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PART 1 - GENERAL

1.01 REFERENCES

- .1 General Conditions, Documents in Division 00 and Sections of Division 01, apply to Contract Documents including specification and drawings.
- .2 Refer to Owner's policies and procedures documents attached to end of Section entitled Owner's Procedures. Where requirements of Specification conflicts with requirements of Owner's policies and procedures documents, Owner's policies and procedures documents to take precedence, subject to requirements of local governing codes and authorities .

1.02 DEFINITIONS

- .1 "concealed" – means hidden from normal sight in furred spaces, shafts, ceiling spaces, walls and partitions.
- .2 "exposed" – means work normally visible, including work in equipment rooms, tunnels, and similar spaces.
- .3 "finished" - means when in description of any area or part of an area or a product which receives a finish such as paint or in case of a product may be factory finished.
- .4 "provision" or "provide" (and tenses of "provide") – means supply, install, start-up, test and commission complete.
- .5 "install" (and tenses of "install") – means secure in position, connect complete, start-up, test and commission.
- .6 "supply" – means to procure, arrange for delivery to site, inspect, accept delivery and administer supply of products and/or systems, and includes manufacturer's supply of any specialty ancillaries, standard on site testing, initial start-up, programming, basic commissioning, warranties and manufacturers' assistance to Contractor.
- .7 "Service Shut-down" means a total stoppage of the distributed building service to a particular area.
- .8 "barrier-free" – means when applied to a building and its facilities, that building and its facilities can be approached, entered and used by persons with physical or sensory disabilities in accordance with requirements of local governing building code.
- .9 "delete" or "remove" (and tenses of "delete" or "removed") – means to disconnect, make safe, remove obsolete materials including any back box and exposed piping and raceways; patch, and repair/finish surfaces to match adjoining similar construction; include for associated re-programming of systems and/or change of documentation identifications to suit deletions; and properly dispose of deleted products off site unless otherwise instructed by Consultant.
- .10 "BAS" – means building automation system; "BMS" – means building management system, "FMS" – means facility management system; and "DDC" means direct digital controls; references to "BAS", "BMS", "FMS" and "DDC" generally have the same meaning.
- .11 "authority having jurisdiction" and/or "AHJ" and/or "AHJs" and/or "governing authority" and/or "regulatory authority" and/or "Municipal authority" – means

- government departments, agencies, standards, rules and regulations that apply to, and govern the work, and to which work must adhere.
- .12 "OSHA" and "OHSA" - stands for Occupational Safety and Health Administration and Occupational Health and Safety Act, and wherever either one is used, they are to be read to mean local governing occupational health and safety regulations that apply to and govern work and to which work must adhere, regardless if Project falls within either authority's jurisdiction.
- .13 "General Trades Divisions" – refers to Divisions 02, 03, 04, 07, 08, 09, 31, 32 and other Divisions as specifically noted, and which work as defined in Specifications and/or drawings is responsibility of Prime Contractor, unless otherwise noted.
- .14 "Mechanical Trades" and/or "Mechanical Divisions" – refers to Divisions 20, 21, 22, 23, 25 and other Divisions as specifically noted, and which work as defined in Specifications and/or on drawings is responsibility of Mechanical Contractor, unless otherwise noted.
- .15 "Electrical Trades" and/or "Electrical Divisions" – refers to Divisions 26, 27, 28 and other Divisions as specifically noted, and which work as defined in Specifications and/or on drawings is responsibility of Electrical Contractor, unless otherwise noted.
- .16 "Consultant" – means person, firm or corporation identified as such in Agreement or Documents, and is licensed to practice in Place of the Work, and has been appointed by Owner to act for Owner in a professional capacity in relation to the Work.
- .17 Wherever term "indicated", "shown", "noted", "listed", or similar words or phrases are used in Contract Documents they are understood, unless otherwise defined, to mean product referred to is "indicated", "shown", "listed", or "noted" on Contract Documents.
- .18 Wherever term "reviewed", "satisfactory", "as directed", "submit", or similar words or phrases are used in Contract Documents they are understood, unless otherwise defined, to mean that work or product(s) referred to as "reviewed by", "to the satisfaction of", "submitted to", the Consultant.
- .19 Wherever "Drawings", and/or "Specifications" and/or "Drawings and Specifications" are referred to, it means "the Contract Documents in their entirety".
- .20 Wherever the term "Work" or "work" is used in the Contract Documents it means all equipment, permits, materials, labour and other services as may be necessary to provide a complete installation as described and detailed on the Drawings, the Specifications and other references in the Contract Documents.
- .21 "Basis of Design" refers the mechanical design inherent in the Contract Documents to establish a specific performance requirement and may refer to specific Equipment and/or Products that have been used to establish an energy performance benchmark, and/or space constraint, and/or structural load, and/or may refer to a specific equipment arrangement, and/or may refer to a particular operating sequence, and/or other similar consideration specific to the design.
- .22 "Acceptable Manufacturer", and/or "Standard of Acceptance", and/or "Alternative Manufacturer", "and/or Acceptable Alternative" and/or similar language that

describes manufacturers other than the manufacturer used as the Basis of Design shall all have the same meaning throughout the Contract Documents. Acceptable Manufacturers may be used in the Work in lieu of the Basis of Design manufacturers subject to conditions stipulated elsewhere in the Contract Documents.

1.03 DOCUMENTS

- .1 Documents for bidding include but are not limited to issued Drawings, Specifications and Addenda.
- .2 Drawings and Specifications are portions of Contract Documents and identify labour, products and services necessary for performance of work and form a basis for determining pricing. They are intended to be cooperative. Perform work that is shown, specified, or reasonably implied on drawings but not mentioned in Specification, or vice-versa, as though fully covered by both.
- .3 Review Drawings and Specifications of each Division and where applicable, Code Consultants' reports.
- .4 Unless otherwise specifically noted in Specifications and/or on Drawings, Sections of Divisions are not intended to delegate functions nor to delegate work and supply of materials to any specific trade, but rather to generally designate a basic unit of work, and Sections are to be read as a whole.
- .5 Drawings are performance drawings, diagrammatic, and show approximate locations of equipment, materials and connecting services. Drawings are intended to convey scope of work and do not show exact architectural and/or structural details.
- .6 Mechanical and Electrical Drawings are intended to convey scope of work and do not show architectural and structural details. Provide fittings, offsets, transformations and similar items required as a result of obstructions and other architectural and/or structural details but not shown on Drawings.
- .7 Locations of equipment and materials shown may be altered, when reviewed by Consultant, to meet requirements of equipment and/or materials, other equipment or systems being installed, and of building, all at no additional cost to Contract.
- .8 Specification is intended to provide product data and installation requirements. Refer to schedules, Drawings (layouts, riser diagrams, schematics, details) and Specification to provide correct quantities and performance. Singular may be read as plural and vice versa.
- .9 Starter/motor control centre (MCC), and variable frequency drive (VFD) schedule drawings are both mechanical and electrical, and apply to work of both Mechanical Divisions and Electrical Divisions. Be responsible for reviewing starter, MCC, VFD, and motor specification requirements of Mechanical Divisions specifications and drawings, prior to Bid submission and confirm and coordinate exact scope of work and responsibility between Mechanical Divisions and Electrical Divisions.
- .10 Drawings and Specifications are prepared solely for use by party with whom Consultant has entered into a contract and there are no representations of any kind made by Consultant to any other party.

- .11 When scale and date of Drawings are same, or when discrepancy exists within Specification, include most costly arrangement to take precedence.
- .12 In case of discrepancies or conflicts between Drawings and Specifications, Documents will govern in following order:
 - .1 Documents of a later date.
 - .2 Specification;
 - .3 Drawings of larger scale;
 - .4 Drawings of smaller scale;
- .13 Language of Documents is in many cases are written in imperative mode for brevity. Clauses containing instructions or directions are directed to the Prime Contractor.

1.04 METRIC AND IMPERIAL MEASUREMENTS

- .1 Generally, both metric and imperial units of measurement are given in Sections of Specification governed by this Section. Measurement conversions may be generally "soft" and rounded off. Exact measurements to be confirmed based on application.
- .2 Where measurements are related to installation and onsite applications, confirm issued document measurements with applicable local code requirements, and/or as applicable, make accurate measurements onsite.
- .3 Where significant discrepancies are found, immediately notify Consultant for direction.

1.05 EXAMINATION OF BID DOCUMENTS AND SITE

- .1 Carefully examine Documents and visit site to determine and review existing site conditions that will or may affect work, and include for such conditions in Bid Price.
- .2 Report to Consultant, prior to Bid Submittal, any existing site condition that will or may affect performance of work as per Documents. Failure to do so will not be grounds for additional costs.
- .3 Upon finding discrepancies in, or omissions from Documents, or having doubt as to their meaning or intent, immediately notify Consultant, in writing.

1.06 WORK STANDARDS

- .1 Where any code, regulation, bylaw, standard, contract form, manual, printed instruction, and installation and application instruction is quoted it means, unless noted otherwise, the edition adopted by and enforced by local governing authorities having jurisdiction at time of submission of Bids. Include for compliance with revisions, bulletins, supplementary standards or amendments issued by local governing authorities.
- .2 Where regulatory codes, standards and regulations are at variance with Drawings and Specification, more stringent requirement will apply unless otherwise directed by Consultant.
- .3 Supplementary mandatory specifications and requirements to be used in conjunction with project include but are not limited to following:

- .1 Air-Conditioning, Heating and Refrigeration Institute (AHRI),
- .2 Air Movement and Control Association (AMCA),
- .3 American Iron and Steel Institute (AISI),
- .4 Air Movement and Control Association (AMCA),
- .5 American National Standards Institute (ANSI),
- .6 American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc., (ASHRAE),
- .7 American Society of Mechanical Engineers (ASME),
- .8 American Society of Testing and Materials (ASTM),
- .9 American Water Works Association (AWWA),
- .10 ANSI/ASHRAE Standard 90.1, Energy Standard for Buildings Except Low-Rise Residential Buildings,
- .11 Associated Air Balance Council (AABC),
- .12 Building Industry Consulting Services, International (BICSI),
- .13 Canadian Gas Association (CGA),
- .14 Canadian General Standards Board (CGSB),
- .15 Canadian Standards Association (CSA),
- .16 CSA C282, "Emergency Electrical Power Supply For Buildings",
- .17 CSA Z432 Safeguarding of Machinery,
- .18 CSA Z462, "Workplace Electrical Safety",
- .19 Electrical and Electronic Manufacturers Association of Canada (EEMAC),
- .20 Electrical Safety Authority (ESA),
- .21 Electronic Industries Association (EIA),
- .22 Factory Mutual Global (FM Global),
- .23 Illuminating Engineering Society (IES),
- .24 Institute of Electrical and Electronic Engineers (IEEE),
- .25 International Standards Organization (ISO),
- .26 Manufacturers Standardization Society of the Valve and Fittings Industry Inc. (MSS),
- .27 National Building Code of Canada (NBC),
- .28 National Plumbing Code of Canada (NPC),
- .29 National Fire Code of Canada (NFC),
- .30 National Electrical Manufacturers Association (NEMA),
- .31 National Energy Code of Canada for Buildings (NECB),
- .32 National Environmental Balancing Bureau (NEBB),
- .33 National Fire Protection Association (NFPA),

- .34 National Standards of Canada,
 - .35 NSF International,
 - .36 Occupational Health and Safety Act - Ontario Regulation 632, "Confined Spaces",
 - .37 Occupational Health and Safety Act (OHSA),
 - .38 Ontario Building Code (OBC),
 - .39 Ontario Fire Code (OFC),
 - .40 Ontario Electrical Safety Code (OESC),
 - .41 Sheet Metal and Air Conditioning Contractors' National Association (SMACNA),
 - .42 Technical Standards and Safety Authority (TSSA),
 - .43 Telecommunications Industry Association (TIA),
 - .44 Thermal Insulation Association of Canada (TIAC),
 - .45 Underwriters' Laboratories of Canada (ULC),
 - .46 Workplace Hazardous Materials Information System (WHMIS),
 - .47 Material Safety Data Sheets by product manufacturers,
 - .48 local utility inspection permits,
 - .49 Codes, standards, and regulations of Authorities Having Jurisdiction (AHJs),
 - .50 additional codes and standards listed in Trade Specification Sections,
 - .51 Owner's standards.
- .4 Provide applicable requirements for barrier free access in accordance with latest edition of Ontario Building Code and more specifically the Accessibility for Ontarians with Disabilities Act (AODA).
 - .5 Where any governing Code, Regulation, or Standard requires preparation and submission of special details or drawings for review they are to be prepared and submitted to appropriate authorities. Be responsible for costs associated with these submittals.
 - .6 Unless otherwise specified, install equipment in accordance with equipment manufacturer's recommendations and instructions, and requirements of governing Codes, Standards, and Regulations. Governing Codes, Standards, and Regulations take precedence over manufacturer's instructions. Notify Consultant in writing of conflicts between Contract Documents and manufacturer's instructions.
 - .7 Work is to be performed by journeyperson tradesmen who perform only work that their certificates permit, or by apprentice tradesmen under direct on site supervision of experienced journeyperson tradesman. Journeyperson to apprentice ratio is not to exceed ratio determined by the Board as stated in Ontario College of Trades and Apprenticeship Act or local equivalent governing body in Place of the Work.

- .8 Journeyperson tradesmen are to have a copy of valid trade certificates available at site for review by Consultant at any time.
- .9 Experienced and qualified Superintendent is to be on-site at times when work is being performed.
- .10 Protect existing areas above, below and adjacent areas of Work from any debris, noise, or interruptions to existing services to satisfaction of Owner and reviewed with Consultant. Maintain in operation existing services to these areas to allow Owner to continue use of these areas. If services that are required to be maintained run through areas of renovations, provide necessary protection to services or reroute, in coordination with Owner and Consultant. Include for required premium time work to meet these requirements.
- .11 Coordinate work inspection reviews and approvals with governing inspection department to ensure that construction schedule is not delayed. Be responsible for prompt notification of deficiencies to Consultant and submission of reports and certificates to Consultant.
- .12 Properly protect equipment and materials on site from damage and defacement due to elements and work of trades, to satisfaction of Consultant. Equipment and materials are to be in new condition upon Substantial Performance of the Work.
- .13 Mechanical piping system work, including equipment, must comply in all respects with requirements of local technical standards authorities and CSA Standard B51, Boiler, Pressure Vessels and Pressure Piping Code. Where required, mechanical work products must bear a CRN number.
- .14 Electrical items associated with mechanical equipment are to be certified and bear stamp or seal of a recognized testing agency such as CSA, UL, ULC, ETL, etc., or bear a stamp to indicate special electrical utility approval.

1.07 PERMITS, CERTIFICATES, APPROVALS AND FEES

- .1 As specified in Instructions to Bidders, be responsible for application and payment for permits, certificates, and approvals required to complete Work.
- .2 Contact and confirm with local authorities having jurisdiction including utility providers, requirements for approvals from such authorities.
- .3 Be responsible for ensuring that authorities having jurisdiction which require on-site inspection of work, have ample notification to perform inspection, with sufficient lead time to correct deficiencies in a manner that will not impede schedule of completion of Work. If any defect, deficiency or non-compliant is found in work by inspection, be responsible for costs of such inspection, including any related expenses, making good and return to site, until work is passed by governing authorities.
- .4 Obtain and submit to Consultant, approval/inspection certificates issued by governing authorities to confirm that Work as installed is in accordance with rules and regulations of local governing authorities and are acceptable.
- .5 Include in each copy of operating and maintenance instruction manuals, copies of approvals and inspection certificates issued by regulatory authorities.

- .6 Submit required applications, shop drawings, electrical distribution system protection device coordination studies, and short circuit calculations, and any other information requested by local authority.
- .7 Where electromagnetic locks are provided whether by this scope of work, or by others, be responsible for obtaining and paying for required certificates of work with regards to such electromagnetic lock work.

1.08 REQUIREMENTS FOR CONTRACTOR RETAINED ENGINEERS

- .1 Professional engineers retained to perform consulting services with regard to Project work, i.e. seismic engineer, fire protection engineer or, structural engineer, are to be members in good standing with local Association of Professional Engineers, and are to carry and pay for errors and omissions professional liability insurance in compliance with requirements of governing authorities in Place of the Work.
- .2 Retained engineer's professional liability insurance is to protect Contractor's consultants and their respective servants, agents, and employees against any loss or damage resulting from professional services rendered by aforementioned consultants and their respective servants, agents, and employees in regards to the Work of this Contract.
- .3 Unless otherwise specified in Division 00 and 01, liability insurance requirements are as follows:
 - .1 coverage is to be a minimum of \$2,000,000.00 CDN inclusive of any one occurrence;
 - .2 insurance policy is not to be cancelled or changed in any way without insurer giving Owner minimum thirty (30) days written notice;
 - .3 liability insurance is to be obtained from an insurer registered and licensed to underwrite such insurance in Place of the Work;
 - .4 Retained consultants are to ascertain that sub-consultants employed by them carry insurance in form and limits specified above;
 - .5 evidence of required liability insurance in such form as may be required is to be issued to Owner, Owner's Consultant, and Municipal Authorities as required prior to commencement of aforementioned consultant's services.

1.09 WHMIS REQUIREMENTS

- .1 Be familiar with Workplace Hazardous Materials Information System (WHMIS), which require uniform labelling of Hazardous Workplace Materials and Safety Data Sheets relating to materials covered in this Specification.
- .2 Ensure that Employees and Subcontractors representing their firm who work with, or in proximity to, hazardous materials fully understand potential hazards and have been thoroughly trained to deal with any emergencies. Workers shall be able to:
 - .1 recognize and understand labelling on hazardous materials;
 - .2 understand Material Safety Data Sheets, and are knowledgeable on how to safely use, store, handle and dispose of hazardous materials.

- .3 Provide verification that Employees and Subcontractors attending the job site have WHMIS training.
- .4 Submit to the Consultant unexpired Material Safety Data Sheets pertinent to the Work on this job site who will forward them to Owner's Occupational Health and Safety Specialist. Notify Consultant prior to delivery and starting of any work involving the use of hazardous substances.

1.10 WORKPLACE SAFETY AND PROCEDURES

- .1 In addition to requirements of the City of Toronto Procurement documents, local governing Occupational Health, and Safety Act for Construction Projects, requirements of Owner's Occupational Health and Safety Policy, Safety Act and Instructions for Contractors document apply to the Work of this contract. Health and safety legislation from authorities having jurisdiction are to also apply to this project. Coordinate with Owner's occupational health and safety joint policy committee member, and review responsibilities of each party. Be responsible for ensuring that Subcontractors and Workers abide by rules and requirements set forth under the Act.
- .2 Be the liaison with Ministry of Labour and to notify Consultant of and enforce duties of Contractor (Constructor) in accordance with Occupational Health and Safety Act (Ontario).
- .3 When working in areas considered by governing authorities and local governing codes as being confined spaces, such as crawl spaces, comply with requirements of Occupational Health and Safety Act - Ontario Regulation 632 "Confined Spaces" and any other applicable Ministry of Labour requirements.
- .4 Hot Work:
 - .1 Hot Work includes, but is not limited to, brazing, cuttings, grinding, soldering, pipe thawing, torch applied roofing, and welding operations.
 - .2 Prior to commencement of any Hot Work, for any temporary operations involving open flames or projecting sparks, Contractor's policies and procedures to be submitted to Consultant for review.
 - .3 No Hot Work is permitted without authorization of Owner; review work and protection methods with Consultant.
 - .4 Provide fire and public safety protection materials, screens, smoke eaters, etc. as may be required by type of work and Consultant.

1.11 FIRST AID

- .1 Be familiar with location of nearest first aid unit (provided by Contractor) prior to commencement of Work. Report incidents to Consultant immediately and submit a copy of Ministry of Labour report form to Consultant.

1.12 CONTRACTOR'S JOB SITE RULES

- .1 Within ten (10) days of preconstruction meeting, and prior to commencement of Work, submit Contractor's job site rules, including safety policies and procedures, general safety policies and injured worker transportation policies. These job site rules to be consistent with Contractor's duties and obligations under Contract and under Occupational Health and Safety Act. Such job site rules to include provisions

making smoking and consumption of alcohol or non-prescription drugs on Project to be subject to discipline proceedings and/or termination of employment.

1.13 SAFETY APPAREL

- .1 Unless otherwise coordinated with Consultant, provide minimum 6 spare safety helmets for visitors. Enforce use of safety helmets and safety footwear for personnel, including visitors.
- .2 Follow requirements of local governing Occupational Health and Safety Act.
- .3 Assess potential workplace hazards on an on-going basis, particularly in situations of on-going construction of work, or where multiple trades are present and intermingling, or where workplace environment is not familiar.
- .4 Prior to start of work, provide to Consultant written confirmation that Contractor's personnel on site including sub-trades have been trained on safety policy and procedures and are aware of potential workplace hazards.
- .5 With due diligence, provide adequate levels of safety supervision, including sufficient and competent supervising staff and processes for monitoring compliance of safety requirements and to effectively communicate and inform personnel of any foreseeable risks or hazards prior to work commencing and regularly during progress of work.
- .6 Conduct regular site meetings as work proceeds, to organize work, explain safety aspects of work, remind of important safety aspects of work and to advise of any new hazards or problematic issues.

1.14 SMOKING

- .1 Smoking is at all times be prohibited inside demolition or construction zones in all areas of the Work.
- .2 The Contractor shall post signage indicating the prohibition of smoking in all areas of the Work and shall enforce the no-smoking policy.
- .3 Smoking outside of areas of the Work shall only be permitted in a designated location agreeable to the Owner, but in no case shall be allowed within 9m (30 ft.) of any building opening or air intake.

1.15 DESIGNATED MATERIALS

- .1 If at any time during course of existing building work, hazardous materials other than those identified in Project Documents and pertaining to Project Scope of Work, are encountered or suspected that were not identified as being present and which specific instructions in handling of such materials were not given, cease work in area in question and immediately notify Consultant. Comply with local governing regulations with regards to working in areas suspected of containing hazardous materials. Do not resume work in affected area without coordination with Consultant.

1.16 FIREWATCH

- .1 Throughout all construction activities, Fire Alarm and Life Safety Systems shall remain operational. If any portion of a Fire Alarm System including zones or devices needs to be bypassed, or otherwise deactivated to complete the Work, the Contractor shall implement a Firewatch.

- .2 Firewatch procedures are to be conducted in strict accordance with latest edition of the Ontario Fire Code. Where interpretations are required, coordinate with the Owner, the Consultant and Authorities Having Jurisdiction (AHJ). Refer to the Ontario Fire Code for Firewatch requirements and expectations.
- .3 The following outlines the anticipated Firewatch procedures required:
 - .1 Contact the Owner a minimum of 48 hours (2 business days) prior to initiation of Firewatch.
 - .2 Contractor shall subcontract an Owner approved fire alarm contractor to put the device(s) or zone(s) affected on bypass. If the building fire alarm devices are addressable, the devices can be bypassed individually. If a building has a “conventional” fire alarm system, the entire zone affected must be bypassed. Under no circumstances is an entire panel to be bypassed.
 - .3 If devices are covered during the Work the Contractor shall follow the manufacturer’s recommended procedures. Covers shall be removed at the end of each working day.
 - .4 Other activities that generate dust or airborne particulate including spray painting may disturb or actuate fire alarm devices. Such activities may warrant fire alarm bypass and Firewatch procedures.
 - .5 During Firewatch, Contractor personnel conducting the watch shall:
 - .1 carry a radio for communication with the Owner’s security personnel,
 - .2 remain onsite for the duration of the Firewatch, and
 - .3 tour building areas affected once every hour.
- .4 Once the Firewatch has ended;
 - .1 Owner approved fire alarm contractor to verify the fire alarm system including all devices affected are back online and ensure all “trouble signals” at the fire alarm panel are cleared.
 - .2 Return the radio(s) to the Owner.
 - .3 Once the Work is completed, all devices that were covered are to be re-verified.
 - .4 Notify the Owner the Firewatch has ended.

1.17 CONSTRUCTION SCHEDULE

- .1 Project Start Date:
 - .1 The proposed project start timeline is as indicated by the Bidder in Bid Submission
- .2 Project Completion Date:
 - .1 The required Substantial Performance date as indicated in the City of Toronto Procurement documents.
- .3 Construction Schedule:
 - .1 The successful bidder must provide a Construction Schedule within 5 (five) days of project award. An updated project schedule must be submitted every

two (2) weeks. Payment will not be certified without submission of an updated Construction Schedule.

- .2 Prepare a detailed Construction Schedule based on the following major targeted milestones and work schedule limitations:
 - .1 Basement HVAC work shall be a priority and shall take place beginning April 2026 and complete before the start of the cooling season.
 - .2 Boiler replacement work shall take place during a scheduled service/maintenance shut-down of the swimming pool.
 - .3 Rooftop air handling unit replacement shall take place during “shoulder” seasons (spring and/or fall); April 1, 2026 to May 31, 2026, and/or September 8, 2026 to October 31, 2026.
 - .4 Prolonged rooftop unit down-time shall be kept to a minimum and replacement work shall be completed over weekends.
- .3 Construction Schedule updates must include a minimum four (4) advanced notice for any major service disruption to the facility. Include all intended service shut-downs in the four-week look-ahead schedule. Do not proceed with any major service disruptions with the prior written consent of the Owner.
- .4 Construction Schedule shall outline the sequence of work, identify dates and duration for each activity, methodology of how work is to be performed, when deliveries are to be made and interruption to services are required.
- .5 Do not start any construction work without Owner’s review and approval of the Construction Schedule.
- .6 Strictly adhere to Construction Schedule.
- .4 Working Hours:
 - .1 The facility includes a daycare that is operational from 7:00 AM to 6:00 PM on weekdays, Monday to Friday; no Noisy Work, or other work that would be disruptive to the daycare operation may be conducted during this time period.
 - .2 Noisy Work to be completed at times when the facility daycare is not operational and must be completed within applicable by-laws and coordinated with building staff. Any shut downs to areas of the building are to be coordinated with the Owner.
 - .3 Work being performed within occupied spaces and work affecting surfaces adjacent to occupied spaces may need to be performed after regular business hours. For areas where spaces are used by Owner on a 24 hours basis or over varying hours, co-ordinate hours of work with Owner on a regular basis to suit Owner’s schedule.
 - .4 Execute work at times confirmed with, and as agreed to by the Owner, so as not to inconvenience the Owner’s operation of the facility in any way or otherwise hinder the Owner’s use of building. Include for required premium time work to meet these requirements.

- .5 All work to be in accordance with applicable by-laws.
- .6 All work must be coordinated with the Owner.
- .5 Be aware that on-going functions of existing building must continue and noise-making tools may be operated only with Owner's permission. Owner may at any given time request that any construction activity be temporarily ceased due to interference with facility operations.
- .6 Use scheduling program acceptable to Owner.
- .7 Contractor's Construction Superintendent to attend regular weekly site meetings with Owner's representative to review Construction Schedule and to report on progress of the Work. Contractor's site representative to prepare notes of meeting and issue to participants within three (3) working days after meeting. Prepare a Project Status report and issue to Consultant on every Monday during construction phase unless Monday is a statutory or provincial holiday, then on next working day. Project Status report to summarize activities completed in prior week, and forecast activities to be undertaken in current week.
- .8 Include for scheduling, coordination and work phasing to suit project requirements. No extras for premium time will be considered. Shutdowns and planning of operations that may affect Owner's use of services to be coordinated and approved in writing with Owner.
- .9 Owner reserves right to perform additional non-related work in same space, while Contractor is performing their work.
- .10 Review product delivery times with suppliers/manufacturers proposed at time of Bid and ensure that products are delivered within time frames to meet Construction Schedule requirements. Failure to order products in time to meet Construction Schedule unless due to named manufacturer's unforeseen circumstances, is not acceptable reason to change from named manufacturer.

1.18 PLANNING AND LAYOUT OF WORK

- .1 Base installation layout, design, terminations, and supply of accessories, on Contract Documents with specific coordination with reviewed shop drawings.
- .2 Plan, coordinate, and establish exact locations and routing of services with affected trades prior to installation such that services clear each other as well as other obstructions. Generally, order of right of way for services to be as follows:
 - .1 piping requiring uniform pitch;
 - .2 piping 100 mm (4") dia. and larger;
 - .3 large ducts (main runs);
 - .4 cable tray and bus duct;
 - .5 conduit 100 mm (4") dia. and larger;
 - .6 piping less than 100 mm (4") dia.;
 - .7 smaller branch ductwork;
 - .8 conduit less than 100 mm (4") dia.

- .3 Unless otherwise shown or specified, conceal work in finished areas, and conceal work in partially finished and/or unfinished areas to extent made possible by area construction. Install services as high as possible to conserve headroom and/or ceiling space. Notify Consultant where headroom or ceiling space appears to be inadequate prior to installation of work.
- .4 Do not use Contract Drawing measurements for prefabrication and layout of raceways, conduits, ducts, bus ducts, luminaires, layout of piping, sheet metal work, and other such work. Locations and routing are to be generally in accordance with Contract Drawings, however, prepare layout drawings for such work. Use established bench marks for both horizontal and vertical measurements. Confirm inverts, coordinate with and make allowances for work of other trades. Accurately layout work, and be entirely responsible for work installed in accordance with layout drawings. Where any invert, grade, or size is at variance with Contract Drawings, notify Consultant prior to proceeding with work.
- .5 Prepare plan and interference drawings (at a minimum drawing scale of 1:50 or ¼" = 1' 0") of work for coordination with each trade Contractor. Arrange for preparation of detailed section drawings of ceiling spaces of corridors and any other congested areas. Sections are to be cross referenced with plan drawings so that trades may make use of section drawings. Section drawings to indicate lateral and elevation dimensions of major services within ceiling space. Lateral dimensions are to be from grid lines and elevations from top of floor slab. Obtain from Consultant, engineering drawings for this use. Contractors' interference drawings are to be distributed among other Trade Contractors. Submit drawings to Consultant for review.
- .6 Carry out alterations in arrangement of work that has been installed without proper coordination, study, and review, even if in accordance with Contract Documents, in order to conceal work behind finishes, or to allow installation of other work, without additional cost. In addition, make necessary alterations in other work required by such alterations, without additional cost.
- .7 Be responsible for making necessary changes, at no additional cost, to accommodate structural and building conditions that were missed due to lack of coordination.
- .8 Shut-off valves, balancing devices, air vents, equipment and similar products, particularly such products located above suspended ceilings must be located for easy access for servicing and/or removal. Products which do not meet this location requirement are to be relocated to an accessible location at no additional cost.
- .9 As reviewed with Consultant, Mechanical Contractor is to determine final locations of major work within ceiling spaces.
- .10 Control products, products requiring maintenance, junction boxes, and similar products, particularly such products located above suspended ceilings must be located for easy access for servicing and/or removal. Products which do not meet this location requirement are to be relocated to an accessible location at no additional cost.
- .11 Where drawings indicate that acoustic tile ceiling is being suspended below plaster ceiling, coordinate design of framework used to support suspended ceiling, lighting,

diffusers, and other Divisions components that are mounted within or through ceiling. Do not mount devices to suspended ceiling. Secure and mount to ceiling slab above. Seal ceiling openings to maintain required fire rating.

1.19 PHASING

- .1 Include for scheduling, co-ordination, and construction phasing to suit project time line for Completion. Review exact phasing requirements with Consultant prior to start of Work.
- .2 Phasing and scheduling of Work is required in order to maintain existing building operations. Include costs (including costs for "off hours" work) for scheduling, co-ordination, and construction phasing to suit this project as specified in Division 01 and on drawings. Review exact phasing requirements with Consultant prior to start of Work.
- .3 Project partial occupancy permits may be required throughout project. Where applicable, provide for each partial permit, local governing authority certificate and any other testing/verification certificates for systems.

1.20 USING ELEVATORS FOR MOVEMENT OF EQUIPMENT

- .1 When using elevators to transport equipment to installed positions, ship equipment to site in sections to allow for transporting in Owner designated building elevators on site. Include for following:
 - .1 prepare and submit proposed schedule of use of elevators to Consultant for review and Owner approval;
 - .2 equipment to suit weight limit restrictions and dimensions of elevator; factory disassemble equipment as required to meet elevator restrictions; include in shop drawings manufacturer's detailed drawings identifying breakdown sections of equipment;
 - .3 provide protection mats to interior elevator cab surfaces;
 - .4 transport to installation location;
 - .5 where applicable, re-assemble equipment at installation location;
 - .6 equipment disassembly and assembly to be performed by equipment manufacturer's authorized technicians;
 - .7 perform start-up and testing of equipment.

1.21 INTERRUPTIONS TO AND SHUTDOWNS OF SERVICES AND SYSTEMS

- .1 It is understood that this facility is a critical facility that operates continuously. Avoid as much as possible, requirement for power or service shut downs. Take necessary steps and measures to avoid any need for shut down or service interruptions.
- .2 Coordinate shutdowns and interruptions to existing systems and services fully with and performed at times acceptable to Owner. Within ten (10) days of being awarded Contract, prepare and submit to Consultant, schedule and shutdown period(s) proposed. Ensure that Consultant reviews and Owner approves proposed schedules and interrupted services prior to start of Work. Include for performing Work during these times. No additional costs for overtime or premium

time will be considered. Be fully responsible for ensuring that power to facility is restored once allowable window for shutdown has expired.

- .3 Prior to each shut-down or interruption, inform Consultant in writing minimum fifteen (15) working days in advance of proposed shutdown or interruption and obtain a written approval from Owner to proceed. Additionally, submit to Consultant for review, method of procedure (MOP) for each scheduled shutdown or interruption. Provide further additional notice in special cases with respect to services to essential systems. Exact requirements to be confirmed with Consultant. Do not shutdown or interrupt any system or service without Consultant's review and Owner approval. Owner retains right to cancel or re-schedule any period of shut down.
- .4 Perform work associated with shutdowns and interruptions as continuous operations to minimize shutdown time and to reinstate systems as soon as possible, and, prior to any shutdown, ensure that required materials and labour required to complete Work for which shutdown is required are available at onsite.
- .5 Coordinate with Owner any off-hour work and comply with any instructions given by Owner for carrying out this work. Such disruptive work consists of, but is not limited to power shut down, use of heavy equipment, use of explosive actuated tools, excessive noise of any origin, use of materials with odours, coring, drilling, and similar types of irritations.
- .6 Owner retains right to shutdown services or building access for emergency reasons with no advance notification to Contractor. Owner to provide Contractor with minimum five (5) working days advance notice of planned temporary stoppages of services and planned rerouting of building access.
- .7 Existing building to remain in use and occupancy throughout duration of construction of Work. Provide and maintain continuation of fire protection, fire walls and fire rated assemblies in existing building.
- .8 Maintain existing exits and provide proper and safe means of egress from throughout existing building to open spaces at all times to approval of local governing authorities. Identify and provide exit lights, and illuminate temporary means of egress.
- .9 Maintain access to service and delivery entrances, and for maintenance and inspection services.
- .10 Maintain security of existing building during Work.
- .11 Confirm with Consultant if any feeder is designated for special considerations and if designated as such and is to be interrupted, ensure that at least following preparations are met:
 - .1 provide a schedule of proposed feeders to be interrupted; propose one feeder at a time to be worked on per scheduled shutdown;
 - .2 provide a method of procedure for work;
 - .3 prepare above documentation and submit for review by Consultant at least 15 working days prior to date of each proposed work;
 - .4 on day/night of proposed feeder work, advise Consultant of which feeder is to be worked on; confirm with Consultant requirements for witnessing work;

- .5 de-energize feeders and perform work as per Consultant and Owner reviewed schedule;
- .6 after feeders are re-routed, megger test each feeder.
- .12 Where working in close proximity to "live parts" or inside energized panels or energized cubicles of switchboards/substations, provide protection "boots" over bussing and insulating mats to cover areas of exposed live parts. Provisions to be in compliance with local governing authority requirements.
- .13 Coordinate fully with Owner's designated personnel to maintain building services and life/safety systems in areas that are and may be in operation during construction of Project. Monitoring and supervision of existing life safety systems serving areas of Work, to be daily monitored to ensure that life safety systems are left in proper operating condition at end of each working day. Include for but not be limited to performing following:
 - .1 under presence of Owner's representative, check each morning and evening (start and end of work) of each day, each life safety and security system to ensure that they are in proper working condition;
 - .2 if portions of life safety systems are not in proper working order, provide temporary provisions subject to approval of local governing authority having jurisdiction, to ensure that proper life safety alarm coverage is provided and/or provide supervisory personnel to monitor areas where life safety system is not operational during work;
 - .3 document and sign off with Owner's representative signing off also, each respective daily check condition.
- .14 Work Noise Levels: Execute Work as quietly as possible in and around existing building at times Owner is occupying it. Schedule noisy operations defined by Owner/Consultant, with Consultant to achieve least disturbance to Owner. In event of excessive noise or vibration being detrimental to function of building, at no cost to Owner, cease activity immediately upon notification from Owner and reschedule Work at a time suitable to Owner, changing tools and work methods, if required, to achieve desired results. In some situations Consultant may request that Contractor perform work of high noise levels on an intermittent basis (i.e. 1 hour on, 1 hour off).
- .15 At regular meetings, review areas of existing building that Contractor requires access in next 4 weeks, duration of time that areas need to be accessed, route of entry, times that entry is permitted and any other condition relevant to area of Work.

1.22 COORDINATION OF WORK

- .1 Review Contract Documents and coordinate work with work of each trade. Coordination requirements are to include but not be limited to following:
 - .1 requirements for openings, sleeves, inserts and other hardware necessary for installation of work;
 - .2 concrete work such as housekeeping pads, sumps, bases, etc., required for work, and including required dimensions, operating weight of equipment, location, etc.;

- .3 depth and routing of excavation required for work, and requirements for bedding and backfill;
- .4 wiring work required for equipment and systems but not specified to be done as part of specific particular trade work, including termination points, wiring type and size, and any other requirements.
- .2 Ensure materials and equipment are delivered to site at proper time and in such assemblies and sizes so as to enter into building and be moved into spaces where they are to be located without difficulty.
- .3 Wherever possible, coordinate equipment deliveries with manufacturers and/or suppliers so equipment is delivered to site when it is required, or so it can be stored within building subject to available space as confirmed with Owner and protected from elements.
- .4 Ensure proper access and service clearances are maintained around equipment, and, where applicable, access space for future equipment removal or replacement is not impeded. Comply with code requirements with regards to access space provision around equipment. Remove and replace any equipment which does not meet this requirement.
- .5 Where work is to be integrated, or is to be installed in close proximity with work of other trades, coordinate work prior to and during installation.

1.23 COMPONENT FINAL LOCATIONS

- .1 Owner and Consultant reserve right to relocate electrical components such as receptacles, switches, communication system, outlets, hard wired outlet boxes and luminaries at a later date, but prior to installation, without additional cost to Owner, if relocation per components do not exceed 3m (10ft.) from original location. No credits will be anticipated where relocation per components of up to and including 3m (10ft.) reduces materials, products and labour. Should relocations exceed 3m (10ft.) from original location, adjust contract price for that portion beyond 3m (10ft.) in accordance with provisions for changes in Contract Documents.

1.24 SYSTEMS COORDINATION

- .1 Be responsible for and perform specific coordination of various low voltage systems supplied by Electrical Divisions and also with systems supplied by other Divisions of Work. Include for but not be limited to provision of following, as applicable:
 - .1 coordinate with General Contractor and other Subcontractors, various systems of trades which in any way are interfaced with or monitored by or integrated to, or need to be coordinated with;
 - .2 prepare systems coordination drawings detailing related system coordination and integration points being monitored and/or controlled; submit coordination drawings as part of shop drawing submission;
 - .3 coordinate security system requirements with successful door hardware supplier and prepare detailed coordination drawings of component installations, wiring and conduit layouts, division of responsibility between various trades, etc.; review security system requirements with associated door hardware (electromagnetic locks, electric strikes, etc.), to ensure

proper sequence of operation and door functionality is provided to suit each door configuration; prepare detailed door functionality of each door configuration and submit for review by Consultant;

- .4 review systems requirements for component back boxes and conduits; ensure that system of conduits and boxes meet respective system wiring bending radii requirements;
- .5 review specifications of each trade/Division (i.e. for BAS points, elevator requirements, electrical devices in millwork or prefabricated service consoles, outlet box and back box requirements), to ensure proper power supplies, interconnecting wiring requirements and back box/ outlet box requirements;
- .6 review with manufacturers coordination and integration requirements of their systems;
- .7 review each systems communication protocols to ensure they are compatible and can communicate with each other as required;
- .8 review system shop drawings prior to submission to Consultant, to verify that each system has been coordinated with other systems and that required options and features are selected to meet coordination requirements;
- .9 be present at testing and commissioning functions of each system and provide technical assistance with regards to system operations;
- .10 be "on-site" coordinator of respective system trades with regards to respective system coordination of installation and testing;
- .11 coordinate and review with Consultant with regards to ensuring that systems coordinate and integrate properly to satisfaction of Owner;
- .12 document coordination and integration requirements and maintain records for submission as part of shop drawings;
- .13 respond to coordination and integration requirements and be responsible for such work;
- .14 where a system integrator has been included for, coordinate integration requirements with system integrator.

1.25 PRODUCTS

- .1 Be responsible for ordering of products (equipment and materials) in a timely manner in order to meet project-scheduling timelines. Failure to order products to allow manufacturers sufficient production/delivery time to meet project-scheduling timelines is an unacceptable reason to request for other suppliers or substitutions.
- .2 Provide Canadian manufactured products wherever possible or required and when quality and performance is obtainable at a competitive price. Products are to be supplied from manufacturer's authorized Canadian representative, unless otherwise noted.
- .3 Unless otherwise specified, products are to be new and are to comply with applicable respective Canadian standards. References to UL listings of products to include requirements that products are to be also Underwriters Laboratories of Canada (ULC) listed for use in Canada.

- .4 Products are to meet or exceed latest ANSI/ASHRAE/IES 90.1 standards, as applicable.
- .5 Do not supply any products containing asbestos materials or PCB materials.
- .6 Systems and equipment of this Project are to be "State of the Art" and be most recent and up to date series/version of product that is available at time of shop drawing review process. Products that have been stored or "on shelf" for an extended period of time will not be accepted. Software is to be of latest version available and be provided with updates available at time of shop drawing review process. Systems are to be designed such that its software is backwards compatible. Future upgrades are not to require any hardware replacements or additions to utilize latest software.
- .7 Products scheduled and/or specified have been selected to establish a performance and quality standard, and also a dimensional standard, and a dead load/ live load standard. In most cases, base specified manufacturers are stated for any product specified by manufacturer's name and model number. Bid Price may be based on products supplied by any of manufacturers' base specified or named as acceptable for particular product provided all selection criteria is achieved. If acceptable manufacturers are not stated for a particular product, base Bid Price on product supplied by base specified manufacturer.
- .8 Documents have been prepared based on product available at time of Bidding. If, after award of Contract, and if successful manufacturer can no longer supply a product that meets base specified selection criteria, notify Consultant immediately. Be responsible for obtaining other manufacturers product that complies with base specified performance and criteria and meets project timelines. Proposed products are subject to review and consideration by Consultant and are considered as substitutions subject to a credit to Contract. In addition, if such products require modifications to room spaces, mechanical systems, electrical systems, etc., include required changes. Such changes are to be submitted in detail to Consultant for review and consideration for acceptance. There will be no increase in Contract Price for revisions.
- .9 Listing of a product as "acceptable" does not imply automatic acceptance by Consultant and/or Owner. It is responsibility of Contractor to ensure that any price quotations received and submittals made are for products that meet or exceed specifications and selection criteria included herein.
- .10 If products supplied by a manufacturer named as acceptable are used in lieu of base specified manufacturer, be responsible for ensuring that they are equivalent in performance and operating characteristics (including energy consumption if applicable) to base specified products. It is understood that any additional costs (i.e. for larger starters, larger feeders, additional spaces, and similar downstream effects), and changes to associated or adjacent work resulting from provision of product supplied by a manufacturer other than base specified manufacturer, is included in Bid Price. In addition, in equipment spaces and equipment supports where equipment named as acceptable is used in lieu of base specified equipment. Where dimensions of such equipment differs from base specified equipment, prepare and submit for review accurately dimensioned layouts of rooms affected, identifying architectural and structural elements, systems and equipment to prove

that equipment in room will fit properly meeting design intent. There will be no increase in Contract Price for revisions.

- .11 In addition to manufacturer's products base specified or named as acceptable, other manufacturers of products may be proposed as substitutions to Consultant for review and consideration for acceptance, listing in each case a corresponding credit for each substitution proposed. However, base Bid Price on products base specified or named as acceptable. Certify in writing to Consultant that proposed substitution meets space, power, design, energy consumption, and other selection criteria requirements of base specified or acceptable product. It is understood that there will be no increase in Contract Price by reason of any changes to associated equipment, mechanically, electrically, structurally or architecturally, required by acceptance of proposed substitution. Consultant has sole discretion in accepting any such proposed substitution of product. Indicate any proposed substitutions in areas provided on Bid Form.
- .12 Where products are listed as "or approved equal", certify in writing that product to be used in lieu of base specified product, at least meets space, power, design, energy consumption, and other selection criteria requirements of base specified product and is equivalent or better than base specified product. When requested by Consultant, provide full design detail drawings and specifications of proposed products. Acceptance of these "or approved equal" products is at sole discretion of Consultant. It is understood that there will be no increase in Contract Price by reason of any changes to associated equipment, mechanically, electrically, structurally or architecturally, required by acceptance of approved equal product. There must be no increase in Contract price due to Consultant's rejection of proposed equivalent product.
- .13 Whenever use of product other than base specified product is being supplied, ensure corresponding certifications and product information (detailed catalogue and engineering data, fabrication information and performance characteristics) are submitted to Consultant for review. Failure of submission of these documents to Consultant in a timely manner to allow for review will result in base specified product to be supplied at Consultant's discretion, at no additional increase to the Contract amount.
- .14 Products supplied by a manufacturer/supplier other than a manufacturer listed as acceptable may be considered for acceptance by Consultant if requested in writing with full product documentation submitted, a minimum of ten (10) working days prior to Bid closing date.
- .15 Any proposed changes initiated by Contractor after award of Contract may be considered by Consultant at Consultant's discretion, with any additional costs for such changes if accepted by Consultant, and costs for review, to be borne by Contractor.
- .16 Whenever use of product other than based specified products or named as acceptable is being supplied, time for process of submission of other products and Consultant's review of products will not alter contract time or delay work schedule.
- .17 Requirements for low voltage systems of this project that are of technology that changes rapidly and are forever evolving and changing, resulting in systems that may be out dated by time of installation, are to include provisions to allow Owner

option to select most updated technology. Shop drawings for such systems and equipment are to include provisions for a minimum six (6) week review time for Owner to review degree of technology of each system and determine acceptance. Owner will have right to substitute a more advanced technology subject to negotiated pricing.

1.26 NON-FERROUS MATERIALS

- .1 Materials within designated imaging rooms to be of non-ferrous construction as reviewed with Consultant. Devices, luminaires, various communications system components, and similar devices, utilized to be approved for use in designated imaging room type applications. Methods of construction to take into consideration use of non-ferrous materials. Ultimate approval of any materials, devices or components, or methods of construction to be at imaging system manufacturer's discretion. Coordinate and confirm final requirements with successful imaging system supplier.

1.27 SITE SECURITY

- .1 Unless otherwise instructed by Owner, Contractor and Subcontractors are required to sign-in at security desk on a daily basis. Sign-out at security desk prior to leaving site at end of each Working Day.
- .2 As confirmed with Owner, Contractor may be given a limited number of security badges to distribute to Contractor's staff and to Subcontractors. Provide Owner with a continually updated list of Subcontractors that are working at Place of the Work.
- .3 Contractor, workers, and other project personnel are only to access specific areas of work via entrances and routing shown and as confirmed and reviewed by the Consultant and approved by the Owner.
- .4 Contractor supervision must be present on site during any work being performed as part of this Project.

1.28 TEMPORARY FACILITIES AND SERVICES

- .1 Provide temporary facilities as required for:
 - .1 construction office as coordinated with Owner and reviewed with Consultant;
 - .2 first aid: as required by local governing authorities;
 - .3 fire protection: as required by local governing authorities and as per Owner's policies and procedures;
 - .4 ventilation: do not use hazardous materials without approval of Owner and review by Consultant; for applications requiring ventilation, provide mechanical ventilation to satisfaction of Owner and as per local governing authority requirements;
 - .5 dust and debris containment: provide temporary dust and debris containment requirements as specified elsewhere in this Section.
- .2 Where existing washroom facilities are not to be used as directed by Owner, provide temporary stand-alone facilities in locations as coordinated with Owner.

- .3 Throughout duration of project, water and power may be taken from existing services in building, as approved by Owner and reviewed with Consultant. Confirm power connection points with Owner and review with Consultant. Only amount of water and power required for normal and proper execution of work may be used. Connection to and use of electrical distribution equipment is to in no way overload distribution system. Pay for unusual or unwarranted consumption of water and power. Decision of Consultant on this matter will be final and binding. Building to remain totally operational during regular hours.

1.29 RESPONSIBILITY FOR TEMPORARY STRUCTURES

- .1 Take precautions to prevent the overloading of scaffolding, and other temporary structures. Make good, at own expense, any damage resulting from such overloading.
- .2 Make good all areas affected by the use of any and all temporary structures.

1.30 STORAGE AND HANDLING OF MATERIALS

- .1 Coordinate storage requirements for project material/equipment in advance, and store material/equipment in accordance with Owner's instructions and space restrictions. For storage of materials/equipment in excess of building space requirements, be responsible for arranging own means of material/equipment storage, to approval of Owner and reviewed with Consultant.
- .2 Store, materials to be reused, recycled and salvaged in locations as directed by Owner and reviewed with Consultant.
- .3 Unless specified otherwise, materials for removal and not being reused become Contractor's property and to be properly disposed off-site.
- .4 Protect, stockpile, store and catalogue salvaged items.

1.31 WASTE MANAGEMENT

- .1 Audit, separate and dispose of construction waste in whole or in part, in accordance with Ontario Regulations 102 and 103 made under Environmental Protection Act.
- .2 Develop a Construction Waste Management Plan, outlining what waste materials are expected, and how waste will be diverted away from landfill. Identify in the Plan appropriate unused material handling and disposal protocols, recycling opportunities and manufacturer take-back programs. During regular periods reviewed with Consultant, submit copies of waste hauling certificates or receipts with documentation of recovery rates for all materials where a portion is recycled and/or reused and a portion is landfilled.
- .3 Implement Construction Waste Management Plan and document how plan was followed during construction.
- .4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
- .5 Separate and store materials produced during dismantling of structures in designated areas.

- .6 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.
- .7 Fires and burning of rubbish or waste onsite is prohibited.
- .8 Do not bury rubbish or waste materials.
- .9 Do not dispose of waste into waterways, storm, or sanitary sewers.
- .10 Remove materials from deconstruction as deconstruction/disassembly Work progresses.
- .11 Empty waste containers on a regular basis.

1.32 PARKING AND TRAFFIC CONTROL

- .1 Arrange for own parking outside of site. Limited parking may be available onsite, but confirm availability with Owner.
- .2 Control traffic to and from Place of the Work to public roads where public pedestrian and vehicular traffic occurs. Conform to local traffic regulations, parking authority and police instructions.
- .3 Where work requires closure of public roads, sidewalks, and/or use of properties/spaces of adjacent buildings/lots, include necessary arrangements and costs to obtain approvals for such use, from respective authorities and/or Owners/Property Managers. Include for required police supervision, where applicable.

1.33 PROTECTION AND SECURITY

- .1 Protect existing services, structures and other items required to remain and newly installed Work during construction with secure and durable coverings, barricades, or guards suitable for various conditions. Perform Work in a manner to avoid damage.
- .2 Owner's personnel and public will be occupying existing building during execution of Work. Provide for safety of occupants and for security of occupied areas. Provide protection and keep clear areas that are required for access to, and exit from, occupied areas. Maintain clear and safe fire exit routes.
- .3 Protect existing areas above, below and adjacent areas of Work from any debris, noise or interruptions to existing services to satisfaction of Owner and reviewed with Consultant. Maintain existing services to these areas in operation to allow Owner to have continued use of areas. If services that are required to be maintained and run through areas of renovations, provide necessary protection to services or reroute, to approval of Owner and reviewed with Consultant. Include for required premium time work to meet these requirements.
- .4 Where construction operations are executed or traffic routed over finished floors, lay minimum 6 mm (1/4") thick plywood coverings tightly fitted over surface in such areas. Secure plywood to prevent movement in a manner which will not damage finished surfaces.
- .5 Cover openings in equipment, ducts, and pipes until final connections are made.
- .6 Protect exposed live electrical equipment during construction for personal safety.
- .7 Shield and mark live electrical parts with appropriate warnings.

- .8 Wherever practical, barricade and lock finished areas.
- .9 Ensure continuous security of Work and construction equipment.
- .10 Perform special precautions when using ladders. As one worker is on a ladder, position another worker at bottom of ladder to maintain watch and to, secure/support ladder. Erect a safety barrier as required around ladder.
- .11 Provide rigid structural safety barriers in compliance with safety requirements of local governing authority having jurisdiction, around perimeter of excavation work. Provide proper warning signage.
- .12 Properly secure tools and Products at end of each Working Day. Owner will not be held responsible for any material/Product losses and/or theft.

1.34 NOISE AND WIND PROTECTION

- .1 Provide full co-operation and protective measures in minimizing excessive noise due to construction operations.
- .2 No pneumatic tools and other excessively noisy and disrupting tools, machinery and equipment to be permitted without written approval of Owner and review with Consultant.
- .3 Do not store materials on roofs or other areas of site which could be subject to falling from building, as a result of winds or otherwise, which might result in damage to property or risk to public safety.
- .4 Ensure that temporary construction materials and structures are securely fastened to structure or ground to prevent falling or blowing off building or ground and causing harm to persons or property.
- .5 Promptly remove any temporary structures and materials from roofs as soon as possible.
- .6 Conduct a daily review of site to ensure that materials and temporary structures are secure. Allow for inspection by Consultant. Rectify any deficiencies as instructed by Consultant.
- .7 Prior to issuance of a Certificate of Substantial Performance of the Work, review roof or other areas of site with Owner and Consultant to ensure that temporary construction materials and structures are removed. Submit to Consultant, final field review report stating that roof or other site areas are cleared of temporary construction materials and structures. Certificate of Substantial Performance of the Work is not to be granted until Consultant reviews condition of site to be satisfactory.

1.35 HOARDING AND FENCING

- .1 Provide required hoarding, fencing, safety devices, and safety barriers, and provide required temporary safety rails, and weather tight and/or protective covers, and other measures necessary to protect building occupants, works, building elements, and the site.
- .2 Comply with Occupational Health and Safety Acts and maintain same in a safe condition until total completion of this Contract or until directed by Consultant, whichever is sooner. Safety rails, weather tight and/or protective covers, and other measures necessary to be provided around excavations, concrete floor edges,

perimeters of slabs, openings, stairwells, and similar instances where falls may occur.

- .3 Provide fencing and/or hoarding around construction areas and staging areas in compliance with local governing authority and code requirements.
- .4 Provide galvanized steel fencing positioned to provide a secured compound area for area and/or equipment where noted on drawings. Materials include but are not limited to provision of following:
 - .1 terminal posts, line posts and post caps; posts spacing to be maximum 3m (10ft.);
 - .2 rails;
 - .3 offset bands and centre bands;
 - .4 tension bars and wires;
 - .5 fence ties;
 - .6 chain link wire;
 - .7 brace wire;
 - .8 hinged gate(s) with padlocking provisions; gate to be of width to accommodate width of largest equipment in secured area, but not less than 1.5m (5ft.) and minimum height of 2m (6'-6"); review exact dimensions with Consultant prior to ordering.
- .5 Remove safety barriers at completion of work as coordinated with Consultant.

1.36 DUST AND WATER CONTROLS

- .1 Provide protective measures necessary to ensure that existing building and adjacent areas to work of this contract will remain free from entry of dust or water at all times. Existing areas and rooms to be in use during construction period. Conduct work to minimize interferences. Coordinate with Owner to allow Owner's continual normal operations to be conducted. Exercise extreme care and caution to protect existing equipment and other components from contamination by dust and debris.
- .2 Include for following work:
 - .1 Provide required temporary enclosures and protective measures to protect existing equipment for entire duration of work in existing areas. Erect and maintain interior enclosures to isolate renovation from other areas and existing equipment.
 - .2 Prior to commencement of Work, protect existing equipment within work area with drop cloths, air barriers, protective panels, and enclosures. Such measures to prevent any debris from falling onto existing equipment, and to prevent dust migration from occurring. Support drop cloths from ceiling or other structure at a minimum 600mm (2ft.) above existing equipment, or other equipment as designated by Owner and coordinated with Consultant. Do not allow tools, drop cloths, materials, and construction aids to be placed on or against electrical or mechanical equipment unless such equipment

- has been properly and safely shutdown for performance of work and coordinated with Consultant.
- .3 Thoroughly clean following items prior to bringing into existing areas and rooms:
 - .1 tools, equipment, and other construction aids;
 - .2 materials, parts, and other components to be installed;
 - .3 pipe, ducts and conduit: Remove dirt and scale for inside and outside surfaces;
 - .4 workers apparel.
 - .3 To extent possible, perform cutting, drilling, welding, soldering, sanding, painting, finishing, and other construction operations outside existing areas in locations approved by Owner and reviewed by Consultant.
 - .4 Work performed within existing areas:
 - .1 Continuously operate HEPA vacuum cleaner/ HEPA dust collectors to remove residue when cutting, filing, drilling or other similar work being performed within existing areas. Remove particles with HEPA vacuum cleaner during operation producing residues.
 - .2 Welding, soldering, and other fume producing operations being performed within existing areas: Provide supplemental power ventilation to building exterior. Do not commence fume-producing operations until ventilation apparatus is approved by Owner and reviewed by Consultant.
 - .3 At end of workday remove tools and materials from existing areas or place within room at location designated by Owner and coordinated with Consultant.
 - .4 Maintain work areas free of waste material, debris, and rubbish. Immediately remove debris and rubbish from areas of Work and associated pipe chases, plenums, access floor spaces, and above suspended ceiling.
 - .5 Provide temporary dustproofing partitions as required prior to demolition. Treat openings, joints and cracks in enclosures to prevent any dust and moisture, from entering existing adjacent areas.
 - .6 Remove existing walls with care. Avoid damage to Owner's equipment. Allow Consultant to review work before commencing with partition or wall removal. Minimize dust.
 - .7 Where dustproof partitions are relocated for tying in of materials install partition from floor to ceiling and from ceiling to underside of slab without damaging finishes.
 - .8 Render door leading into construction areas dust tight.
 - .9 Damp mop surfaces in construction areas continually during demolition and daily during normal construction.
 - .10 Seal ventilation ducts to or from construction area.
 - .11 Employ a full time labourer to continuously clean up during demolition and during construction of dust proof partitions.

.12 Temporary Partitions:

- .1 Erect temporary dustproof partitions, consisting of 92 x 9.5mm (3-5/8" x 25 gauge) metal studs at 400mm (16") o.c., with top and bottom runners and intermediate horizontal supports at 1/3 points. Render partitions soundproof in areas of Work adjacent to existing operational spaces/areas, as directed by Owner and reviewed by Consultant. Confirm these areas on site prior to submitting Bid.
- .2 Over one side of metal studs, install Griffolyn T55 or approved equal, fire retardant, reinforced clear laminated film, distributed by Morgan Scott Group Inc. 1700 Drew Road, Mississauga, Ontario L5S 1J6, Tel. No. 905-612-0909 or J-2 Products, 54 Audia Court, Unit 2, Concord, Ontario L4K 3N4, tel. no. 416-665-1404. Other local available products may be approved by Consultant, if equivalent. Secure film in place with double side adhesive tape capable of supporting film without delamination.
- .3 Install felt gaskets around partition perimeter framing to prevent dust migration into adjoining areas.
- .4 Provide new temporary doors and frames.
- .5 Equip doors and butts, latchset or lockset, closer, weather stripping.
- .13 Be responsible for careful installation of dustproof partitions.
- .14 Allow Consultant to review erected partitions before proceeding with any construction and/or demolition work.
- .15 Do not remove dustproof partitions until areas have been reviewed with Consultant and acceptance given by Owner.
- .16 Carefully remove dustproof partitions and clean surfaces including walls, ceilings, floors, and top of equipment to Owner's acceptance and review with Consultant.
- .17 Be responsible for ventilation of fumes and odours that may occur during construction. Include for temporary partitions and temporary exhaust fans to ensure that fumes are properly extracted from work area.

1.37 TEMPORARY RAISED FLOOR PROVISIONS

- .1 During applications of demolition and new work activities in existing raised floor areas, provide following:
 - .1 reinforcement of existing raised floor areas during moving of equipment into raised floor areas. Provide additional steel plates and intermediary raised floor pedestals between existing raised floor pedestals for additional structural reinforcement. Reinforced system to be capable of supporting weight of equipment;
 - .2 protective 20 mm (3/4") plywood sheets on top of raised floor to protect raised floor panels from damage during demolition and installation stages of project;
 - .3 remove temporary provisions upon completion of work.

1.38 WORKMANSHIP AND MATERIALS

- .1 Materials used in execution of contract to be new and of best quality to perform work for which it is intended. No defective, unsound, or used material will be permitted.
- .2 Manufactured articles, material, and equipment to be applied, installed, connected, erected, cleaned, and conditioned in strict accordance with applicable manufacturer's instructions and directions.
- .3 Make no deviations from specifications or drawings without written request to Consultant and subsequent Consultant's review and response.
- .4 Where evidence exists that defective work has occurred, or that work has been carried out incorporating defective materials, or work has been damaged due to unprotected conditions, Consultant may have tests, inspections, surveys, analytical calculations of equipment performance and the like to help determine whether work is to be corrected or replaced. These tests, inspections, surveys, analytical calculations of equipment performance and the like are to be made at Contractor's expense, regardless of the results.
- .5 Conduct testing in accordance with requirements of CSA, local governing codes, and local governing authorities, except where this would, in Consultant's opinion, cause undue delay or give results not representative of rejected material in place. In this case, tests are to be conducted in accordance with standards given by Consultant and/or Commissioning Authority.
- .6 Materials or work which fails to meet specified requirements, may be rejected by Consultant whenever found at any time prior to final acceptance of work regardless of previous inspections. If rejected, defective materials or work is to be promptly removed and replaced, or repaired to satisfaction of Owner, at no expense to Owner.

1.39 EQUIPMENT LOADS

- .1 Supply equipment loads (dry weight, operating weight, housekeeping pad, inertia pads, and similar) to Consultant, via shop drawing submissions, prior to construction.
- .2 Where given choice of specific equipment, actual weight, location and method of support of equipment may differ from those assumed by Consultant for base design. Back-check equipment loads, location, and supports, and include any additional necessary accommodations.
- .3 Where supporting structure consists of structural steel framing, it is imperative that equipment loads, location, and method of support be confirmed prior to fabrication of structural steel. Review locations of equipment with Consultant prior to construction.

1.40 OPENINGS

- .1 Supply opening sizes and locations to Consultant to allow verification of their effect on design, and for inclusion on structural drawings, where appropriate.
- .2 No openings will be permitted through completed structure without written request to Consultant and subsequent Consultant's review and response. Clearly and accurately show on a copy of drawings, any openings which are required through

structure. Identify and submit to Consultant for review, well in advance of doing work, exact locations, elevations, and size of proposed openings.

- .3 Prior to leaving site at end of each day, walk through areas of work and check for any openings, penetrations, holes, and/or voids created under scope of work of project, and ensure that any openings created under scope of work have been closed off, fire-stopped and smoke-sealed. Unless directed by Owner and reviewed with Consultant, do not leave any openings unprotected and unfinished overnight.

1.41 CONSTRUCTION MACHINERY AND EQUIPMENT

- .1 Unless otherwise specified or directed, supply, erect and operate scaffolding, rigging, hoisting equipment and associated hardware required for work, and subject to approval of Owner and review by Consultant.
- .2 Comply with codes, by-laws, and regulations governing erection and use of scaffolding and other equipment used for preparation, fabrication, conveying, and erection of Work.
- .3 Submit erection drawings if required by local authority having jurisdiction, Consultant, and Owner.
- .4 Submit to Consultant and Owner for review prior to start of work, erection and layout drawings and list of scaffolding, machinery, and equipment intended to be used in equipment rooms.
- .5 Erect scaffolding independent of walls and in a manner to avoid interference with parts of Work in progress. Obtain approval from Owner and allow Consultant to review.
- .6 Do not place major scaffolding/hoisting equipment loads on any portion of structure without approval from Owner and review by Consultant.
- .7 Provide and maintain required shoring and bracing in accordance with Construction Safety Act and other applicable regulations.
- .8 Prevent sprayed materials from contaminating air beyond application area, by providing temporary enclosures.
- .9 Immediately remove from site scaffolding, rigging and hoisting equipment when no longer required.

1.42 CHANGES IN THE WORK

- .1 Unless otherwise stated in the Contract, or the Supplementary Conditions, whenever Consultant proposes in writing to make a Change or revision to design, arrangement, quantity, or type of any work from that required by the Documents, prepare and submit to Consultant for review, a quotation for executing the Change or revision. The Change or revision shall be determined by one or more of the following methods as determined by the Consultant:
 - .1 By estimate and acceptance of a lump sum ("Lump Sum Method"); or
 - .2 Where unit prices, discounts and allowances are set out in the Contract Documents or subsequently agreed upon, in accordance with such unit prices ("Unit Price Method"); or

- .3 By actual time and material costs and a fixed or percentage fee for overhead and profit ("Time and Material Method").
- .2 Changes in the Work evaluated using the Lump Sum Method or Time and Material Method shall be based on the following factors:
 - .1 For Materials and Equipment - The latest edition of Allpriser published list prices, less the following discounts:

	Item	Discount
1	Steel Pipe	50%
2	Copper Pipe	45%
3	Cast Iron Soil Pipe	45%
4	Stainless Steel Pipe and fittings:	45%
5	Welded Fittings:	50%
6	Grooved Fittings:	30%
7	Threaded Fittings:	40%
8	Cast Iron Screwed Fittings:	40%
9	Copper Fittings:	45%
10	Cast Iron MJ Fittings:	35%
11	Valves:	25%
12	Insulation Materials:	35%
13	All Other Materials:	25%
14	Equipment Rental:	Actual Rate, but not to exceed local rates.

- .2 For Base Labour Units:
 - .1 mechanical labour unit costs are to be in accordance with Mechanical Contractors Association of America (MCAA) Labor Estimating Manual;
 - .2 electrical labour unit costs are to be in accordance with National Electrical Contractors Association (NECA) Manual of Labor Units;
 - .3 other such standardized trade units that may exist, on a Journeyman basis.
- .3 Provide copies of the Allpriser published list prices used to estimate material and equipment costs, and copies of the NECA, MCAA, SMACNA or other

such standardized trade rates used to determine labour units when requested by the Consultant.

- .4 It is understood that each change may have a variety of non-typical or abnormal factors that will require adjustments. Under no circumstances shall the cumulative total of additional factors exceed 20% of the hours established using Base Labour units.
- .5 Labour rates shall include all associated project management, estimating, supervision, scheduling, coordination, interference, as-built drawing production/updates, travel time and associated expenses, delivery charges, clean-up, printing, telephone and other office expenses, and applicable employee benefits and burdens including, but not limited to:
 - .1 Base Rate
 - .2 Vacation/Stat Pay
 - .3 Union Deductions
 - .4 Legislated Burdens
 - .1 Employer Health Tax (EHT)
 - .2 Workplace Safety and Insurance Board (WSIB)
 - .3 Employment Insurance (EI)
 - .4 Canadian Pension Plan (CPP)
 - .5 Retail Sales Tax (RST) on Hardware.
 - .5 Expendable Small Tools
 - .6 Additional Unionized Charges
 - .7 Finance Payroll
 - .8 Rest Breaks
 - .9 Idle Time
 - .10 Safety
 - .1 Job Box Talks
 - .2 WHMIS
 - .3 Fall Protection
 - .4 Personal Protective Equipment
 - .5 Committees
 - .11 Labour Warranties
- .3 The following additional requirements apply to all Change quotations submitted:
 - .1 costs for Journeyman and Apprentice labour must not exceed prevailing rates at time of execution of Contract and must reflect actual personnel performing the work;
 - .2 Change pricing must be such that Site Superintendent's involvement is necessary; cost for Site Superintendent must not exceed 10% of total hours of labour estimated for Change or revision;

- .3 Change quotations, including those for deleted work, to include a figure for any required change to Contract time.
- .4 The Contractor shall at the request of the Owner, and/or the Project Manager, and/or the Consultant provide all required supplementary documentation requested by the Owner, and/or the Project Manager, and/or the Consultant for any Change.
- .5 Where Changes are evaluated using either the Lump Sum Method, or the Time and Material Method, the cost to the Owner shall be the actual cost of credits and, where additional work is required; the cost to the Owner shall be the actual cost plus a percentage covering overhead and profit, after all credits included in the Change have been deducted.
- .6 Where Changes are evaluated using either the Lump Sum Method, or the Time and Material Method, credit pricing for deleted work not already performed shall have a credit value assessed that is not less than 80% of the value of charges for similar new work.
- .7 Where Changes are evaluated using either the Lump Sum Method, or the Time and Material Method, the mark-up for overhead and profit shall be limited to and be calculated as follows;
 - .1 Work carried out by the Trade Contractor or Trade Subcontractor: 10% overhead and profit combined.
 - .2 Trade Contractor's overhead and profit on Trade Subcontractor's work: 5% overhead and profit combined.
- .8 The cumulative total percentage for overhead and profit charged by the Trade Contractor, Trade Subcontractor and others shall not exceed 20% of the cumulative total value of such change in the work, net of overhead and profit.
- .9 Trade Contractor and trade Subcontractor's overhead and profit shall be calculated on net additional work only.
- .10 For Changes involving net deletions only, overhead and profit shall not be deducted, but shall include taxes and duties.
- .11 Where Changes are evaluated using the Unit Price method, the value of the change shall be based on the net difference in quantities with the appropriate Unit Rate applied.
- .12 Where changes are extensive, or where requested by the Owner, and/or Project Manager, and/or Consultant, material and labour take-offs shall be organized on a drawing-by-drawing, or area-by-area basis by the Contractor to more readily facilitate verification of quantities and labour hours.
- .13 Change quotation summaries shall itemize HST separately.
- .14 Change quotations submitted that are not in accordance with requirements specified above will be rejected and returned for re-submittal.
- .15 Failure to submit a proper quotation to enable the Owner, and/or Project Manager, and/or Consultant to expeditiously process quotation and issue a Change Order will not be grounds for any additional change to Contract time.

- .16 Submit proposed Change quotations in writing for review by Consultant; if Consultant agrees a Change Order will be issued.
- .17 Do not execute any Change or revision until written authorization for Change or revision has been issued by the Consultant.

1.43 NOTICE FOR REQUIRED FIELD REVIEWS

- .1 Whenever there is a requirement for Consultant to perform a field review prior to concealment of any work, to inspect/re-inspect work for deficiencies prior to Substantial Performance of the Work, for commissioning demonstrations, and any other such required field review, provide a minimum five (5) working days notice in writing to Consultant.
- .2 If Consultant is unable to attend a field review when requested, arrange an alternative date and time coordinated with Consultant.
- .3 Do not conceal work until Consultant advises that it may be concealed.
- .4 When Consultant is requested to perform a field review and work is not ready to be reviewed, reimburse Consultant for time and travel expenses.

1.44 PRELIMINARY TESTING

- .1 When directed by Consultant, include for performance of site tests on any piece of equipment or any system for such reasonable lengths of time and at such times as may be required to prove compliance with Specification and governing Codes and Regulations, prior to Substantial Performance of the Work.
- .2 When, in Consultant's opinion, tests are required to be performed by a certified testing laboratory, arrange and pay for such tests.
- .3 These tests are not to be construed as evidence of acceptance of work, and it is agreed and understood that no claim for delays or damage will be made for injury or breakage to any part or parts of equipment or system due to test where such injuries or breakage were caused by faulty parts and/or workmanship of any kind.
- .4 When, in Consultant's opinion, tests indicate that equipment, products, and similar devices are defective or deficient, immediately remove such equipment and/or products from site and replace them with acceptable equipment and/or products, at no additional cost.

1.45 PROVISIONS FOR SYSTEMS/EQUIPMENT USED DURING CONSTRUCTION

- .1 Permanent building mechanical systems are not to be used for temporary heating or cooling purposes during construction.
- .2 Permanent mechanical systems in building may be used for temporary heating or cooling during construction subject to following conditions:
 - .1 each entire system is complete, pressure tested, cleaned, and flushed out;
 - .2 specified water treatment system has been commissioned, and treatment is being continuously monitored;
 - .3 building has been closed-in and areas to be heated/ventilated are clean and will not thereafter be subjected to dust-producing processes;
 - .4 there is no possibility of damage from any cause;

- .5 supply ventilation systems are protected by 60% filters, which are to be inspected daily, and changed every 2 weeks, or more frequently as required;
- .6 return air systems have approved construction filters over openings, inlets, and outlets;
- .7 systems are operated in accordance with manufacturer's recommendations or instructions, and are monitored on a regular and frequent basis;
- .8 warranties are not affected in any way;
- .9 regular preventive and other manufacturer's recommended maintenance routines are performed;
- .10 before application for Certificate of Substantial Performance of the Work, each entire system is to be refurbished, cleaned internally and externally, restored to "as-new" condition, and filters in air systems replaced;
- .11 energy costs are to be paid by Contractor.
- .3 Confirm with Consultant what equipment can be used during construction.
- .4 Any system or piece of equipment that is specified to be provided under requirements of Project Documents and is required to be used during construction stages of work prior to issuing of Certificate of Substantial Performance of the Work, are to be provided with special interim maintenance and service to cover systems/equipment during time of use during construction period of project until project has been certified as substantially performed and such systems/equipment are turned over to Owner.
- .5 During this period of construction, such systems/equipment to not become property of Owner or be Owner's responsibility for maintenance or service. Systems/equipment are to remain property of respective manufacturers/suppliers or Contractor, who are responsible for full maintenance and servicing of systems/equipment in order to maintain validity of warranties after turn over to Owner.
- .6 Prior to application for a Certificate of Substantial Performance of the Work and turn over to Owner, ensure new and modified systems/equipment affected by the Work are cleaned, restored to "new" condition.

1.46 CUTTING, CHASING AND CORE DRILLING

- .1 Cutting, chasing, and minor demolition required for Work to be responsibility of Prime Contractor, who is to either perform these operations with Contractor's own forces under this Section of Work, or in some cases as later set out, engage particular sub-trade responsible for material affected. Submit core-drilling requests in a shop drawing form, indicating location with respect to gridlines, size of openings and elevation with dimensions to soffit of beams or edges of openings for Consultant's review, prior to start of Work.
- .2 Criteria for Cutting Holes for new services:
 - .1 cut holes through slabs only; no holes to be cut through beams;
 - .2 cut holes 150 mm (6") diameter or smaller only; obtain approval from Structural Consultant for larger holes;

- .3 keep at least 100 mm (4") clear from beam faces;
 - .4 space at least 3 hole diameters on center;
 - .5 for holes that are required closer than 25% of slab span from supporting beam face, use cover meter above slab to clear slab top bars;
 - .6 for holes that are required within 50% of slab span, use cover meter underside of slab to clear slab bottom bars;
 - .7 submit sleeving drawings indicating holes and their locations for Structural Consultant's review.
- .3 Perform required core drilling. Cut, chase, and make good to leave Work in a finished condition where new Work connects with existing and where existing Work is altered.
 - .4 Where a trade section corresponding to any part of existing Work is not included in Specifications, cutting and chasing for such portions of Work under this category to be provided under this Section.
 - .5 Where new Work penetrates existing construction, core drill or saw cut an opening. Size openings to leave 13 mm (1/2") clearance around Work and pack and seal the void between opening and Work for length of opening with ULC listed and labelled material to achieve a ULC listed fire stop and smoke seal assembly.
 - .6 Prior to drilling or cutting an opening, in consultation with Consultant and Owner, determine by use of non-destructive radar scanning of the slab or wall, the presence, if any, of existing services and reinforcement bars concealed behind building surface to be cut; locate openings to suit. Contractor will be held responsible for damage to existing services caused by core drilling or cutting openings. In areas that scanning is not permitted by Owner or where scanning equipment cannot access, hand chisel to expose any reinforcing steel or buried services.
 - .7 Do not cut any existing Work without coordination with and review by Consultant. Perform cutting, coring and scanning after normal working hours. Normal working hours are defined in Section 01 11 40, Work Restrictions, or confirmed with Owner.

1.47 RESTORATION, PATCHING AND MAKING GOOD

- .1 Repair all areas having been damaged in the process of execution of the Work and replace all items being damaged beyond repair, to the complete satisfaction of the Owner.
- .2 Patching and making good shall be the responsibility of the Contractor and shall be performed by trade specialist in particular material to be treated, and to be made indistinguishable in finished work when viewed from distance of 1500 mm (5ft.) under normal lighting. Unless otherwise approved by Owner and reviewed with Consultant, patch openings and penetrations same day as cutting/drilling of work. Provide ULC listed fire stop and smoke seal assembly for penetrations in fire rated partitions, slabs, and ceilings.
- .3 Where existing openings are indicated as filled in, new openings cut into existing walls, existing items removed, or any form of alteration to existing surface or

material is made, term "Make Good" is deemed to apply whether specifically noted or not.

- .4 Where term "Make Good" is implied or used on drawings or in Specifications to refer to repairing or filling operations performed on existing floors, walls, ceilings or any other exposed surfaces, it is intended that finished surfaces match and line with existing adjoining surfaces.
- .5 Paint patched areas to match existing. Unless otherwise noted, include for one coat of base primer enamel and minimum two coats of alkyd enamel finish. If paint colour cannot be found to match existing, repaint entire ceiling and/or partition wall. Apply sufficient number of coats such that patched area is indistinguishable from surrounding area.
- .6 Continue base, dadoes, and miscellaneous moulds and features around face of patched areas.
- .7 Where existing surfaces are damaged by Work and/or where existing devices are removed from wall, ceilings, floors and other surfaces, and such deleted devices are not being replaced in same locations, patch locations of these removed devices and re-finish. Patching and finishing is to be provided by tradesmen skilled in particular trade or application worked on by trade. Where openings are left in existing ceiling tiles, replace ceiling tiles with new matching tiles coordinated with and reviewed by Consultant. Unless otherwise included for in other Divisions, include for:
 - .1 preparing existing surfaces to be filled and repainted to be cleaned as required to remove dirt, dust, oil, grease, loose paint, rust and any other foreign matter which would prevent proper bonding of new finish; sand glossy surfaces to uniform dull texture;
 - .2 filling in and patching surfaces with same material as existing surfaces; finished surfaces to match and line with existing adjoining surfaces;
 - .3 provide ULC listed fire stop and smoke seal assembly to maintain fire rating of surfaces penetrated;
 - .4 using paint rollers and/or brushes to apply and extend paint finish over full height and/or width of area affected, to a straight line in location coordinated with and reviewed by Consultant;
 - .5 applying sufficient number of coats such that patched area is indistinguishable to surrounding area;
 - .6 materials used to be of equivalent quality to existing finishes standards and be compatible with finishes to which they are applied;
 - .7 finishes to be coordinated and reviewed with Consultant.

1.48 MAINTAINING EQUIPMENT PRIOR TO ACCEPTANCE

- .1 Maintain equipment in accordance with manufacturer's instructions prior to start-up, testing and commissioning.
- .2 Employ a qualified millwright to check and align shafts, drives, and couplings on all base mounted split coupled motor driven equipment.

- .3 Where equipment lubrication fittings are not easily accessible, extend fittings to accessible locations using copper or aluminium tubing.
- .4 All filters are to be new upon certification of Substantial Performance of the Work. This is in addition to any spare filters specified.

1.49 WARRANTY

- .1 General: The Contractor shall submit a full labour and material warranty against defective workmanship or materials that result in maintenance or repair for a period of two (2) years from the date of Substantial performance of the Contract.
- .2 Water Seal Installation: The Contractor shall submit a full labour and material warranty against defective workmanship or materials that result in water penetration, material incompatibility, material failure, and similar type of failure issues for a period of five (5) years from the date of Substantial Performance of the Contract.
- .3 Contractor shall provide a warranty by the sealant manufacturer covering a period of two (2) years for all labour and materials from the date of Substantial Performance of the contract agreeing to furnish sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within the specified warranty period.
- .4 Mechanical and Electrical: Mechanical and Electrical warranty requirements are defined within the specific Mechanical General Requirements and Electrical General Requirements sections within these specifications.
- .5 Warranty coverage to include the repair of any premise/content property damaged as a result of failure of the roof waterproofing assembly system.
- .6 The warranty is to be supplied on official company letterhead and shall bear the corporate seal.
- .7 Within ten (10) days of written notification from the Owner, the Contractor is to begin taking step to rectify the above defects including all cost associated with replacement and reinstatement of the expansion joint assembly, including the cost of making good items damaged or removed in order to perform the work.

1.50 CLEANING AND HOUSEKEEPING MEASURES

- .1 Maintain a dry, clean workspace throughout construction. Keep site reasonably clear of rubbish and waste material resulting from Work on a daily basis to satisfaction of Owner and reviewed with Consultant.
- .2 Material not for reuse to become property of Contractor. Provide covered bins for removing debris and rubbish. Remove debris promptly from site. Make good all damage.
- .3 The Contractor shall visually inspect job site daily for dust, dirt and water accumulation and take remedial action to correct deficiencies. Increase frequency of cleaning as required to maintain the site in clean and dry condition.

- .4 At completion of work of each day, remove rubbish, tools, scaffolding, and surplus materials due to this Contract from and about occupied portions of the premises, and leave whole of work in a clean and tidy condition to satisfaction of Owner and reviewed with Consultant. Owner may remove rubbish and charge such cost to Contractor as Owner determines to be just.
- .5 Low emitting cleaners shall be used that are certified in accordance with project LEED requirements.
- .6 All surfaces shall be kept clean, including higher ledges and behind equipment or furniture.
- .7 Building materials shall be protected from precipitation and other contamination prior to installation. This includes protection of porous materials (i.e. insulation, drywall, and ceiling tile) from exposure to moisture and other sources of contamination.
- .8 Materials shall not be stored directly on the floor. All materials will be elevated by a minimum of 75mm on pallets or by other means.
- .9 Acceptable areas to store the building materials on-site will be identified by the Owner's Project Manager.
- .10 All coils, air filters, fans and duct work will remain clean during the installation and will be cleaned prior to performing testing, adjusting and balancing of systems.
- .11 Any accumulation of water in the building will be immediately removed.
- .12 Before applying for a Certificate of Substantial Performance of the Work, remove rubbish and debris, and be responsible for repair of any damage caused as a result of work.
- .13 At time of final cleaning, clean luminaire reflectors, lenses, and other luminary surfaces that have been exposed to construction dust and dirt, including top surface, whether it is exposed or in ceiling space.
- .14 Clean all elements of the building adjacent to and affected by the Work, including but not limited to:
 - .1 glass,
 - .2 roof,
 - .3 walls.
- .15 Where applicable to scope of Work:
 - .1 Clean and make good surfaces soiled or otherwise damaged in connection with Work. Pay cost of replacing finishes or materials that cannot be satisfactorily cleaned.
 - .2 Clean equipment and devices installed as part of the Work.
 - .3 Clean switches, receptacles, communications outlets, cover plates, and exposed surfaces.
- .16 For Work performed in service rooms, equipment rooms, electrical closets and communication closets, perform following:

- .1 HEPA vacuum and clean interiors and buswork of switchboards, panels, cabinets and other electrical equipment of construction debris and dust prior to energization;
- .2 HEPA vacuum top of switchboards, panels, cabinets, bus ducts, cable trays and conduits in room, followed by a thorough HEPA vacuuming of floors;
- .3 Do not lay permanent switchboard matting in electrical rooms until rooms are re-cleaned, and floors wet mopped and dried just prior to final turn over to Owner.

PART 2 - PRODUCTS

2.01 NIL

PART 3 - EXECUTION

3.01 NIL

END OF SECTION 01 10 05