6 Special precautions for protecting piping system materials and components.
 - .4 Pipe cleaning to be completed after hydrostatic test.
 - .5 Flush through all low point drains of the piping system.
 - .6 Low Points:
 - .1 Inspect, clean of sludge and flush all low points with clean water after cleaning and degreasing process is completed.
 - .2 Include disassembly of components as required.
 - .3 All cleaning and flushing of low points, coils and boilers shall be done prior to final fill and chemical treatment.
 - .7 Ensure flush velocity is adequate in all pipe mains and branches to ensure debris is removed.
 - .8 Where necessary, create a loop at the end of the system to ensure no dead legs.
 - .9 Circulation of Cleaning Solution:
 - .1 System pumps may be used for circulating cleaning solution provided velocities are adequate.
 - .2 If used for circulation, dismantle pump and inspect, replace worn parts, install new gaskets and seals. Turn over used seals.
- .4 Domestic Hot, Cold and Recirculating Water System
- .1 Flushing:
 - .1 Before disinfecting, flush all foreign matter from the pipeline.
 - .2 Provide hoses, pumps, temporary pipes, ditches, etc., as required to dispose of flushing water without causing damage to adjacent properties.
 - .3 The flushing velocities shall be at least 1 m/s, for a period of 10 minutes.
 - .4 Open and close valves, hydrants, and services connections to ensure thorough flushing.
 - .5 For large diameter pipe, where it is impractical or impossible to flush the pipe at 1 m/s velocity, the pipeline shall be cleaned in place from the inside by brushing and sweeping, then flushing the line at a lower velocity.
 - .2 Disinfection:
 - .1 Pipes intended to carry potable water shall be disinfected before being placed in service.
 - .2 Disinfection procedures shall conform to AWWA C651 as hereinafter modified or expanded, and the requirements of any governing agency having jurisdiction.
 - .3 Ensure that the disinfection solution is distributed throughout the entire domestic water system.
 - .3 Disinfection Mixture:
 - .1 The mechanical contractor shall prepare the disinfection mixture with a chlorine-water solution having a free chlorine residual of 40 - 50 PPM.
 - .2 The disinfection mixture shall be prepared by injecting calcium or sodium hypochlorite and water into the piping and allowing it to flow at a measured rate so that water-chlorine solution is of the specified strength.

- .3 If the calcium hypochlorite procedure is used, first mix the dry powder with water to make a thick paste, then thin to approximately a one percent solution (10,000 PPM Chlorine).
- .4 If the sodium hypochlorite procedure is used, dilute the liquid with water to obtain a one percent solution.
- .4 Point of Application:
 - .1 The chlorine mixture shall be injected into the piping to be treated at the beginning of the line, and through a corporation stop or suitable tap in the top of the line.
 - .2 Water from the existing system or other approved sources shall be controlled so as to flow slowly into the newly installed pipe during the application of chlorine.
 - .3 The rate of chlorine mixture flow shall be in such proportion to the rate of water entering the pipe that the combined mixture shall contain 40-50 PPM of free available chlorine.
 - .4 Valves shall be manipulated so that the strong chlorine solution in the line being treated will not flow back into the line supplying the water.
 - .5 Check valves shall be used if deemed necessary.
 - .6 The chemical treatment representative shall analyze and record the free chlorine residual at the farthest fixtures from the injection point.
- .5 All valves, fixtures and other appurtenances shall be operated during disinfection to ensure that the disinfection mixture is dispersed into all parts of the line, including dead ends, new services and similar areas that otherwise may not receive the treated water.
- .6 Retention Period:
 - .1 Treated water shall be retained in the pipeline long enough to destroy all nonspore-forming bacteria.
 - .2 With proper flushing and the specified solution strength, 24 hours is adequate.
 - .3 At the end of the 24-hour period, the disinfection mixture shall have a strength of at least 25 PPM of chlorine.
 - .4 The chemical treatment representative shall analyze and record the free chlorine residual at the farthest fixtures from the injection point.
- .7 The above procedure shall be repeated at the mechanical contractor's expense if the free chlorine level drops below the minimum requirements.
- .8 Arrange and pay for water quality tests to be performed by an independent testing laboratory acceptable to the Consultant as follows:
 - .1 Test for chlorine residuals at extreme ends of all piping systems. After a chlorine residual of not less than 50 ppm has been achieved in all parts of the system, let the system stand for 24 hours. After this period, take further samples to ensure that there is still not less than 10 ppm of chlorine residual throughout the system.
 - .2 When chlorine residuals of 10 ppm have been maintained for a minimum of 24 hours, flush the system and refill to put the system into service.
 - .3 Submit copy of report as prepared by the testing laboratory as well as a certificate attesting to level of safety of water supply being in conformance with standards of Authority having jurisdiction.
- .9 After chlorination, the water from the line shall be flushed until it meets health department requirements.
- .10 Disposal of Disinfection Water:
 - .1 Disposal of disinfecting water shall be done in an approved manner.
 - .2 Disinfecting water should not be allowed to flow into a waterway without adequate dilution or other satisfactory method of reducing chlorine concentrations to a safe level.
- .5 When new systems are to be connected to existing systems
 - .1 Take samples of water in existing piping and submit to Chemical Treatment Subcontractor for water quality testing.

- .2 Should the water quality in the existing piping not be sufficient, include the existing piping in the above flushing and cleaning scope.
- .3 If flushing scope & cleaning is restricted to new piping only:
 - .1 Provide isolation valves as required to fully isolate new piping from existing piping during cleaning and flushing procedure.
 - .2 Create additional loops at the end of the system, as necessary to ensure no dead legs and that flushing only takes place in new piping.
 - .3 Complete one final water quality test for new piping prior to opening up to existing system.

3.23 PIPING SYSTEM TESTS

- .1 Do not insulate piping systems until completed, perfected, and proven tight.
- .2 Should leaks develop in any part of the piping system, remove and replace defective sections, fittings and equipment.
- .3 Test piping system in sections as required by the progress of work.
- .4 Test all domestic water piping hydraulically to a minimum pressure of 1100 kPa (150 psi) or 1.5 times the normal working pressure, whichever is the greater, and prove tight for a period of 8 hours. Testing with nitrogen is also acceptable provided a pressure of 1.25 times values specified previously is used.
- .5 All plumbing, heating and cooling mains and branches are to be flushed and cleaned without fixtures and appliances connected.
- .6 All tests must be recorded. Submit recorded data to the Consultant.

END OF SECTION 20 05 10

PART 1 - GENERAL

1.01 DESCRIPTION

- .1 Comply with Requirements of Division 01, General Requirements and all documents referred to therein.
- .2 Comply with requirements of Basic Mechanical Materials and Methods Section 20 05 10.

1.02 WORK PERFORMED BY THIS SECTION

- .1 Supply and installation of piping insulation.

1.03 DEFINITIONS

- .1 For purposes of this section:
 - .1 "CONCEALED" - insulated mechanical services and equipment in suspended ceilings and non-accessible chases and furred-in spaces.
 - .2 "EXPOSED" - means "not concealed" as previously defined.
 - .3 Insulation systems - insulation material, fasteners, jackets and other accessories.

1.04 QUALITY ASSURANCE

- .1 Qualifications: Execute work of this section only by skilled tradesmen regularly employed in the application of insulation to piping, ductwork, plenums, tanks, pressure vessels, equipment casings and heating panels for building heating, cooling, ventilating and plumbing systems.
- .2 Insulation, self-adhesive tape, adhesives and any insulation finishes to be ULC labelled and listed for flame spread rating of less than 25 and smoke development classification of less than 50.
- .3 Health and Safety:
 - .1 Do construction occupational health and safety in accordance with Division 01, Health and Safety Requirements.
- .4 Acceptable Manufacturers:
 - .1 Insulation: Fiberglas Canada Inc., Knauf Fiber Glass, Manson, Roxul.
 - .2 Preformed flexible elastomeric insulation: ARMACELL – AP Armaflex SS Pipe Insulation, Johns Manville, Rubatex.
 - .3 Tape: Avery Dennison, Mactac, Tuck, Compac.
 - .4 Canvas: Fattal Thermocanvas, Alpa-Maritex 3451-RW, Clairmont Diplag 60.
 - .5 Lagging adhesive: Childers CP.50A-HV2, Fosters 30-36 asbestos free.

1.05 SUBMITTALS

- .1 Submit manufacturer's printed product literature and datasheets for insulation adhesives, coatings and finishes, include product characteristics, performance criteria, physical size, finish and limitations in accordance with Section 20 05 01 – Shop Drawings, Product Data & Samples.

1.06 DELIVERY, STORAGE AND HANDLING

- .1 Do Delivery, Storage and Handling in accordance with Section 20 05 05 - Mechanical Work General Instructions.

1.07 WARRANTY

- .1 Provide warranties as outlined in Section 20 05 05 - Mechanical Work General Instructions.

PART 2 - PRODUCTS

2.01 INSULATION

- .1 Preformed: ULC Listed sectional glass fibre pipe insulation in compliance with ASTM C335 in sections 900 mm (36") long, split and ready for application with a maximum Thermal Conductivity of 0.033 W/m°C at 24°C mean temperature and be capable of use on service from -40°C to 260°C and with factory applied vapour seal jacket of vinyl coated foil Kraft laminate with reinforcing of open mesh glass fibre.
- .2 Preformed Foam: ULC Listed sectional DOW Trymer 2000 XP Polyisocyanurate Foam pipe insulation in compliance with ASTM C335 in sections 900 mm (36") long, split and ready for application with a density of 32.8 kg/m³ (2.05 lb/ft³) according to ASTM D1622, R-value of 0.93 m² °C/W at 24°C mean temperature, water absorption of not more than 0.7% by volume according to ASTM C272, be capable of use on service from -183°C to 149°C and with factory applied vapour seal jacket.
- .3 Rigid board: 72 kg/m³ (4.5 lbs/ft³) density ULC listed glass fibre board with glass fibre reinforced aluminium foil vapour seal facing and maximum thermal conductivity of 0.035 W/m°C at 24°C mean temperature.
- .4 Blanket: 24 kg/m³ (1.5 lbs/ft³) ULC listed flexible glass fibre blanket with glass fibre reinforced aluminium foil vapour seal facing with thermal conductivity of 0.036 W/m°C.
- .5 High temperature (over 200°C): Preformed calcium silicate or Roxul 1200 mineral fibre piping insulation.
- .6 Low temperature: 20 mm fire retardant closed cell Armaflex in sheet form or preformed for piping.
- .7 Preformed flexible elastomeric closed cell insulation for installation on cold and dual temperature (hot and cold) system piping, valves and fittings: to ASTM C534. Thermal performance: 0.04 W/m°C @ 24°C (0.28 btu/hr/in/sq ft/°F @ 75°F) established in accordance with ASTM C 177 or ASTM C 518 and CAN2-51.40-M80+Amendments. service temperature: -40°F to 203°F (-40°C to 95°C), tubular with self-sealing seams, noncombustible meeting 25/50 flame spread/smoke developed when tested to ASTM E84, a water vapour transmission rating of 0.08 in accordance with ASTM E96-90, Procedure A. Provide manufacturer specific sealer/adhesive.

2.02 FINISHES AND PROTECTIVE COVERINGS

- .1 Canvas: 170 g/m² with lagging adhesive, ULC labelled.
- .2 Protective covering (aluminium): .020 Childers corrugated aluminium preformed covering complete with strapping and seals.
- .3 For pipework, ductwork or equipment exposed to the elements, provide an external PVC jacket to the insulation which is to be a white UV resistant PVC jacket. Extra thick material is to be used on outdoor installations only. Normal thickness for indoor installation. 25/50 flame and smoke rated grade PVC shall be used.
 - .1 Finish is to be high gloss white.
 - .2 Minimum thickness to be 10mm
 - .3 Must be resistant to fungi and bacterial growth and comply with ASTM G 21 & G22.

- .4 PVC must be in compliance with ASTM 1784 & CAN/CGSB 51.53.95.
- .5 When installing PVC jacket, jacket must overlap a minimum of 50mm

PART 3 - EXECUTION

3.01 APPLICATION

- .1 Manufacturer's Instructions: Comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.02 PRE-INSTALLATION REQUIREMENTS

- .1 Pressure test ductwork piping systems and equipment complete, witness and certify.
- .2 Ensure surfaces are clean, dry, free from foreign material.

3.03 EQUIPMENT AND MISCELLANEOUS APPLICATIONS

- .1 Drains and water supplies for wallhung handicapped lavatories: blanket type on exposed water supplies and drain under lavatory. Finish with canvas.

3.04 PIPING APPLICATION SCHEDULE

Item	Conductivity Range W/m°C	Insulation Thickness & Type
Domestic hot water (Conditioned space)	0.032 – 0.041	25mm (1") pre-molded for pipe up to and including 31mm (1¼"). 40mm (1½") for 38mm (1½") pipe and greater. 50mm (2") for greater than water temperature higher than 60°C (140°F).
Domestic hot water (Non-conditioned space or outdoor)	0.032 – 0.041	40mm (1½") for runouts less than 50mm (2") pipe 65mm (1½") pre-molded for pipe up to and including 50mm (2"). 76mm (3") pre-molded for pipe from 65mm (2½") up to and including 100mm (4") 88mm (3½") for 125mm (5") pipe and greater.
Domestic hot water recirculation (Conditioned space)	0.032 – 0.041	25mm (1") pre-molded for pipe up to and including 31mm (1¼"). 40 mm (1½") for 40mm (1½") pipe and greater.
Domestic hot water recirculation (Non-conditioned space or outdoor)	0.032 – 0.041	40mm (1½") for runouts less than 50mm (2") pipe 65mm (2½") pre-molded for pipe up to and including 50mm (2").
Domestic cold water & Non-potable water	0.033	12mm (½") pre-molded 40mm (1½") pipe and below. 25mm (1") pre-molded for 50mm (2") pipe to 150mm (6") pipe. 31mm (1") pre-molded for 200mm (8") pipe and greater.
Storm Line (Horizontal) Indoor	0.033	40mm (1½") pre-molded

Item	Conductivity Range W/m°C	Insulation Thickness & Type
Storm Line (outdoor)	0.033	50mm (2") pre-molded

3.05 PIPING

- .1 Apply insulation at temperature of approximately 8°C over clean, dry surfaces. Butt adjoining sections of insulation firmly together with the longitudinal seam of the jacket located on the bottom half of the pipe.
- .2 Insulate and finish in the same manner and same thickness as piping, all valves, fittings and flanges on cold and hot water piping. Use PVC jacketed mitred sections of the specified pipe covering or preformed insulation to suit fitting. Insulate all fittings, valves, strainers, unions and flanges on domestic hot water service for health care facilities including old age homes and long term care buildings.
- .3 Seal longitudinal lap joints with a suitable vapour barrier adhesive for cold and chilled water piping and a suitable cement capable of withstanding service temperature on hot water piping. Cover circumferential butt joints with a strip of the same material as the jacket and cement as indicated above. Cover all joints with foil faced self-adhesive tape on chilled and cold water piping.
- .4 Concealed insulated items require no further finish than provided in factory applied jacket. Cover exposed insulation and all insulated equipment with canvas, field applied, adhered and lap sealed and finished off by a brush coat of approved sizing.
- .5 Insulated piping exposed to outdoors: Apply aluminium protective covering over all insulated pipe and fittings. Seal all joints with approved sealants.
- .6 Seal valves, fittings and flanges on cold and chilled water application in a manner as specified for circumferential joints. On strainers, insulate over blow-down valves and bushings or flanges required for strainer basket removal by providing a removable prefabricated Armaflex cover held in place with a stainless steel gear clamp. Do not insulate over blow-down valves and bushings or flanges for strainer basket removal on condenser water piping.
- .7 Seal end joints and perforation with 100mm (4") vapour barrier strips applied with the same adhesives and cements as previously specified for cold and chilled water.
- .8 On all domestic cold and chilled water piping:
 - .1 Where oversized hangers are used, protect insulation with a sheet metal saddle installed over the vapour barrier. For piping 40mm (1½") and larger provide a section of rigid insulation or non-compressible material under the vapour barrier the same length as the saddle - see detail drawing.
 - .2 Where oversized hangers are not used, apply 12 mm (1/2") insulation with vapour seal over hanger and support rod for a distance of two pipe diameters up the rod from the attachment point at the ring, clamp or clevis.
- .9 Apply blanket type insulation on piping using an approved adhesive and seal all longitudinal and transverse joints with foil faced tape. Insulate pipe hanger in similar manner for a distance of two pipe diameters up the rod beyond the attachment point at the ring, clamp or clevis.
- .10 Insulation on piping where Victaulic couplings are used:
 - .1 In concealed areas, provide insulation over couplings to same thickness as specified for piping.

- .2 In exposed areas, (except mechanical and service rooms) increase insulation thickness and provide one-half specified thickness over couplings to achieve the appearance of uniform diameter of pipe and fittings.
- .3 Where aluminium sheet cladding is required, increase insulation thickness as described in (2) above to achieve a standard and uniform diameter.
- .11 On water to water heat pump circuits utilizing 50mm (2") insulation: At all ball valves, use 1" insulation to allow space for valve handle operation.

3.06 FINISHES

- .1 Canvas over insulated items where exposed indoors.
- .2 28 ga. aluminium over all insulated piping exposed to
- .3 Weatherproof mastic, two coats trowelled smooth, over ductwork insulation where exposed outdoors.
- .4 Breeching Insulation: Apply 13mm (1/2") coat of hydraulic setting insulating cement trowelled smooth over metal mesh.

3.07 CLEANING

- .1 Do Cleaning in accordance with Section 20 05 05 - Mechanical Work General Instructions.

END OF SECTION 20 05 25

PART 1 - GENERAL

1.01 DESCRIPTION

- .1 Comply with Requirements of Division 01, General Requirements and all documents referred to therein.
- .2 Comply with requirements of 20 05 10 Mechanical Basic Materials and Methods.

1.02 WORK PERFORMED BY THIS SECTION

- .1 Provide a complete plumbing system including domestic hot and cold water, sanitary and storm drainage, and vent piping and all fixtures, trim and hot water heaters as shown on the drawings complete in every detail.

1.03 QUALITY ASSURANCE AND REGULATORY COMPLIANCE

- .1 Qualifications: Execute work of this section only by licensed tradesmen regularly employed in the installation of plumbing and drainage piping systems and site water supply and drainage services.
- .2 Other acceptable manufacturers to specified items:

Plumbing Fixtures: Crane, Eljer, Kohler
Plumbing Brass: American Standard, Delta, Crane
Water Closet Seats: Moldex, Beneke, Olsonite
Drains and Specialities: Zurn, Watts
Shower Valves: Leonard, Rada, Danfoss
Wash Fountains: Bradley, Willoughby
Precast Shower Bases and Mop Sinks: Fiat
Oil/Grease Interceptors: Zurn.
- .3 Provide all Barrier Free Fixtures and Fittings to CAN/CSA-B651.
- .4 Provide water closets and urinals with maximum flush for 6.0 and 3.8 litres respectively and provide flush valves that match the fixture capacities that are installed.
- .5 Provide domestic hot water generation systems in compliance with ASHRAE 90.1, 2010.
- .6 Where stops or shut-off valves are specified for fixtures, provide ball type valves - rough brass where concealed and chrome plated where exposed.

1.04 SUBMITTALS

- .1 Submit shop drawings in accordance with Section 20 05 01 – Shop Drawings, Product Data & Samples.
- .2 Shop drawings to show:
 - .1 Mounting arrangements.
 - .2 Operating and maintenance clearances.
- .3 Closeout Submittals:
 - .1 Provide operation and maintenance data for incorporation into manual specified in Division 01 closeout submittals and as outlined in Section 20 05 05.
 - .2 Site records and Record Drawings: Refer to Section 20 05 05:

- .3 Provide co-ordination/interference drawings, as required per Section 20 05 05, Co-ordination Drawings.

1.05 MAINTENANCE

- .1 Furnish spare parts in accordance with Division 01, to suit Close-out Submittals and in accordance with Section 20 05 01 and 20 05 10, as follows:
 - .1 One set of packing for each pump.
 - .2 One casing joint gasket for each size pump.
 - .3 One glass for each gauge glass.
- .2 Provide one set of special tools required to service equipment as recommended by manufacturers and in accordance with Division 01, to suit Close-out Submittals.
- .3 Furnish one commercial quality grease gun, grease and adapters to suit different types of grease and grease fittings.

1.06 START-UP AND COMMISSIONING

- .1 Follow start-up and commissioning procedures in accordance with Section 20 05 10.

PART 2 - PRODUCTS

2.01 NIL

PART 3 - EXECUTION

3.01 NIL

END OF SECTION 22 05 00

PART 1 - GENERAL

1.01 DESCRIPTION

- .1 Comply with Requirements of Division 01, General Requirements and all documents referred to therein.
- .2 Comply with requirements of Section 20 05 10 Mechanical Basic Materials and Methods.
- .3 Comply with requirements of Section 22 05 00 Common Work Results For Plumbing.

1.02 WORK PERFORMED BY THIS SECTION

- .1 Section Includes:
 - .1 Materials and installation for plumbing specialties and accessories.
 - .2 Sustainable requirements for construction and verification.
- .2 Related Sections:
 - .1 Division 01
 - .2 Division 02

1.03 REFERENCES

- .1 American Society for Testing and Materials International (ASTM).
 - .1 ASTM A126, Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings.
 - .2 ASTM B62, Specification for Composition Bronze or Ounce Metal Castings.
- .2 American Water Works Association (AWWA).
 - .1 AWWA C700, Cold Water Meters-Displacement Type, Bronze Main Case.
 - .2 AWWA C701, Cold Water Meters-Turbine Type for Customer Service.
 - .3 AWWA C702-1, Cold Water Meters-Compound Type.
- .3 Canadian Standards Association (CSA International).
 - .1 CSA-B64 Series, Backflow Preventers and Vacuum Breakers.
 - .2 CSA-B79, Floor, Area and Shower Drains, and Clean-outs for Residential Construction.
 - .3 CSA-B356, Water Pressure Reducing Valves for Domestic Water Supply Systems.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
 - .1 Material Safety Data Sheets (MSDS).
- .5 Plumbing and Drainage Institute (PDI).
 - .1 PDI-G101, Testing and Rating Procedure for Grease Interceptors with Appendix of Sizing and Installation Data.
 - .2 PDI-WH201, Water Hammer Arresters Standard.

1.04 QUALITY ASSURANCE AND REGULATORY COMPLIANCE

- .1 Qualifications: Execute work of this section only by licensed tradesmen regularly employed in the installation of plumbing and drainage piping systems and site water supply and drainage services.
- .2 Provide all Barrier Free Fixtures and Fittings to CAN/CSA-B651.

- .3 Provide water closets and urinals with maximum flush for 6.0 and 3.8 litres respectively and provide flush valves that match the fixture capacities that are installed.
- .4 Provide domestic hot water generation systems in compliance with ASHRAE 90.1 (latest version).
- .5 Where stops or shut-off valves are specified for fixtures, provide ball type valves - rough brass where concealed and chrome plated where exposed.
- .6 Acceptable manufacturers: Refer to Section 22 05 00.

1.05 SUBMITTALS

- .1 Submit shop drawings in accordance with Section 20 05 01 – Shop Drawings, Product Data & Samples.

1.06 DELIVERY, STORAGE AND HANDLING

- .1 Do Delivery, Storage and Handling in accordance with Section 20 05 05 - Mechanical Work General Instructions.

1.07 WARRANTY

- .1 Provide warranties as outlined in Section 20 05 05.

PART 2 - PRODUCTS

2.01 CLEANOUTS

.1 Line cleanouts:

- .1 Smith Series 4420 Line Cleanout, in cast iron pipe with taper thread cover secured to body with full size pipe opening.

.2 Stack Cleanout:

- .1 Smith Series 4510 Stack Cleanout, in base of cast iron stacks with neoprene gasketed secured cover. Where cleanouts are concealed behind finished walls access shall be made by 4530 round stainless steel plate and slotted flat head stainless steel screws.

.3 Floor cleanouts:

In unfinished areas and outside areas, Smith 'Twist to Floor' Series 4220 Floor Cleanout, duco coated cast iron body with integral clamp device, and removable positive seal closure plug and heavy duty 6" (150mm) adjustable cover secured with stainless steel screws, C.O. cast in cover. (For water proofed areas provide 'FC' flange with flashing clamp).

- .1 In tiled areas, Smith Series 4140 Floor Cleanout, same as above with square nickel bronze cover and frame recessed for tile. Cover can be adjusted to suit floor lines when installing finished floor. (Mosaic tile provide series 4160 with square cover).
- .2 In terrazzo areas, Smith Series 4180 Floor Cleanout, same as above with square nickel bronze cover and frame recessed for terrazzo. Cover can be adjusted to suit floor lines when installing finished floor.
- .3 In carpeted areas, Smith Series 4020Y Floor Cleanout, same as above with nickel bronze cover and frame.
- .4 In other finished areas, Smith Series 4020 Floor Cleanout, same as above with nickel bronze frame and cover (for medium load traffic).
- .5 For heavy traffic areas, Smith Series 4100 Floor Cleanout, same as above with extra heavy nickel bronze cover and frame.

2.02 WATER HAMMER ARRESTORS

- .1 P.P.P. INC. 'Water Hammer Arrestors' Series 'SC' with brass piston in a type 'K' copper casing size according to manufacturer's recommendations chart below to eliminate water hammer and shock from piping system. Provide Water Hammer Arrestors on hot and cold water supplies to all quick valves, solenoids, and plumbing fixtures, and locate in an upright position between the last two fixtures on a line, or horizontally at the end of line closest to supply source.
- .2 On projects exceeding five stories in height, provide water hammer arrestors on domestic water risers as follows. Locate arrestors at the end of riser opposite supply source. Arrestor shall be two pipe sizes larger than the riser is at the connection point, not exceeding the largest pipe size diameter in the riser.

Size	Fixture Units	Model No.	Connection Size
A	1 - 11	SC - 500	½" (12mm)
B	12 - 32	SC - 700	¾" (20mm)
C	33 - 60	SC - 1000	1" (25mm)
D	61 - 113	SC - 1250	1¼" (32mm)
E	114 - 154	SC- 1500	1½" (38mm)
F	155 - 330	SC- 2000	2" (50mm)

2.03 TRAP SEAL PRIMERS

- .1 Trap seal primer shall be a mechanical pressure-drop operated trap seal primer suitable for potable water service.
- .2 Trap seal primer shall be cast brass construction complete with integral vacuum breaker, backflow protection, inlet strainer, and all required fittings and accessories.
- .3 Trap seal primer shall be P.P.P. Inc. Model PR-500 or approved equivalent.
- .4 Provide manufacturer's distribution unit for serving multiple floor drains from a single trap seal primer.
- .5 Trap seal primer shall serve two floor drains as indicated on the drawings.
- .6 Provide primer distribution tubing, fittings, supports, valves, and accessories required for a complete and operational installation.
- .7 Install trap seal primer in an accessible location for maintenance and inspection.
- .8 Acceptable Manufacturers:
 - .1 P.P.P. Inc.
 - .2 Precision Plumbing Products (PPP).
 - .3 Approved equivalent.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

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

3.02 INSTALLATION

- .1 Install in accordance with National Plumbing Code of Canada, provincial codes, and local authority having jurisdiction.
- .2 Install in accordance with manufacturer's instructions and as specified.
- .3 Connect fixtures, complete with supplies and drains, separately trapped, supported level and square. Provide chrome plated piping for all exposed water supply, waste and vent connections.
- .4 Provide supports to set fixtures square and level.
- .5 Obtain Consultant's acceptance of mounting heights of all wall mounted fixtures.
- .6 Fixtures mounted on glazed tile surfaces: Provide ground faces to finished surfaces.
- .7 Install water hammer arrestors for each fixture or group of fixtures.

3.03 CLEAN-OUTS

- .1 Install clean-outs at base of soil and waste stacks, and rainwater leaders, at locations required code and as indicated.
- .2 Bring clean-outs to wall or finished floor unless serviceable from below floor.
- .3 Building drain clean-out and stack base cleanouts: Line size to maximum NPS4.

3.04 TRAP SEAL PRIMERS

- .1 Install for floor drains and elsewhere, as indicated.
- .2 Install on cold water supply to nearest frequently used plumbing fixture, in concealed space, to approval of the Consultant.
- .3 Install soft copper or plastic tubing to floor drain.

3.05 PIPE INSTALLATION

- .1 General: Install straight, parallel and close to walls and ceilings, with specified pitch. Use standard fittings for direction changes.
- .2 Install groups of piping parallel to each other on trapeze hangers; Space piping to permit application of insulation, identification and service access.
- .3 Install eccentric reducers in horizontal piping to permit drainage and eliminate air pockets.
- .4 Where pipe sizes differ from connection sizes of equipment, install reducing fittings close to equipment. Reducing bushings are not permitted.
- .5 Install brass and copper pipe and tubing free from surface damage. Replace damaged pipe or tubing.
- .6 Provide vents to atmosphere for all gas regulators as required by Code.
- .7 Ream ends of pipes and tubes before installation.
- .8 Lay copper tubing so that it is not in contact with dissimilar metal and will not be kinked or collapsed.
- .9 Provide non-toxic lubricant or teflon tape applied to male thread on all threaded connections.

- .10 Clean ends of pipes or tubing and recesses of fittings to be brazed or soldered. Assemble joints without binding.
- .11 Sanitary and storm drainage: Run piping to main sewers with uniform grade.
- .12 Jointing of pipe: Compatible with type of pipe used.
- .13 Water piping: Run water piping from service connection and connect to fixtures and equipment. At lavatories install supplies as high as possible.
- .14 Provide washroom groups and branch take offs from mains with isolating valves. Install stop valve in each fixture supply.
- .15 Where two or more branch recirculating hot water lines are connected to main recirculating line, provide lockshield globe valve and check valve in each branch line for balancing water flow and for prevention of back flow in one branch. Adjust balancing valves to provide recirculation through each circuit. Turn over lockshield valve key to Owner.
- .16 Provide hose end ball valves for complete system drainage.
- .17 Provide branch take-offs from mains of domestic hot and cold water lines with water balancing valves and shut off valves.
- .18 Provide all parts of the plumbing system including all required venting in accordance with Part 7 of the Ontario Building Code to current amendments, Provincial Plumbing Code.
- .19 Indirectly connect, to the sanitary sewer only, all drains and overflow lines from cooling towers.

3.06 FIELD QUALITY CONTROL

- .1 Verification requirements in accordance with Division 01, to suit Sustainable Requirements: Contractor's Verification to include:
 - .1 Materials and resources.
 - .2 Storage and collection of recyclables.
 - .3 Construction waste management.
 - .4 Resource re-use.
 - .5 Recycled content.
 - .6 Local/regional materials.
 - .7 Wood.
 - .8 Low-emitting materials.

3.07 TESTING AND ADJUSTING

- .1 General: In accordance with Division 01, to suit General Commissioning (Cx) Requirements - General Requirements, supplemented as specified.
- .2 Timing:
 - .1 After start-up deficiencies rectified.
 - .2 After certificate of completion has been issued by authority having jurisdiction.
- .3 Application tolerances:
 - .1 Pressure at fixtures: +/- 70kPa.
 - .2 Flow rate at fixtures: +/- 20%.

- .4 Adjustments:
 - .1 Verify that flow rate and pressure meet design criteria.
 - .2 Make adjustments while flow rate or withdrawal is (1) maximum and (2) 25% of maximum and while pressure is (1) maximum and (2) minimum.
- .5 Access doors: Verify size and location relative to items to be accessed.
- .6 Cleanouts: Verify covers are gas-tight, secure, yet readily removable.
- .7 Water hammer arrestors: Verify proper installation of correct type of water hammer arrester.
- .8 Commissioning Reports: In accordance with Division 01 and 20 05 10 - General Commissioning (Cx) Requirements: reports, supplemented as specified.
- .9 Training:
 - .1 In accordance with Division 01 and 20 05 10 - General Commissioning (Cx) Requirements: Training of O&M Personnel, supplemented as specified.
 - .2 Demonstrate full compliance with Design Criteria.

3.08 CLEANING

- .1 Do Cleaning in accordance with Section 20 05 10 – Basic Mechanical and Methods.

END OF SECTION 22 42 01

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 35 43 - Environmental Procedures.
- .2 Section 31 32 19 - Geotextiles.
- .3 Section 32 11 23 - Aggregate Base Courses.

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C117-17, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C136-14, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .3 ASTM D422-63 (2007), Standard Test Method for Particle-Size Analysis of Soils.
 - .4 ASTM D698-12 (2021), Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³) (600 kN-m/m³).
 - .5 ASTM D1557-09, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³) (2,700 kN-m/m³).
 - .6 ASTM D4318-17, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

1.3 DEFINITIONS

- .1 Excavation classes: one class of excavation will be recognized; common excavation.
 - .1 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.
- .2 Waste material: excavated material unsuitable for use in Work or surplus to requirements.
- .3 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.
- .4 Recycled fill material: material, considered inert, obtained from alternate sources and engineered to meet requirements of fill areas.
- .5 Unsuitable materials:
 - .1 Weak, chemically unstable, and compressible materials.
 - .2 Frost susceptible materials:
 - .1 Fine grained soils with plasticity index less than 10 when tested to ASTM D4318, and gradation within limits specified when tested to

ASTM D422 ASTM C136: Sieve sizes to CAN/CGSB-8.1 CAN/CGSB-8.2.

- .2 Soils with more than 3% passing No. 200 sieve.

1.4 SUBMITTALS

- .1 Quality Control:
 - .1 Submit for review by Engineer proposed dewatering methods as described in PART 3 of this Section.
 - .2 Submit to Engineer written notice at least 7 days prior to excavation work, to ensure cross sections are taken.
 - .3 Submit to Engineer written notice when bottom of excavation is reached.
 - .4 Submit to Engineer testing results as described in PART 3 of this Section.
- .2 Preconstruction Submittals:
 - .1 Submit records of underground utility locates, indicating: location plan of existing utilities as found in field, clearance record from utility authority, and location plan of relocated and abandoned services, as required.

1.5 QUALITY ASSURANCE

- .1 Qualification Statement: submit proof of insurance coverage for professional liability.
- .2 Keep design and supporting data on site.
- .3 Engage services of qualified professional Engineer who is registered or licensed in Province of Ontario, Canada in which Work is to be carried out to design and inspect cofferdams, shoring, bracing and underpinning required for Work.
- .4 Health and Safety Requirements:
 - .1 Do construction occupational health and safety in accordance with Provincial standards.

1.6 EXISTING CONDITIONS

- .1 Buried services:
 - .1 Before commencing work verify location of buried services on and adjacent to site.
 - .2 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered.
 - .3 Where utility lines or structures exist in area of excavation, obtain direction of Engineer before removing or re-routing.
 - .4 Record location of maintained, re-routed and abandoned underground lines.
- .2 Existing buildings and surface features:
 - .1 Conduct, with Engineer, condition survey of existing buildings, trees and other plants, lawns, fencing, service poles, wires, pavement, survey bench marks and monuments which may be affected by Work.
 - .2 Protect existing buildings and surface features from damage while Work is in progress. In event of damage, immediately make repair as directed by Engineer.

Part 2 Products

2.1 MATERIALS

- .1 Geotextiles: Section 31 32 19 - Geotextiles
- .2 Base Course: Section 32 11 23 - Aggregate Base Courses

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties, walkways and waterways.
- .2 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.2 SITE PREPARATION

- .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.

3.3 PREPARATION/PROTECTION

- .1 Keep excavations clean, free of standing water, and loose soil.
- .2 Protect buried services that are required to remain undisturbed.

3.4 SHORING, BRACING AND UNDERPINNING

- .1 Maintain sides and slopes of excavations in safe condition by appropriate methods and in accordance with Health and Safety Act for the Province of Ontario.

3.5 DEWATERING

- .1 Keep excavations free of water while Work is in progress.
- .2 Protect open excavations against flooding and damage due to surface run-off.
- .3 Dispose of water in manner not detrimental to public and private property, or portion of Work completed or under construction.
 - .1 Provide and maintain temporary drainage ditches and other diversions outside of excavation limits.

3.6 EXCAVATION

- .1 Advise Engineer at least 7 days in advance of excavation operations for initial cross sections to be taken.
- .2 Excavate to lines, grades, elevations and dimensions as indicated.
- .3 Excavation must not interfere with bearing capacity of adjacent foundations.
- .4 Restrict vehicle operations directly adjacent to open excavations.

- .5 Dispose of surplus and unsuitable excavated material off site at approved re-use facility as per O.Reg. 406/19.
- .6 Base of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .7 Notify Engineer when bottom of excavation is reached.
- .8 Obtain Engineer approval of completed excavation.
- .9 Correct unauthorized over-excavation as follows:
 - .1 Fill with Granular A material compacted to not less than 98% of corrected SPMDD.
- .10 Hand trim, make firm and remove loose material and debris from excavations.
 - .1 Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil.
- .11 Install geotextile at limits of excavation, as indicated on the Drawings and in accordance with Section 31 32 19 - Geotextiles.

3.7 BACKFILLING

- .1 Do not proceed with backfilling operations until completion of following:
 - .1 Engineer has inspected and approved installations.
- .2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .3 Do not use backfill material which is frozen or contains ice, snow or debris.
- .4 Place granular backfill material in uniform layers not exceeding 150 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.
- .5 Contractor shall arrange and pay for the required materials testing including the following:
 - .1 Proctor and gradation for Granular 'A' and Granular 'B'.
 - .2 Compaction testing for minimum top lift of Granular 'A' and Granular 'B'.

3.8 RESTORATION

- .1 Upon completion of Work, remove waste materials and debris off site.
- .2 Any disturbed areas outside of the limits shown on the design drawings shall be returned to equal or better condition at the contractor's expense.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 32 12 16 - Asphalt Paving Short Form
- .2 Section 31 00 00 - Earthwork Short Form
- .3 Section 31 23 33 - Excavating, Trenching and Backfilling
- .4 Section 32 12 16 – Aggregate Base Courses

1.2 REFERENCES

- .1 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-4.2 No. 11.2-M89 (R2013), Textile Test Methods - Bursting Strength - Ball Burst Test (Extension of September 1989).
 - .2 CAN/CGSB-148.1, Methods of Testing Geotextiles and Complete Geomembranes.
 - .1 No.2-M85 Methods of Testing Geosynthetics - Mass per Unit Area.
 - .2 No.3-M85, Methods of Testing Geosynthetics - Thickness of Geotextiles.
 - .3 No.6.1-93, Methods of Testing Geotextiles and Geomembranes - Bursting Strength of Geotextiles Under No Compressive Load.
 - .4 No.7.3-92, Methods of Testing Geotextiles and Geomembranes - Grab Tensile Test for Geotextiles.
 - .5 No. 10-94, Methods of Testing Geosynthetics - Geotextiles - Filtration Opening Size.
- .2 Ontario Provincial Standard Specifications (OPSS)
 - .1 OPSS.PROV 1860 – April 2018, Material Specification for Geotextiles.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 11 05 – General Instructions.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for geotextiles and geogrid and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Test and Evaluation Reports:
 - .1 If requested, submit copies of mill test data and certificate at least 4 weeks prior to start of Work.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.

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

Part 2 Products

2.1 MATERIAL

- .1 Non-woven geotextiles shall be Class II and consist of a manufactured sheet, web, or batt of directionally or randomly oriented fibres, filaments, or other elements produced by bonding or interlocking the elements by mechanical, thermal, or chemical means.
 - .1 Tensile strength, MARV, minimum 660 N to CAN/CGSB 148.1, Method No. 7.3.
 - .2 Elongation at break, typical, >50% to CAN/CGSB 148.1, Method No. 7.3.
 - .3 Tear strength, MARV, minimum, 250 N to CAN/CGSB 4.2, Method No. 12.2.
 - .4 Puncture strength, MARV minimum, 1375 N to ASTM D 6241.
 - .5 Permittivity, minimum, to 0.05 CAN/CGSB 148.1, Method No. 4 s⁻¹.
 - .6 Ultraviolet stability, minimum, 50% retained tensile strength at 500 hours to ASTM D 4355.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for geotextile material installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Engineer.
 - .2 Inform Engineer of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

- .1 Place geotextile material by unrolling onto graded surface in orientation, manner and locations indicated.
- .2 Place geotextile material smooth and free of tension stress, folds, wrinkles and creases.
- .3 Overlap each successive strip of geotextile 600 mm over previously laid strip.
- .4 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material layers.
- .5 After installation, cover with overlying layer within 4 hours of placement.
- .6 Replace damaged or deteriorated geotextile to approval of Engineer.

- .7 Place and compact soil layers in accordance with Section 32 11 23 – Aggregate Materials.

3.3 CLEANING

- .1 Progress Cleaning: in accordance with Section 01 74 00 – Cleaning.
- .2 Leave Work area clean at end of each day.
- .3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.4 PROTECTION

- .1 Vehicular traffic not permitted directly on geotextile or geogrid.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 31 23 33 - Excavating, Trenching and Backfilling
- .2 Section 31 32 19 - Geotextiles

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM C117-17, Standard Test Methods for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C131-06, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - .3 ASTM C136-14, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .4 ASTM D698-12 (2021), Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft³) (600kN-m/m³).
 - .5 ASTM D1557-09, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft³) (2,700kN-m/m³).
 - .6 ASTM D1883-21, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.
 - .7 ASTM D4318-17e1, Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

Part 2 Products

2.1 MATERIALS

- .1 Granular base: material in accordance with the following requirements:
 - .1 Granular 'A' and 'B' material – to OPSS 1010.
 - .2 Gradations to be within limits specified when tested to ASTM C136 ASTM C117. Sieve sizes to CAN/CGSB-8.1 CAN/CGSB-8.2.

Part 3 Execution

3.1 PLACEMENT AND INSTALLATION

- .1 Place granular base c/w geotextile and geogrid (where indicated) after sub-grade surface is inspected and approved in writing by Engineer.
- .2 Placing:
 - .1 Construct granular base to depth and grade in areas indicated.
 - .2 Place new Granular 'A' and 'B' material to thickness indicated.
 - .3 Place material using methods which do not lead to segregation or degradation of aggregate.
 - .4 Place material to full width in uniform layers not exceeding 150 mm compacted thickness.
 - .1 Engineer may authorize thicker lifts (layers) if specified compaction can be achieved.
 - .5 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.
 - .6 Remove and replace that portion of layer in which material becomes segregated during spreading.
 - .7 Construct swales using clear stone wrapped in geotextile.
- .3 Compaction Equipment:
 - .1 Ensure compaction equipment is capable of obtaining required material densities.
 - .2 Efficiency of equipment not specified to be proved at least as efficient as specified equipment at no extra cost and written approval must be received from Engineer before use.
- .4 Compacting:
 - .1 Compact in 150 mm lifts new Granular 'A' base to density not less than 100% SPMDD.
 - .2 Compact in 300 mm lifts new Granular 'B' subbase to density not less than 98% SPMDD.
 - .3 Provide compactive effort to clear stone at swales.
 - .4 Shape and roll alternately to obtain smooth, even and uniformly compacted base.
 - .5 Apply water as necessary during compacting to obtain specified density.
 - .6 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved in writing by Engineer.
 - .7 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.
- .5 Proof rolling:
 - .1 Obtain written approval from Engineer to use non standard proof rolling equipment.
 - .2 Proof roll sub-grade as indicated to density not less than 98% SPMDD.
 - .3 Where proof rolling reveals areas of defective sub-grade:
 - .1 Remove sub-grade material to depth and extent as directed by Engineer.

- .2 Backfill excavated sub-grade with granular material and compact in 150 mm lifts to 98% Standard Proctor Density.

3.2 SITE TOLERANCES

- .1 Finished base surface to be within plus or minus 10 mm of established grade and cross section but not uniformly high or low.

3.3 CLEANING

- .1 Progress Cleaning.
- .2 Leave Work area clean at end of each day.
- .3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

3.4 PROTECTION

- .1 Maintain finished base in condition conforming to this Section until succeeding material is applied or until acceptance by Engineer.

END OF SECTION

APPENDIX A

DSS Certificate of Analysis

CERTIFICATE OF ANALYSIS

Work Order	: TY2604500		
Client	: JML Engineering	Laboratory	: ALS Environmental - Thunder Bay
Contact	: Andrew Olesen	Account Manager	: Cassidy Young
Address	: 105 Villa Street, 2nd Floor Thunder Bay Ontario Canada P7A 7W5	Address	: 1081 Barton Street Thunder Bay ON Canada P7B 5N3
Telephone	: ----	E-mail	: cassidy.young@alsglobal.com
Project	: 2026001 Fortheringham Court	Telephone	: +1 807 623 6463
PO	: ----	Date Samples Received	: 04-May-2026 10:12
C-O-C number	: ----	Date Analysis Commenced	: 14-May-2026
Sampler	: ----	Issue Date	: 19-May-2026 14:52
Site	: ----		
Quote number	: JML Standing Offer 2024		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Jeremy Byrnes	Senior Analyst	Limnology, Winnipeg, Manitoba



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
LOR: Limit of Reporting (detection limit).

Unit	Description
%	percent

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Sample Comments

Sample	Client Id	Comment
TY2604500-004	AS-004 Washroom Drywall	1-5% asbestos was observed in joint compound.

Qualifiers

Qualifier	Description
RRR	Refer to report comments for issues regarding this analysis.



Analytical Results

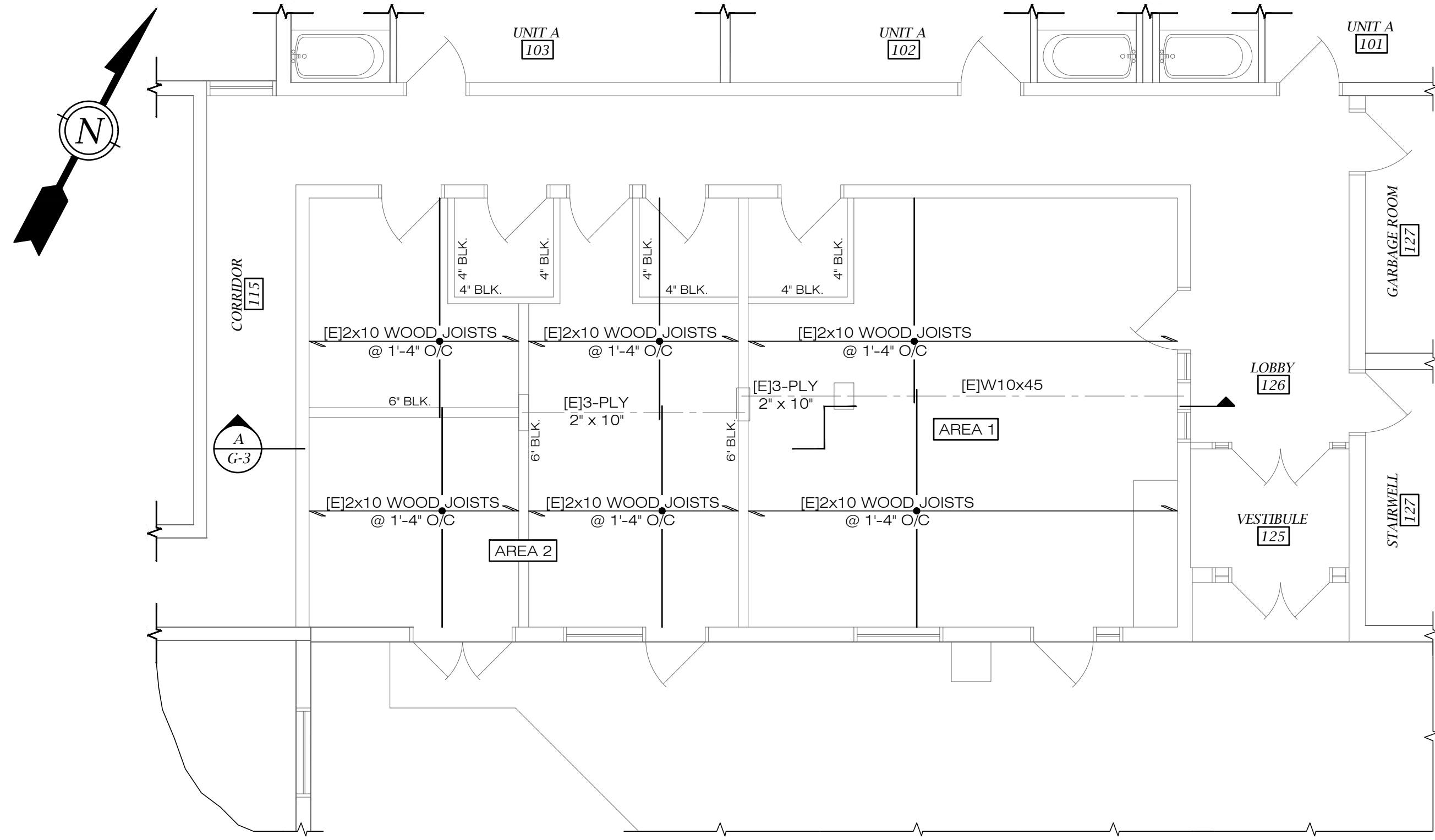
Sub-Matrix: Bulk Material
(Matrix: Soil/Solid)

					Client sample ID	AS-001 Laundry Room Ceiling	AS-002 Janiot Closet Tile	AS-003 Washroom Tile	AS-004 Washroom Drywall	AS-005 Storage Room Ceiling
					Client sampling date / time	20-Jan-2026 00:00	20-Jan-2026 00:00	20-Jan-2026 00:00	20-Jan-2026 00:00	20-Jan-2026 00:00
Analyte	CAS Number	Method/Lab	LOR	Unit		TY2604500-001	TY2604500-002	TY2604500-003	TY2604500-004	TY2604500-005
						Result	Result	Result	Result	Result
Asbestos/Other Fibres										
Asbestos (by point count)	1332-21-4	E912A/WP	0.1	%		Not detected	----	Not detected	----	----
Asbestos, Chrysotile	12001-29-5	E912A/WP	0.1	%		----	5-10	----	0.3 ^{RRR}	1-5
Other fibres, cellulose	----	E912A/WP	1	%		10-25	----	----	10-25	10-25
Other fibres, man-made vitreous	----	E912A/WP	1	%		10-25	----	----	5-10	----

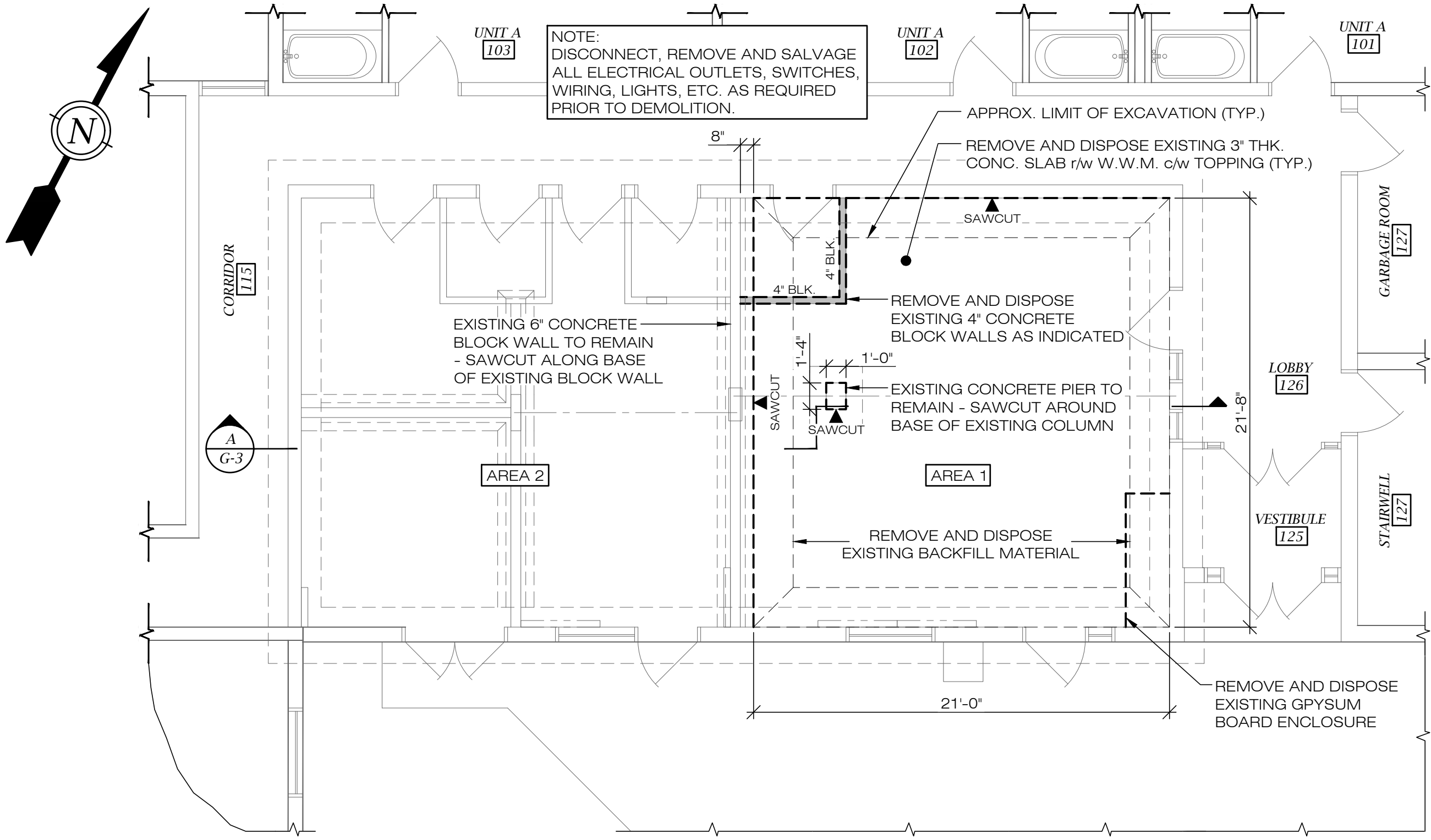
Please refer to the General Comments section for an explanation of any qualifiers detected.

APPENDIX B

Drawings



PARTIAL SECOND FLOOR FRAMING PLAN - EXISTING
3/16" = 1'-0"



PARTIAL GROUND FLOOR PLAN - STAGE 1
3/16" = 1'-0"



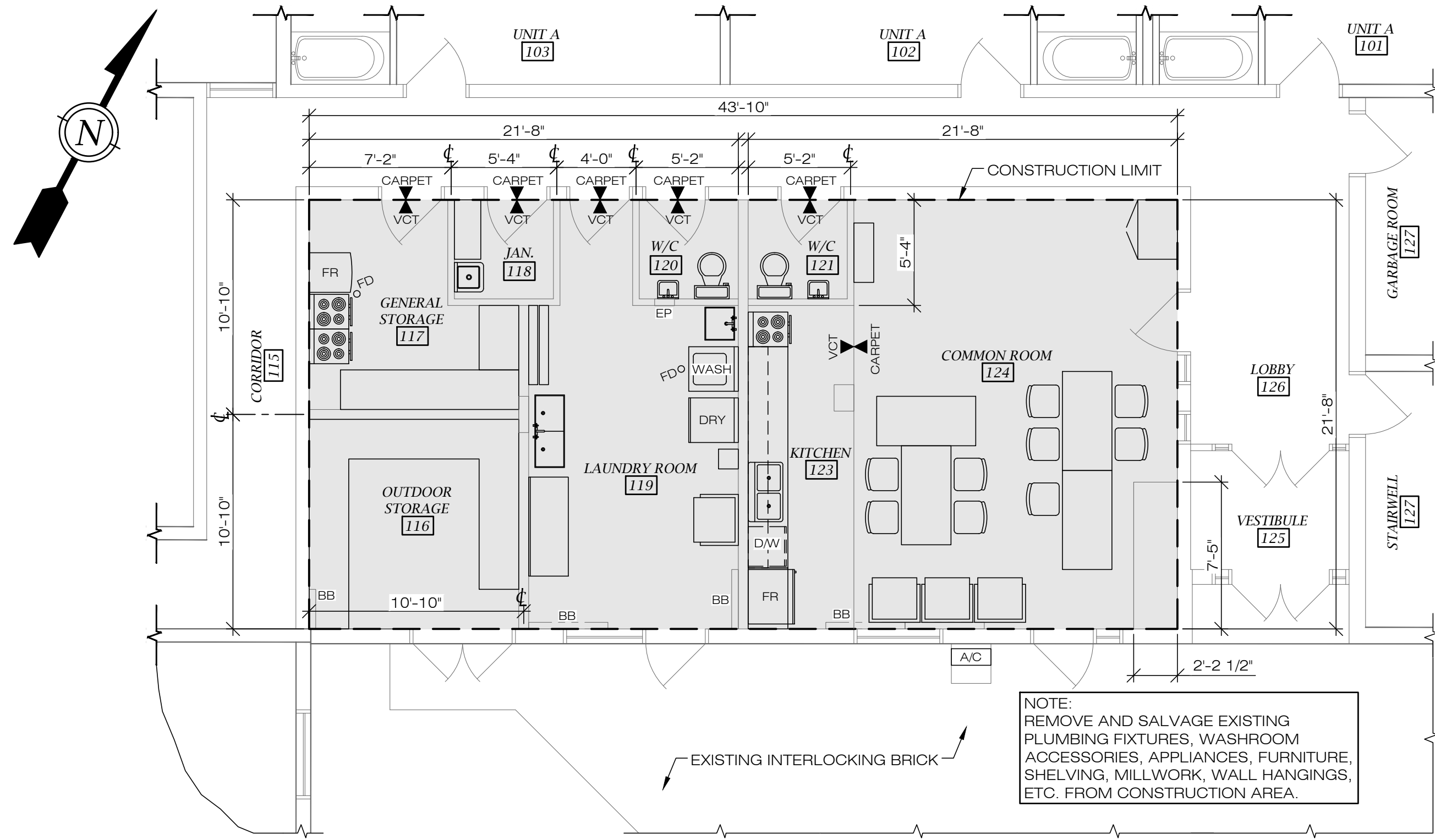
KEY PLAN
N.T.S.

NOTES

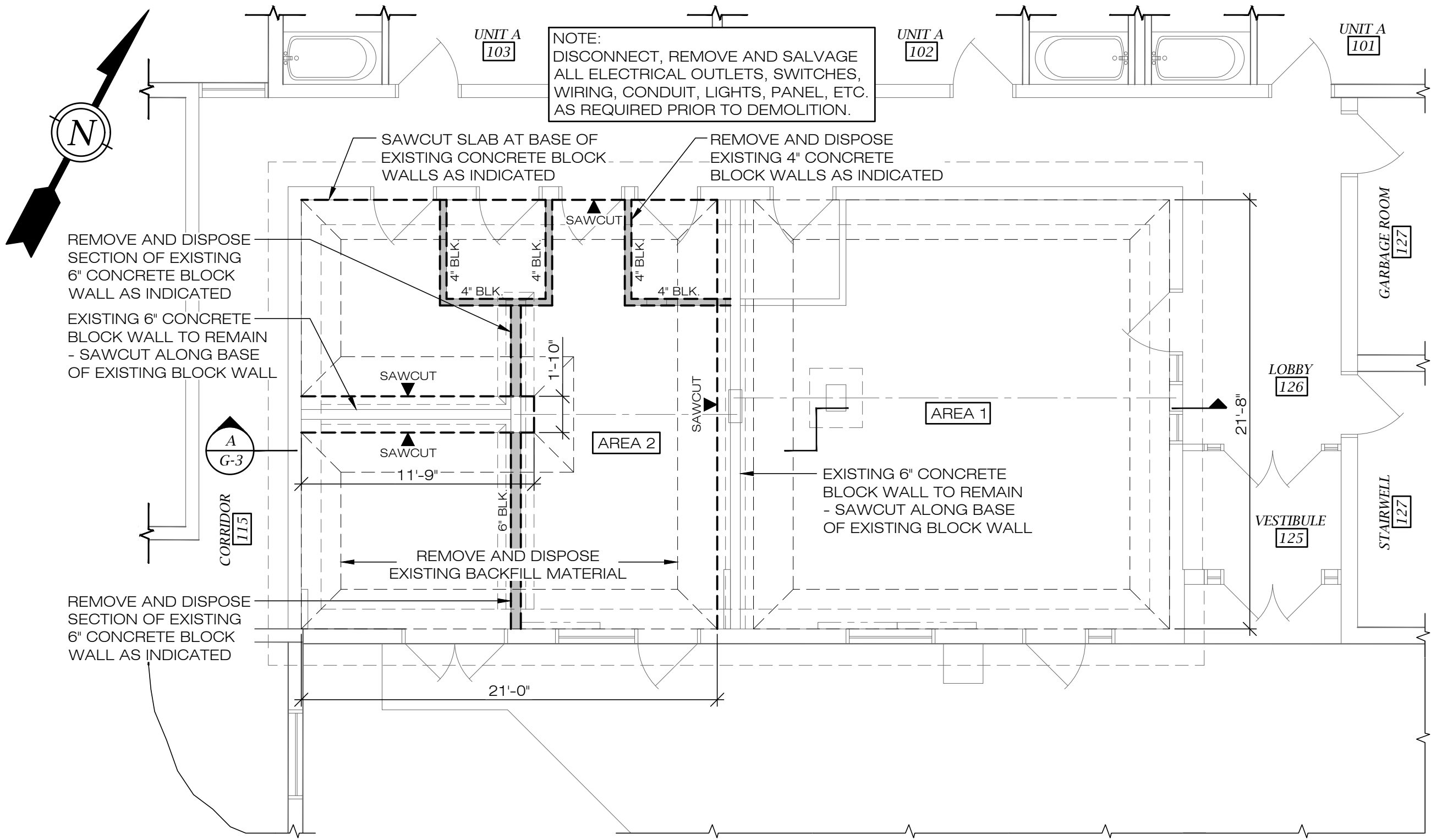
1. FOR GENERAL NOTES, SCOPE OF WORK, MATERIALS NOTES, AND CONSTRUCTION STAGING NOTES REFER TO JML DWG. G-4.

LEGEND

FR	REFRIGERATOR	EP	ELECTRICAL PANEL
FD	FLOOR DRAIN	CJ	CONTRACTION JOINT
DRY	CLOTHES DRYER	[E]	EXISTING MATERIAL
DW	DISH WASHER		
BB	ELECTRIC BASEBOARD HEATER		



PARTIAL GROUND FLOOR PLAN - EXISTING
3/16" = 1'-0"



PARTIAL GROUND FLOOR PLAN - STAGE 2
3/16" = 1'-0"

No.	Description	By	Date (mm/dd/yyyy)
0	ISSUED FOR TENDER	DS	08/04/2026
Revisions			

JML
Engineering

105 Villa Street, 2nd Floor
Thunder Bay, ON P7A 7W5
Phone: 807.345.1131
Fax: 807.345.1229
Email: info@jmleng.com



Client



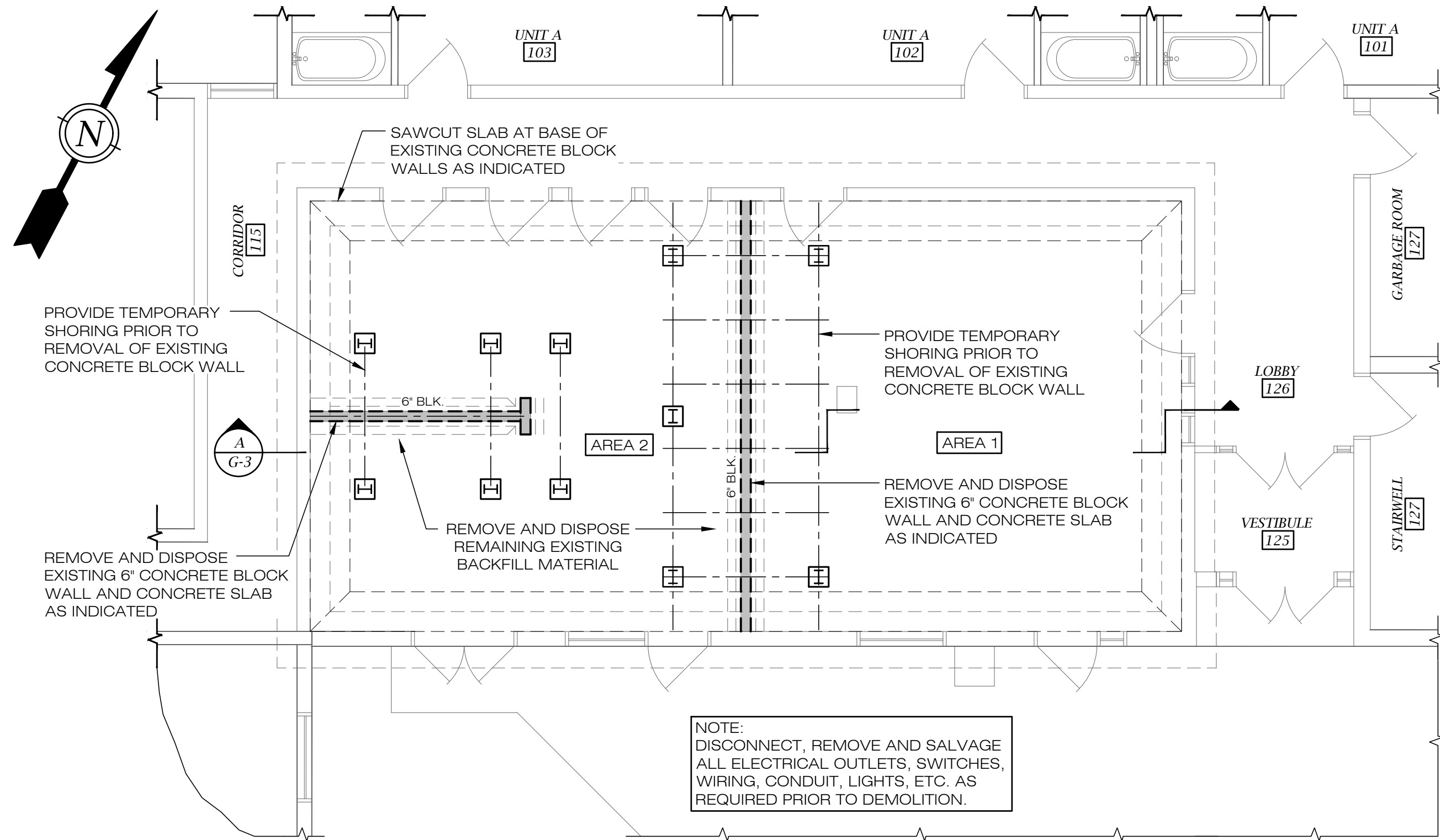
Project

STRUCTURAL & SANITARY ASSESSMENT
FOTHERINGHAM COURT
418 STEEROLA STREET, ATIKOKAN, ON.

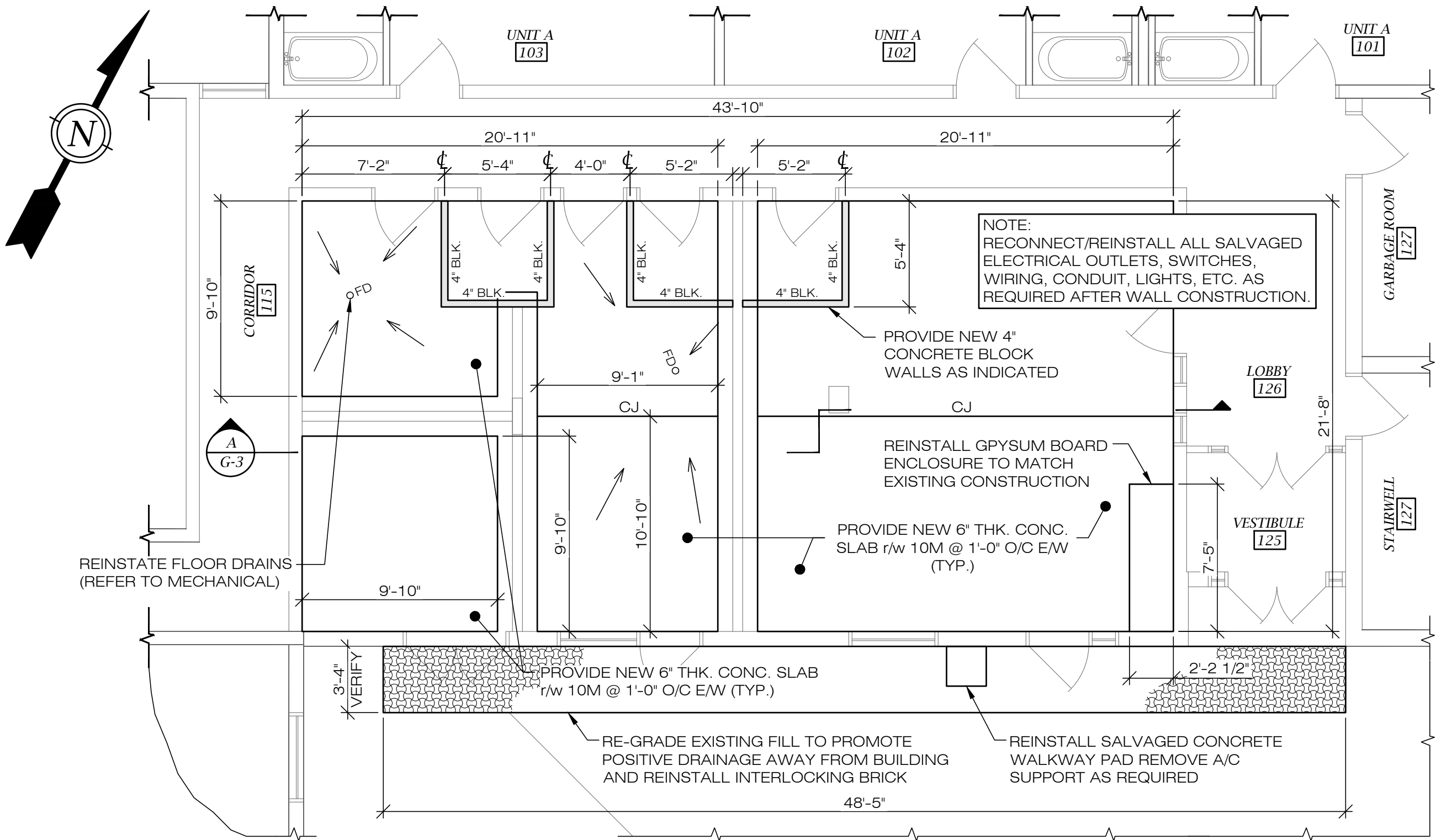
Drawing

EXISTING AND STAGING
PARTIAL FLOOR FRAMING PLAN - EXISTING,
PARTIAL GROUND FLOOR PLAN - EXISTING,
PARTIAL GROUND FLOOR PLAN - STAGE 1 AND 2

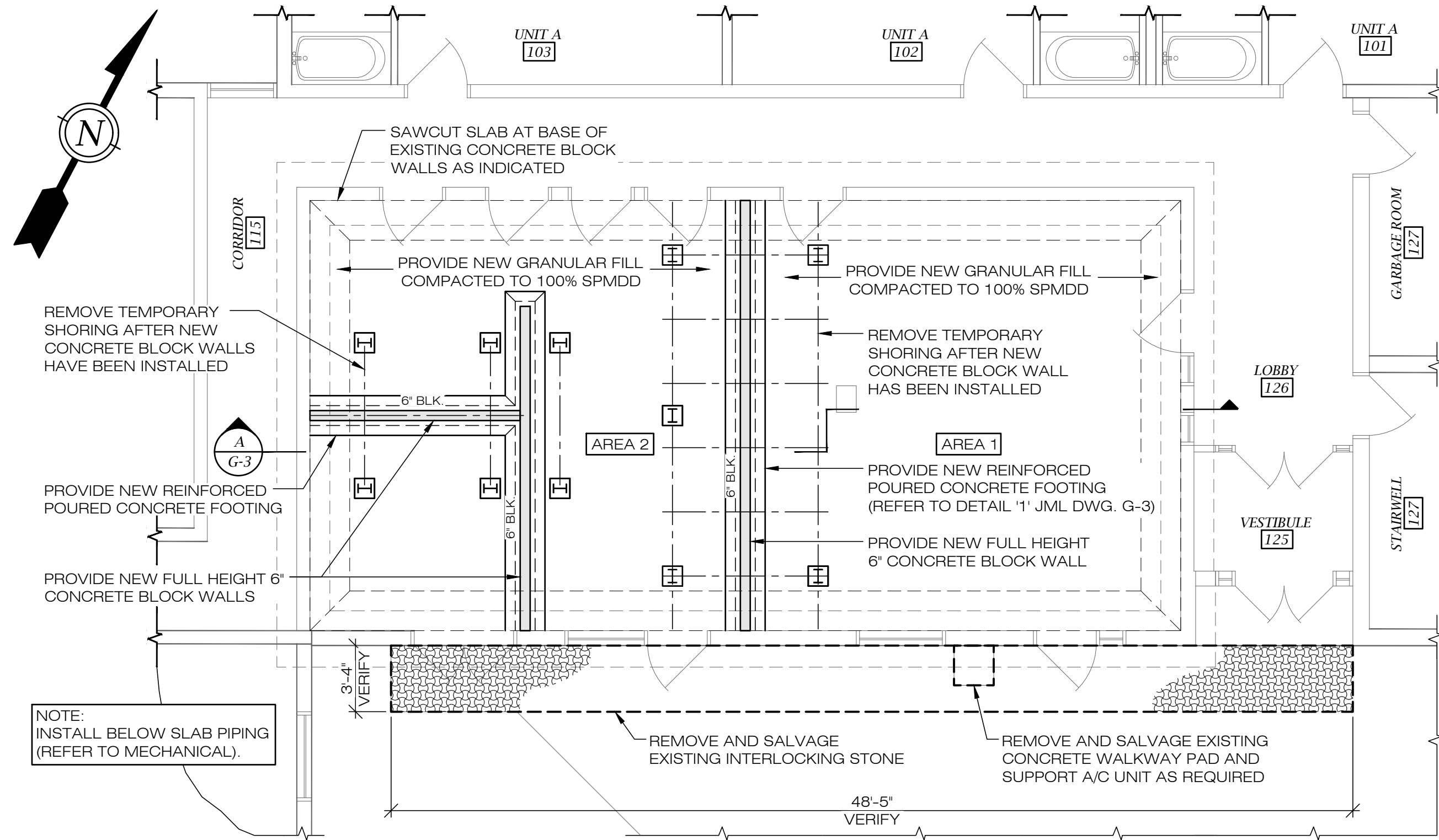
Scale	AS NOTED		
Designer	AO	Date	04/2026
Drafter	DS	Date	04/2026
Checked by	GAM	Date	06/23/2026
CAD File No.	2026001set.dwg	Plot Scale	1" = 1"
Ref. No.	2026001	Drawing No.	G-1
		Rev.	



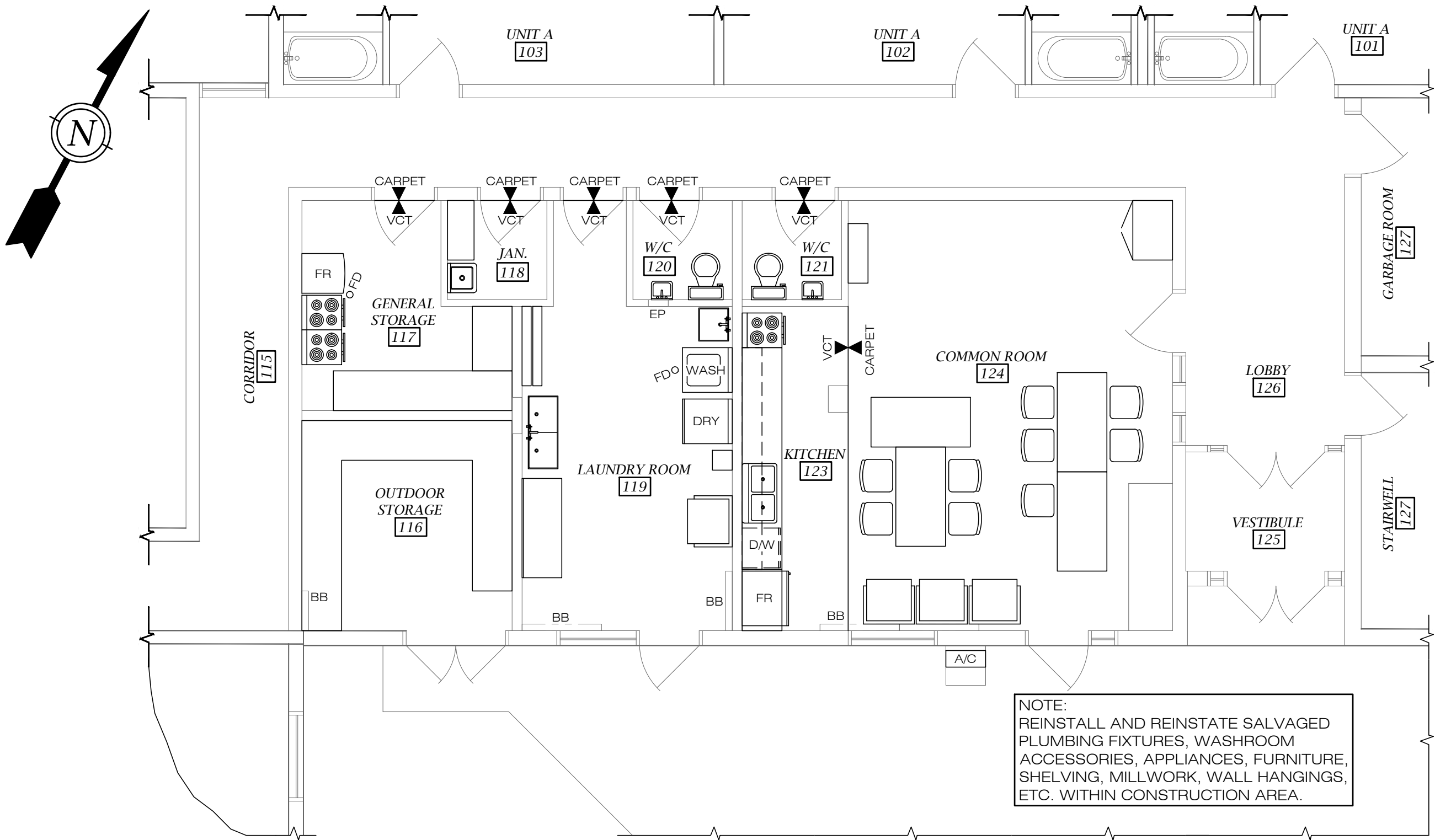
PARTIAL GROUND FLOOR PLAN - STAGE 3
3/16" = 1'-0"



PARTIAL MAIN FLOOR PLAN - STAGE 5
3/16" = 1'-0"



PARTIAL GROUND FLOOR PLAN - STAGE 4
3/16" = 1'-0"



PARTIAL MAIN FLOOR PLAN - STAGE 6
3/16" = 1'-0"

NOTES

1. FOR GENERAL NOTES, SCOPE OF WORK, MATERIALS NOTES, AND CONSTRUCTION STAGING NOTES REFER TO JML DWG. G-4.

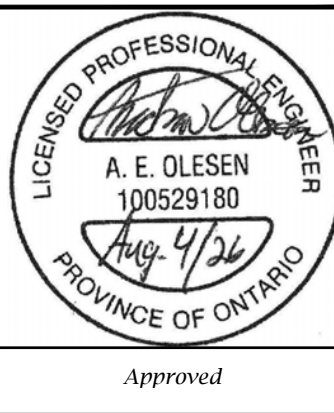
LEGEND

FR	REFRIGERATOR	EP	ELECTRICAL PANEL
FD	FLOOR DRAIN	CJ	CONTRACTION JOINT
DRY	CLOTHES DRYER		
DW	DISH WASHER		
BB	ELECTRIC BASEBOARD HEATER		

No.	Description	By	Date (mm/dd/yyyy)
0	ISSUED FOR TENDER	DS	08/04/2026
Revisions			

JML
Engineering

105 Villa Street, 2nd Floor
Thunder Bay, ON P7A 7W5
Phone: 807.345.1131
Fax: 807.345.1229
Email: info@jmleng.com



Client



Project

STRUCTURAL & SANITARY ASSESSMENT
FOTHERINGHAM COURT
418 STEEROLA STREET, ATIKOKAN, ON.

Drawing

STAGING
PARTIAL GROUND FLOOR PLAN - STAGE 3 TO STAGE 6

Scale

AS NOTED

Designer	AO	Date	04/2026
Drafter	DS	Date	04/2026
Checked by	GAM	Date	06/23/2026
CAD File No.	2026001set.dwg	Plot Scale	1" = 1"
Ref. No.	2026001	Drawing No.	G-2

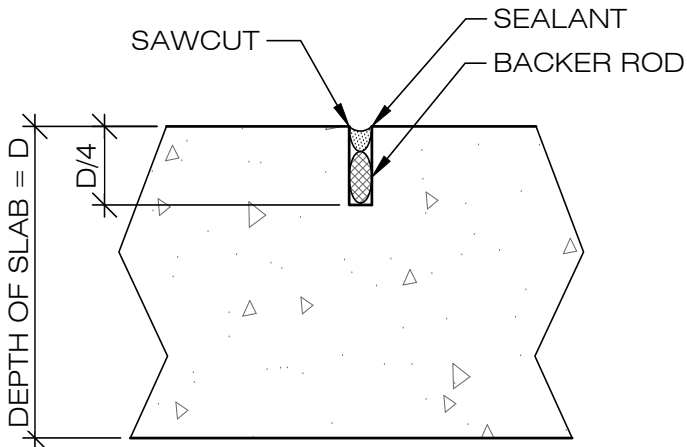
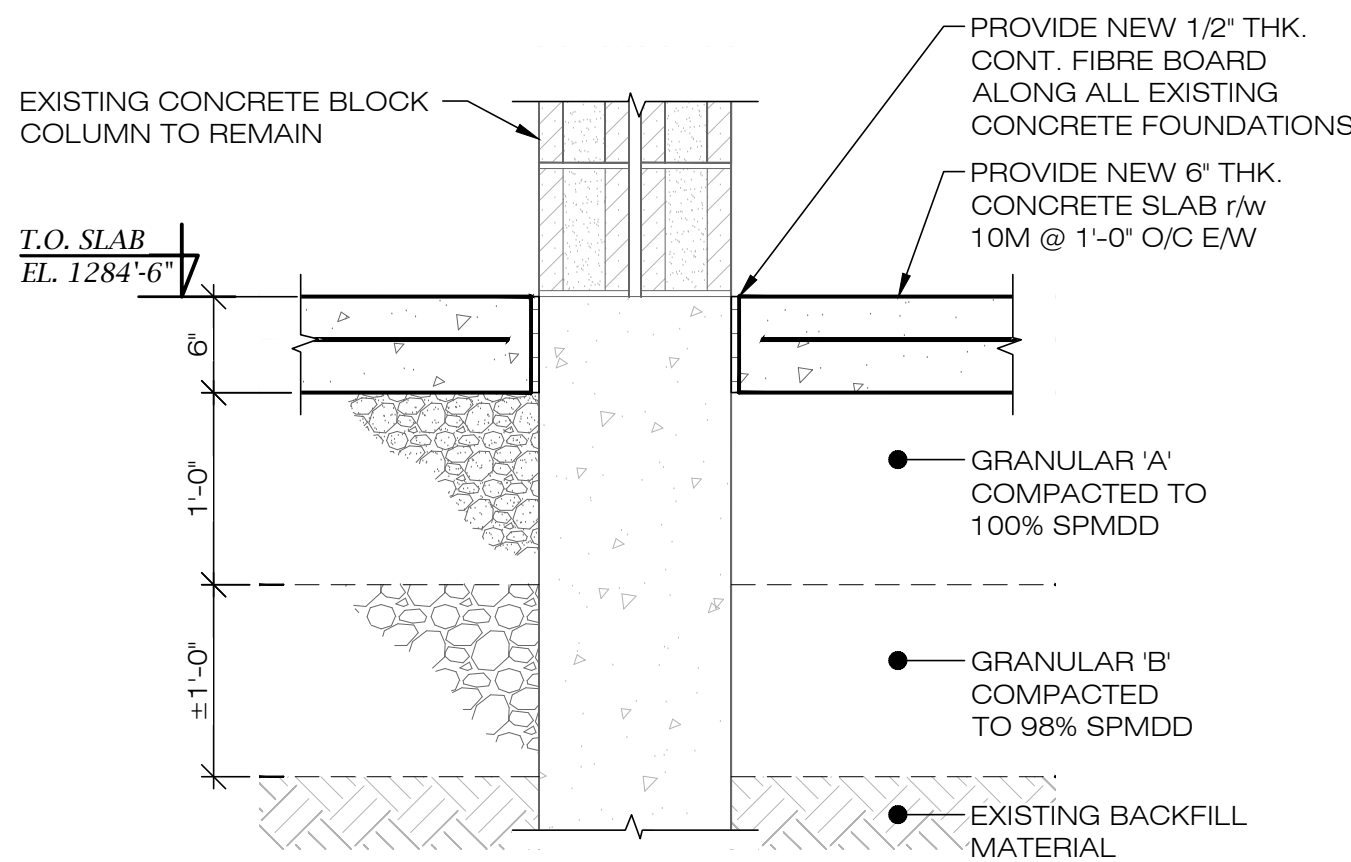
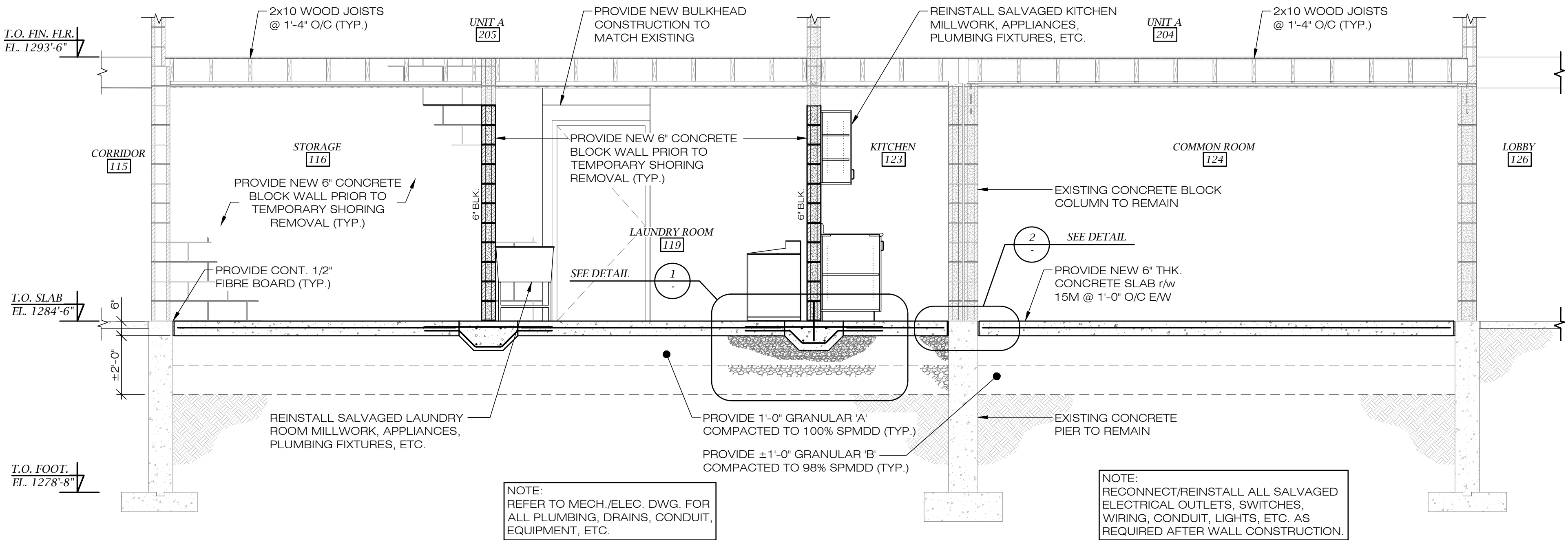
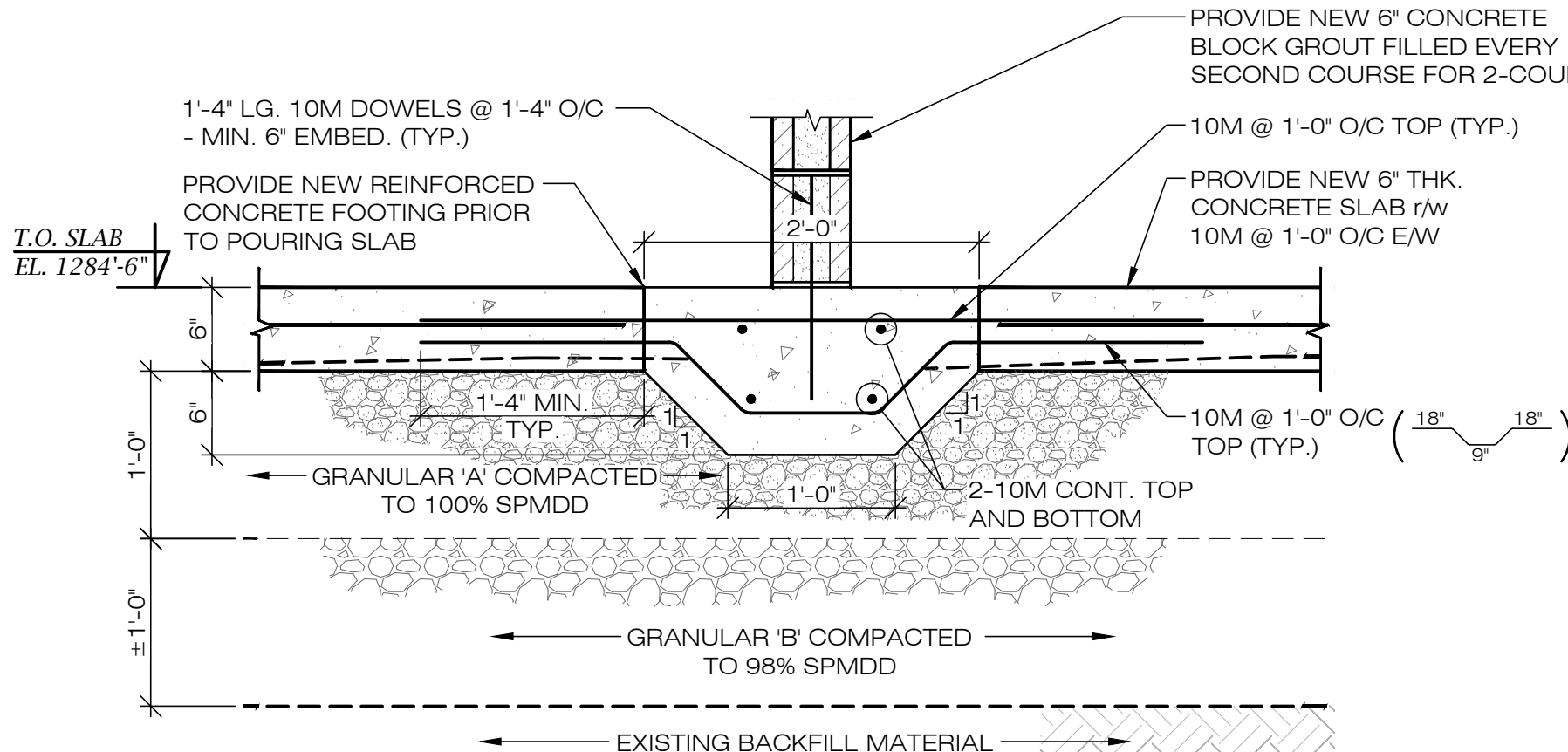
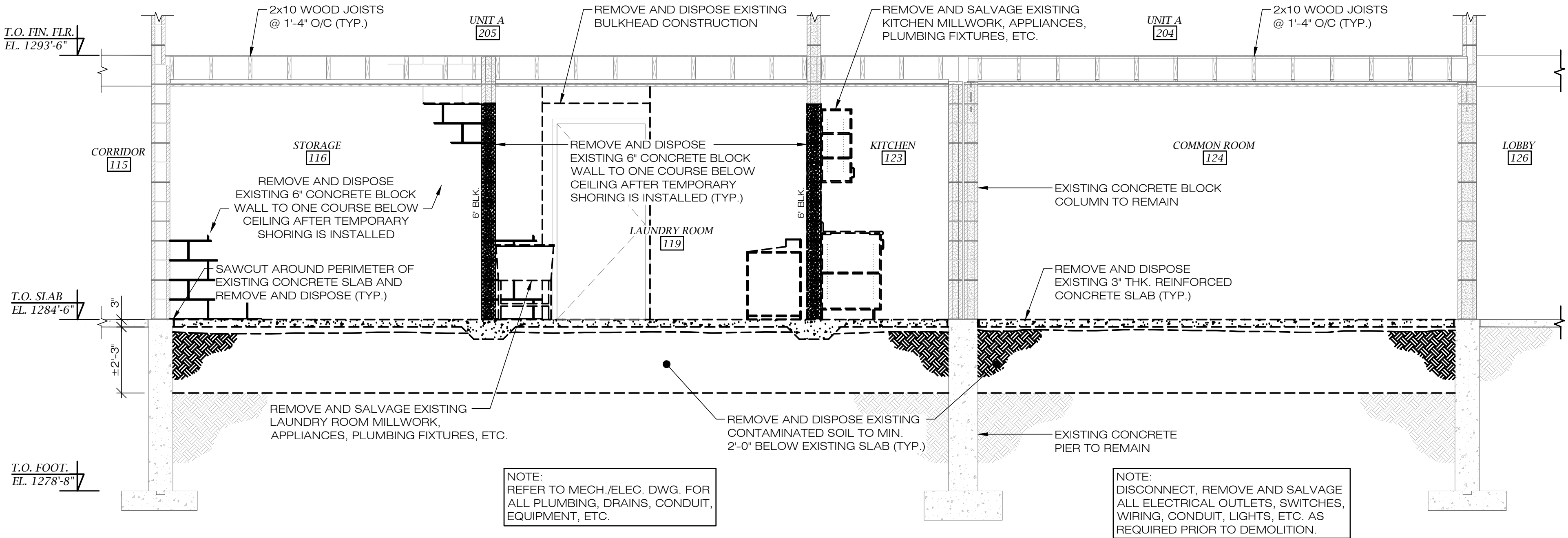
Rev.

NOTES

1. FOR GENERAL NOTES, SCOPE OF WORK, MATERIALS NOTES, AND CONSTRUCTION STAGING NOTES REFER TO JML DWG. G-4.

LEGEND

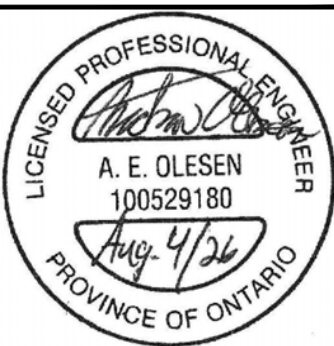
FR	REFRIGERATOR	EP	ELECTRICAL PANEL
FD	FLOOR DRAIN	CJ	CONTRACTION JOINT
DRY	CLOTHES DRYER		
DW	DISH WASHER		
BB	ELECTRIC BASEBOARD HEATER		



No.	Description	By	Date (mm/dd/yyyy)
0	ISSUED FOR TENDER	DS	08/04/2026
Revisions			

JML Engineering

105 Villa Street, 2nd Floor
Thunder Bay, ON P7A 7W5
Phone: 807.345.1131
Fax: 807.345.1229
Email: info@jmleng.com



Client: **DISTRICT OF RAINY RIVER SERVICES BOARD**

Project: **STRUCTURAL & SANITARY ASSESSMENT FOTHERINGHAM COURT 418 STEEROLA STREET, ATIKOKAN, ON.**

Drawing: **CONSTRUCTION STAGING PARTIAL MAIN FLOOR PLANS - STAGE 5 AND 6 DEMOLITION AND NEW CONSTRUCTION SECTIONS**

Scale	AS NOTED		
Designer	AO	Date	04/2026
Drafter	DS	Date	04/2026
Checked by	GAM	Date	06/23/2026
CAD File No.	2026001set.dwg	Plot Scale	1" = 1"
Ref. No.	2026001	Drawing No.	G-3

GENERAL NOTES

1. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO START OF FABRICATION AND/OR CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE CONSULTANT BEFORE PROCEEDING WITH WORK.
2. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW BY THE CONSULTANT PRIOR TO FABRICATION.
3. THE CONTRACTOR SHALL CONFIRM LOCATION OF ALL UTILITIES ON AND NEAR THE SITE PRIOR TO START OF CONSTRUCTION. KNOWN SERVICES HAVE BEEN INDICATED ON THESE DRAWINGS BUT OTHER SERVICES MAY EXIST. ALL DAMAGED SERVICE LINES SHALL BE REPAIRED AT NO COST TO THE OWNER AND TO THE SATISFACTION OF THE CONSULTANT.
4. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING BUILDINGS, FIXTURES, EQUIPMENT AND SERVICES FROM DAMAGE DURING CONSTRUCTION OPERATIONS.
5. THE CONTRACTOR SHALL PROVIDE ACCESS TO THE SITE WITH THE OWNER. WORK IS TO BE SCHEDULED AND COORDINATED SO AS NOT TO INTERFERE WITH NORMAL FACILITY OPERATIONS.
6. ALL WORK SHALL BE PERFORMED TO APPLICABLE CODES, BYLAWS AND STANDARDS GOVERNING THIS PROJECT.
7. DRAWINGS ARE TO BE READ IN COMBINATION WITH ALL APPLICABLE STRUCTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS.
8. TEMPORARY SHORING TO BE DESIGNED BY PROFESSIONAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO. SUBMIT SEALED SHOP DRAWINGS FOR REVIEW.
9. DO NOT SCALE DRAWINGS.
10. ALL DIMENSIONS ARE IN FEET AND INCHES UNLESS NOTED OTHERWISE.
11. ALL ELEVATIONS ARE IN FEET UNLESS NOTED OTHERWISE.

SCOPE OF WORK

1. PROVIDE TEMPORARY PEDESTRIAN PROTECTION.
2. PROVIDE TEMPORARY SHIPPING CONTAINER FOR STORAGE OF FURNISHINGS.
3. SHUT OFF WATER TO ALL FIXTURES IN THE AREA OF WORK.
4. REMOVE AND SALVAGE EXISTING PLUMBING FIXTURES, WASHROOM ACCESSORIES, APPLIANCES, FURNITURE, SHELVING, MILLWORK, WALL HANGINGS, ETC.
5. TURN POWER OFF TO AFFECTED CONSTRUCTION AREAS AND DISCONNECT AND REMOVE AND SALVAGE ALL EXISTING ELECTRICAL OUTLETS, SWITCHES, WIRING, CONDUIT, LIGHTS, ETC. IN WALLS MARKED FOR DEMOLITION AS REQUIRED.
6. REMOVE AND DISPOSE ALL INTERIOR FINISHES - INCLUDING BUT NOT LIMITED TO DRY WALL, MASONRY PARTITION WALLS, FLOORING, ETC.
7. REFER TO MECHANICAL DRAWINGS FOR ALL EXISTING PLUMBING TO BE REMOVED AND/OR SALVAGED.
8. SELECTIVE DEMOLISH AND REMOVE CONCRETE SLAB AND CONTAMINATED SOIL TO ACCOMMODATE SHORING.
9. PROVIDE TEMPORARY SHORING.
10. REMOVE MASONRY BELOW SHORING.
11. REMOVE REMAINDER OF SLAB.
12. REMOVE CONTAMINATED SOIL.
13. REPLACE SANITARY PIPES AS PER MECHANICAL.
14. BACKFILL AREA TO EXTENTS SHOWN.
15. PROVIDE NEW WALL FOOTING.
16. PROVIDE NEW MASONRY WALL COMPLETE WITH BOND BEAM.
17. REMOVE TEMPORARY SHORING AND ASSOCIATED HARDWARE.
18. PROVIDE NEW COMPACTED GRANULAR MATERIAL.
19. PROVIDE NEW 6" REINFORCED CONCRETE SLABS.
20. PROVIDE NEW INTERIOR FINISHES - INCLUDING BUT NOT LIMITED TO DRY WALL, MASONRY PARTITION WALLS, FLOORING, PAINT, ETC., TO CLOSELY MATCH EXISTING.
21. RECONNECT / REINSTALL ALL SALVAGED ELECTRICAL OUTLETS, SWITCHES, WIRING, CONDUIT, LIGHTS, ETC. AS REQUIRED AFTER WALL RECONSTRUCTION IS COMPLETE. ENSURE POWER HAS BEEN RESTORED AND ALL AFFECTED ELECTRICAL FIXTURES WORK AS INTENDED.
22. REINSTALL ALL SALVAGED PLUMBING FIXTURES, WASHROOM ACCESSORIES, APPLIANCES, FURNITURE, SHELVING, MILLWORK, WALL HANGINGS, ETC.
23. REINSTATE WATER.
24. REMOVE TEMPORARY SHIPPING CONTAINER AND RESTORE GRADE/SOD TO ORIGINAL CONDITION.
25. REMOVE TEMPORARY PEDESTRIAN PROTECTION.

CONSTRUCTION STAGE 1

1. REMOVE AND SALVAGE EXISTING PLUMBING FIXTURES, WASHROOM ACCESSORIES, APPLIANCES, FURNITURE, SHELVING, MILLWORK, WALL HANGINGS, ETC. FROM CONSTRUCTION AREA.
2. DISCONNECT, REMOVE AND SALVAGE ALL EXISTING ELECTRICAL OUTLETS, SWITCHES, WIRING, CONDUIT, LIGHTS, ETC. IN WALLS MARKED FOR DEMOLITION AS REQUIRED.
3. REMOVE AND DISPOSE EXISTING WALL AND FLOOR FINISHES.
4. REMOVE AND DISPOSE EXISTING 4" CONCRETE BLOCK WALLS WITHIN AREA 1' AS INDICATED.
5. SAWCUT EXISTING CONCRETE SLAB AROUND INSIDE PERIMETER OF AREA 1' AND REMOVE AND DISPOSE.
6. SAWCUT EXISTING CONCRETE SLAB AROUND EXISTING CONCRETE BLOCK COLUMN AND REMOVE AND DISPOSE.
7. EXISTING 6" CONCRETE BLOCK DIVIDING WALL AND CONCRETE BLOCK COLUMN TO REMAIN AS INDICATED.
8. REMOVE AND DISPOSE EXISTING BACKFILL MATERIAL TO APPROX. 2'-0" BELOW SLAB.

CONSTRUCTION STAGE 2

1. DISCONNECT, REMOVE AND SALVAGE ALL EXISTING ELECTRICAL OUTLETS, SWITCHES, WIRING, CONDUIT, LIGHTS, PANEL, ETC. IN WALLS MARKED FOR DEMOLITION AS REQUIRED.
2. REMOVE AND DISPOSE EXISTING 4" AND 6" CONCRETE BLOCK WALLS AND CONCRETE SLAB WITHIN AREA 2' AS INDICATED.
3. SAWCUT EXISTING CONCRETE SLAB AROUND INSIDE PERIMETER OF AREA 2' AND REMOVE AND DISPOSE.
4. EXISTING 6" CONCRETE BLOCK DIVIDING WALL TO REMAIN AS INDICATED.
5. REMOVE AND DISPOSE EXISTING BACKFILL MATERIAL TO APPROX. 2'-0" BELOW SLAB.
2. DISCONNECT, REMOVE AND SALVAGE ALL EXISTING ELECTRICAL OUTLETS, SWITCHES, WIRING, CONDUIT, LIGHTS, ETC. IN WALLS MARKED FOR DEMOLITION AS REQUIRED
3. REMOVE AND DISPOSE EXISTING 6" CONCRETE BLOCK WALLS.

CONSTRUCTION STAGE 4

1. PROVIDE MINIMUM 2'-0" NEW COMPACTED BACKFILL AS INDICATED.
2. PROVIDE NEW REINFORCED CONCRETE FOOTINGS AS INDICATED.
3. PROVIDE NEW 6" CONCRETE BLOCK WALLS AS INDICATED AFTER FORMWORK HAS BEEN REMOVED.
4. INSTALL BELOW SLAB PIPING.
5. REMOVE TEMPORARY SHORING AFTER 6" CONCRETE BLOCK WALLS ARE CONSTRUCTED.
6. RECONNECT / REINSTATE ALL SALVAGED ELECTRICAL OUTLETS, SWITCHES, WIRING, CONDUIT, LIGHTS, PANEL, ETC. AS REQUIRED. ENSURE ALL AFFECTED ELECTRICAL FIXTURES WORK AS INTENDED.
7. REMOVE AND SALVAGE EXISTING EXTERIOR INTERLOCKING STONE AND EXISTING CONCRETE WALKWAY PAD AS INDICATED.

CONSTRUCTION STAGE 5

1. PROVIDE NEW 6" THICK REINFORCED CONCRETE SLABS AS INDICATED.
2. PROVIDE NEW 4" CONCRETE BLOCK WALLS AS INDICATED AFTER CONCRETE SLAB FORMWORK HAS BEEN REMOVED.
3. RECONNECT / REINSTATE ALL SALVAGED ELECTRICAL OUTLETS, SWITCHES, WIRING, CONDUIT, LIGHTS, PANEL, ETC. AS REQUIRED. ENSURE ALL AFFECTED ELECTRICAL FIXTURES WORK AS INTENDED.
4. RE-GRADE/COMPACT AND REINSTALL SALVAGED EXTERIOR INTERLOCKING STONE AND EXISTING CONCRETE WALKWAY PAD AS INDICATED. SLOPE INTERLOCKING STONE AWAY FROM BUILDING TO PROMOTE POSITIVE DRAINAGE.

CONSTRUCTION STAGE 6

1. PROVIDE NEW WALL AND FLOOR FINISHES INCLUDING CARPETING, VINYL FLOORING, GYPSUM, PAINT, ETC.
2. REINSTALL/REINSTATE ALL SALVAGED PLUMBING FIXTURES, WASHROOM ACCESSORIES, APPLIANCES, FURNITURE, SHELVING, MILLWORK, WALL HANGINGS, ETC. FROM CONSTRUCTION AREA.

CONCRETE NOTES

1. CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 3625psi (25 MPa) AT 28 DAYS FOR EXPOSURE CLASS N AS PER A23.1.24/CSA A23.2.24. NOMINAL MAXIMUM COARSE AGGREGATE SIZE TO BE 3/4". CONCRETE TO OPSS MUNI 1350.
2. REINFORCING BARS SHALL BE DEFORMED BARS GRADE 400 IN ACCORDANCE WITH CSA G-30.18.21.
3. WELDING OF REINFORCING BARS IN REINFORCED CONCRETE SHALL CONFORM TO W186.21.
4. CLEAR CONCRETE COVER TO REINFORCING STEEL SHALL BE:
 - a. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH - 3"
 - b. SLABS - 1 1/4"
5. CONCRETE FLOOR SLAB SHALL BE STEEL TROWEL FINISHED.
6. CONCRETE SAMPLING AND TESTING SHALL BE IN ACCORDANCE WITH CSA A23.1.
7. DOWELS SHALL BE GRADE 400 BARS.
8. PREMOLED EXPANSION JOINT FILLERS SHALL BE BITUMINOUS IMPREGNATED 'FLEXCELL' FIBRE BOARD OR APPROVED ALTERNATE. INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
9. PROVIDE CONTRACTION/CONTROL JOINTS (CJ) WHERE INDICATED WITHIN 24 HOURS OF POURING.
10. CONTRACTION/CONTROL JOINT (CJ) FILLER SHALL BE CLOSED CELL POLYETHYLENE ROD 'KOOL-ROD' OR APPROVED ALTERNATE. SEALANT SHALL BE MONO-COMPONENT, ELASTIC SEALANT. INSTALLED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS AND RECOMMENDATIONS.
11. ENGINEER TO INSPECT COMPACTION, CONCRETE FORMWORK, AND REINFORCING STEEL, PRIOR TO POURING OF CONCRETE.
12. LAP LENGTHS FOR REINFORCING BARS SHALL BE CLASS 'B' AS PER CSA A23.3.24 U.N.O.
13. BAR HOOKS, WHERE REQUIRED, SHALL BE MINIMUM LENGTH AND STIRRUPS SHALL HAVE MINIMUM HOOKS AS PER REINFORCING STEEL INSTITUTE OF CANADA (RSIC) U.N.O.
14. REINFORCING STEEL SHALL NOT BE CUT, REMOVED OR DAMAGED.
15. LEAVE FORM WORK IN PLACE FOR FOLLOWING MINIMUM PERIODS OF TIME AFTER PLACING CONCRETE:
-2 DAYS FOR FOOTINGS

CONCRETE MASONRY NOTES

1. MASONRY SHALL CONFORM TO CAN/CSA A371-14 (R2024) 'MASONRY CONSTRUCTION FOR BUILDINGS'.
2. CONCRETE BLOCK MASONRY UNITS SHALL BE OF SIZE AS SHOWN ON DRAWINGS, CONFORM TO CSA A165 SERIES:14 (R2024), AND HAVE A COMPRESSIVE STRENGTH OF 2900 psi.
3. MORTAR SHALL CONFORM TO CAN/CSA A179-14 (R2024) TYPE 'N'. TYPE 'N' = 750 psi - GENERAL PURPOSE INTERIOR/EXTERIOR
4. FILL CORES WHICH CONTAIN REINFORCEMENT WITH GROUT. GROUT TO BE WELL TAMPED TO COMPLETELY FILL CORES, AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4350 psi (30 MPa) @ 28 DAYS.
5. FILL CORES OF BOTTOM 2 COURSES OF MASONRY WITH GROUT THAT CONTAIN DOWELS WITH CONCRETE.
6. PROVIDE #9 GAUGE MASONRY REINFORCING EVERY 2nd COURSE, AND AT CONTROL JOINTS, WHERE REQUIRED.
7. PROVIDE MASONRY TIES BETWEEN EXISTING MASONRY WALLS AND NEW MASONRY WALLS EVERY 2nd COURSE VERTICALLY.
8. PROVIDE BOND BEAM REINFORCED WITH 2-15M AT ALL OPENINGS.
9. PROVIDE 15M VERTICAL REINFORCING AND GROUTED CORE EACH SIDE OF ALL OPENINGS.

MASONRY COATING NOTES

1. COATING SYSTEM FOR CONCRETE MASONRY SHALL BE AS FOLLOWS:
 - a. SEALER - CLOVERDALE PAINTS' PRIME SOLUTION PRIMER 05130'.
 - b. TOP COAT - CLOVERDALE PAINTS' WEATHERONE COVERCOAT SATIN 02010' COLOUR BY OWNER.

FINISHES NOTES

1. GYPSUM BOARD AND PATCHING AT COLUMN, WALL AND CEILING LOCATIONS SHALL BE 5/8" THICK CONTINUOUS IN ACCORDANCE WITH CAN/CSA A82.27-M91. INSTALLATION SHALL BE AS PER GA-216, ASTM C840 CAN/CSA A82.31-M AND ASTM C475.
2. PAINT SHALL BE BY ONE MANUFACTURE TO CGSB FOR INTERIOR FINISHES. APPLY ONE COAT PRIMER-SEALER AS PER CAN/CGSB-1.119 AND TWO COATS EGGSHELL AS PER CAN CGSB-1.100. COLOUR TO MATCH EXISTING.
3. FOR INTERIOR FINISHES, PAINT SHALL BE AS PER BENJAMIN MOORE, ULTRA SPEC 500 SERIES (OR APPROVED ALTERNATE) AS RECOMMENDED BY THE CGC. APPLY ONE COAT PRIMER-SEALER AS PER CAN/CGSB-1.119 FOR CONCRETE AND GYPSUM SUBSTRATE AND TWO COATS PEARL AS PER CAN.CGSB-1.100 (OR APPROVED ALTERNATES).
5. VINYL COMPOSITION TILE (VCT) SHALL BE AS PER 'FORBO', MARMOLEUM REAL (OR APPROVED ALTERNATE). CLEAN AND PREP ALL SURFACES TO RECEIVE FLOOR COVERING IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS. NEW FLOOR COVERING SHALL BE INSTALLED AS PER MANUFACTURERS' WRITTEN INSTRUCTIONS. COLOUR BY OWNER.
6. RUBBER COVE BASEBOARD SHALL BE JOHNSONITE RWDC-63 BURNT UMBER OR APPROVED ALTERNATE.
7. CARPET SHALL BE BROADLOOM AS PER 'PATCHRAFT' (OR APPROVED ALTERNATE). CLEAN AND PREP ALL SURFACES TO RECEIVE FLOOR COVERING IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS. NEW FLOOR COVERING SHALL BE INSTALLED AS PER MANUFACTURERS' WRITTEN INSTRUCTIONS. STYLE AND COLOUR BY OWNER.
8. CARPET BASEBOARD SHALL BE OF SAME MATERIAL AND COLOUR AS MAIN CARPETING c/w FINISHED EDGE.

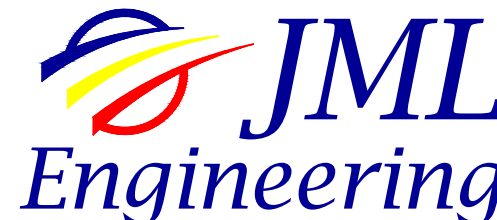
SANITARY NOTES

1. REFER TO MCW DRAWINGS.

ABBREVIATIONS									
BLK.	CONCRETE BLOCK	PT.	PAINT		VCT.	VINYL COMPOSITION TILE			
CPT.	CARPET	R.B.	RUBBER COVE BASEBOARD						
CONC.	CONCRETE	SUSP.	SUSPENDED CEILING						
GYP.	GYPSUM BOARD	TGYP.	TEXTURED GYPSUM BOARD						

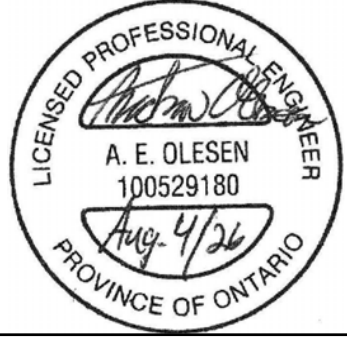
ROOM FINISH SCHEDULE - GROUND FLOOR															
No.	NAME	FLOOR		NORTH WALL		EAST WALL		SOUTH WALL		WEST WALL		CEILING			COMMENTS
		MAT.	BASE	MAT.	FINISH	MAT.	FINISH	MAT.	FINISH	MAT.	FINISH	MAT.	FINISH	HEIGHT	
116	OUTDOOR STORAGE	CONC.	RB.	BLK.	PT.	BLK.	PT.	GYP.	PT.	BLK.	PT.	TGYP.	PT.	8'-0"	
117	GENERAL STORAGE	VCT	RB.	BLK.	PT.	BLK.	PT.	BLK.	PT.	BLK.	PT.	TGYP.	PT.	8'-0"	
118	JANITOR	VCT	RB.	BLK.	PT.	BLK.	PT.	BLK.	PT.	BLK.	PT.	TGYP.	PT.	8'-0"	
119	LAUNDRY ROOM	VCT	RB.	BLK.	PT.	BLK.	PT.	GYP.	PT.	BLK.	PT.	TGYP.	PT.	8'-0"	
120	WASHROOM	VCT	RB.	BLK.	PT.	BLK.	PT.	GYP.	PT.	BLK.	PT.	TGYP.	PT.	8'-0"	
121	WASHROOM	VCT	RB.	BLK.	PT.	BLK.	PT.	GYP.	PT.	BLK.	PT.	TGYP.	PT.	8'-0"	
123	KITCHEN	VCT	RB.	GYP.	PT.	GYP.	PT.	GYP.	PT.	GYP.	PT.	TGYP.	PT.	8'-0"	
124	COMMON ROOM	CPT.	OPT.	GYP.	PT.	GYP.	PT.	GYP.	PT.	GYP.	PT.	TGYP.	PT.	8'-0"	

0	ISSUED FOR TENDER	DS	08/04/2026
No.	Description	By	Date (mm/dd/yyyy)
Revisions			



105 Villa Street, 2nd Floor
Thunder Bay, ON P7A 7W5
Phone: 807.345.1131
Fax: 807.345.1229
Email: info@jmleng.com

Approved



Approved

Client



Project

STRUCTURAL & SANITARY ASSESSMENT
FOTHERINGHAM COURT
418 STEEROLA STREET, ATIKOKAN, ON.

Drawing

DETAILS

Scale AS NOTED			
Designer	AO	Date	04/2026
Drafter	DS	Date	04/2026
Checked by	GAM	Date	06/23/2026
CAD File No.	2026001set.dwg	Plot Scale	1" = 1"
Ref. No.	2026001	Drawing No.	G-4
		Rev.	



- ① REMOVE AND RETAIN PLUMBING FIXTURES FOR REINSTALLATION. STORE AND PROTECT.
- ② DEMOLISH AND REMOVE UNDERGROUND SANITARY DRAIN PIPING FROM THE 3" CAST IRON MAIN STACK IN STAGE 117 TO COMMON 124. THIS INCLUDES ALL BRANCH PIPING TO PLUMBING FIXTURES. CAP VENTS IN CEILING SPACE.
- ③ DEMOLISH AND REMOVE ALL DOMESTIC WATER PIPING FROM ALL PLUMBING FIXTURES. TEMPORARILY CAP THE DOMESTIC WATER PIPING IN THE CEILING SPACE.
- ④ CONTRACTOR TO VERIFY THE VENT THRU ROOF LOCATION AT SITE.
- ⑤ EXISTING SANITARY TO REMAIN.



- ① SUPPLY AND INSTALL NEW UNDERGROUND SANITARY PIPING AND RECONNECT TO ALL RETAINED EXISTING SANITARY FIXTURES AS INDICATED. PROVIDE ALL FITTINGS, CLEANOUTS, BEDDING, AND APPURTENANCES REQUIRED FOR A COMPLETE AND OPERATIONAL INSTALLATION.
- ② REINSTALL RETAINED SANITARYWARE FIXTURES IN THEIR ORIGINAL LOCATIONS AND RECONNECT TO NEW SANITARY PIPING.
- ③ CONNECT NEW FLOOR DRAIN TO NEW TRAP SEAL PRIMER. PROVIDE ALL PIPING, FITTINGS, AND ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION.
- ④ SUPPLY AND INSTALL NEW FLOOR DRAIN. REFER TO PLUMBING FIXTURE SCHEDULE FOR TYPE AND SPECIFICATION.
- ⑤ SUPPLY AND INSTALL NEW DOMESTIC COLD WATER (DOW) AND DOMESTIC HOT WATER (DHW) PIPING COMPLETE WITH ISOLATION VALVES, AND RECONNECT TO RETAINED SANITARYWARE FIXTURES.
- ⑥ REINSTALL RETAINED WATER CLOSET COMPLETE WITH NEW WAX SEAL, CLOS. BOLT'S, GASKETS, CONNECTIONS, AND ALL ACCESSORIES REQUIRED FOR A COMPLETE AND LEAK-FREE INSTALLATION.
- ⑦ REINSTALL RETAINED SANITARYWARE FIXTURES COMPLETE WITH NEW TRAPS, SUPPLY CONNECTORS, GASKETS, SEALS, FASTENERS, AND ALL ACCESSORIES REQUIRED FOR A COMPLETE AND OPERATIONAL INSTALLATION.
- ⑧ CONTRACTOR TO VERIFY THE VENT THRU ROOF LOCATION AT SITE AND CORRECT THE NEW VENT PIPING.
- ⑨ REINSTALL RETAINED SANITARYWARE FIXTURES COMPLETE WITH NEW SUPPLY STOPS, SUPPLY CONNECTORS, ESCUTCHEONS, GASKETS, SEALS, AND ALL ACCESSORIES REQUIRED FOR A COMPLETE, LEAK-FREE, AND OPERATIONAL INSTALLATION.
- ⑩ PROVIDE 1/2" PEK TRAP PRIMER TUBING TO TSP-1.
- ⑪ THE NEW SANITARY PIPING INTO EXISTING PIPING HERE.

TAG	DESCRIPTION	MAKE	MODEL	REMARKS	PIPE SIZES mm (in)			
					DCW	DHW	DRAIN	VENT
WM-1	WASHING MACHINE BOX	OATEY	38540	OATEY 38540 WASHING MACHINE OUTLET BOX COMPLETE WITH QUARTER TURN BRASS BALL VALVES. SIZE 1 3/4" WIDE X 15 1/8" HIGH X 3 5/8" DEEP. 2" DRAIN OPENING, AND CONSTRUCTED OF HIGH IMPACT POLYSTYRENE.	12 (1/2")	12 (1/2")	50 (2")	32 (1-1/4")
FD-1	750 (3") FLOOR DRAIN	WATTS	FD-200	STRAINER COVER TO HAVE TAMPERED PROOF SCREWS. PROVIDE TRAP SEAL (TSP) CONNECTION.	--	--	75 (3")	40 (1-1/2")
TSP-1	TRAP SEAL PRIMER	PPP	PR-500	PPP MODEL PR-500 AUTOMATIC PRESSURE DROP ACTIVATED TRAP PRIMER VALVE. SYSTEM OPERATING RANGE IS 20 PSI MINIMUM TO 80 PSI MAXIMUM. TRAP PRIMER IS TO BE CONNECTED TO A COLD WATER SUPPLY ONLY CONSTRUCTED OF 80/30 BRASS, EPDM O-RINGS, DOWN #1 SILICONE, #60 STAINLESS STEEL MESH SCREEN.	12 (1/2")	--	--	--

