TABLE OF CONTENTS



*Read in Conjunction with Structural Drawing S-1

1. **GENERAL**

1.1. Conform to Parts 1 through 12 of General Conditions of the Stipulated Price Contract.

1.2. Study all Contract Documents to determine extent of work required by all Sections upon which work of other Sections depend.

1.3. Further to requirements of GC 3.4 and GC 6.4 of General Conditions of the Contract regarding Document Review and Concealed and Unknown Conditions, Contractor shall promptly and not later than 10 working days of becoming aware of circumstances which may require a change in Work or other directions, give written notice to Consultant outlining such circumstances and requesting his written directions. Do no work in affected area, or that would prevent Consultant from properly assessing situation or evaluating change, without his prior written approval. Consultant shall act promptly to give Contractor direction so work is not unreasonably delayed.

1.4. In addition to requirements of GC 3.9 of General Conditions of the Contract regarding Documents at the Site, as applicable, maintain in good condition and order on site, 1 copy of addenda, supplemental instructions, all reviewed shop drawings, samples, proposed changes to Work, change orders, test reports, manufacturer's installation and application instructions, progress photographs, as-built drawings, approved progress schedules, minutes of Site Meetings, and other modifications to Contract Documents.

1.5. Further to requirements of GC 3.6 of General Conditions of the Contract regarding Supervision, Contractor shall conduct site meetings, record minutes including significant proceedings and decisions, and identify "action by" parties, reproduce and distribute to meeting participants copies of minutes within 3 working days after each meeting.

2. **SPECIFICATION FORMAT**

2.1. Specifications are not intended as detailed description of all installation methods but serve to indicate particular requirements in completed Work.

2.2. Where Contract Documents do not provide sufficient information for complete installation of item, then as supplement, comply with manufacturer's written instructions for quality of work.

2.3. Portions of Specifications are written in short form. Therefore, it shall be understood that where item of Work is stated in heading followed by material, equipment, component, or operation, words "shall be", "shall consist of" or similar words or phrases are implied which denote supply, fabricate and supply, install, provide or commission of such materials, equipment or operations for component of Work designated by heading.

2.3.1. Whenever used in Specifications, the following definitions shall apply:

2.3.1.1. Supply - Procurement or fabrication of standard components not to special design of materials, equipment, or components, or performance of services to extent indicated. Where used with respect to materials, equipment, or components, term shall include delivery to Site but is not intended to include installation of item, either temporary or final.

2.3.1.2. Fabricate and Supply - Fabrication of materials, equipment, or component, to a special

customized design to extent indicated including delivery to Site, assisting in form of supervision to those Section(s) installing materials, equipment or component. Term shall not include installation of item either temporary or final.

2.3.1.3. Install - Placement of materials, equipment, or components, including receiving, unloading, transporting, storage, un-crating and installing, and performance of such testing and finish work as is compatible with degree of installation specified complete ready for use.

2.3.1.4. Provide- To Supply and Install, complete and in place, including all accessories, finishes, tests and services as required to render item so specified complete ready for use.

2.3.1.5. Commission - Start-up and initial operation of all equipment as required and/or as specified in respective Sections, to demonstrate satisfactory operation of components and entire system including calibration of any control instrumentation as required to maintain operations.

2.4. Drawings following Specification Sections or appended to Specifications, Lists or Schedules of Items are intended to show scope and arrangement of Work. For location of item described refer to such Drawings, Lists or Schedules unless location stipulated in Specifications.

2.5. Wherever words "acceptable", "approved", "reviewed", "satisfactory", "selected", "directed", "designated", "permitted", "inspected", "instructed", "clarification", "required", "report", "submit", "obtain", "consult", "advise", or similar words or phrases are used in Standards or in Contract Documents, it shall be understood that, unless context provides otherwise, words "by/to/with/from Contractor/Contractor's Consultant(s)" shall follow them as applicable. These requirements define level of coordination required between members of Contractor's forces.

3. **STANDARDS**

3.1. Where reference is made to specification Standards produced by various organizations, conform to latest edition of standard as amended and revised to date of Contract. If requested, provide copy of such standard(s) on site.

4. **BUILDING CODE AND AUTHORITIES HAVING JURISDICTION**

4.1. Comply with The Building Code Act as amended, Ontario Building Code as amended, and Regulations and by-laws of other authorities having jurisdiction, including regulations and workplace safety protocols resulting from COVID 19 pandemic, all hereafter referred to as code. Where code or Contract Documents do not cover a particular requirement which is covered by National Building Code, conform to requirements of NBC including its related supplements. Where Drawings and/or Specifications exceed code requirements, satisfy such additional requirements.

4.2. Where a material is designated in Contract Documents for a certain application, unless otherwise specified, that material shall conform to standards designated in code and in absence of a more restrictive requirement comply with "Housing and Small Buildings Part 9" of code. Similarly, unless otherwise specified, and not required otherwise by Code, installation methods and standards of workmanship shall also conform to standards of Part 9. Where specific requirements for a material are not specified for a certain use, select from

choice offered in Part 9.

5. **COORDINATION**

5.1. Coordinate work of each Section as required for satisfactory and expeditious completion of Work. Take field dimensions required. Take into account existing installations to assure best arrangements of components in available space. Consult before commencing work in critical locations. Fabricate and erect work to suit field dimensions and conditions.

5.2. Provide forms, templates, anchors, sleeves, inserts and accessories or other components required to be fixed to or inserted in Work. As applicable set them in place or instruct related Sections as to their location.

5.3. Pay cost of extra work caused by, and make up time lost as the result of failure to comply with these requirements at proper time.

6. **METRIC DIMENSIONS OF IMPERIAL-SIZED COMPONENTS**

6.1. Where drawings are prepared using metric scales, and where Work incorporates imperial-sized components, metric dimension shown on drawings shall be imperial dimension converted to metric equivalent and rounded off to nearest millimetre.

7. **EXAMINATION**

7.1. Examine all drawings, including shop drawings and manufacturers' literature, and become familiar with conditions that may affect Work prior to proceeding with work.

7.2. Where job conditions require reasonable changes in indicated locations and arrangements, make such changes with approval of Consultant at no additional cost to Owner. Similarly where existing conditions interfere with new installation and require relocation, such relocation is included in Work.

7.3. Install and arrange fixtures, equipment, ducts, piping and conduit to conserve as much headroom and space as possible. Avoid interference with or obstruction of access. Observe good installation practice for safety, access and maintenance, and follow manufacturer's recommendations. Make changes requested to comply with these requirements at no additional cost to Owner.

7.4. If requested by Consultant, and before their installation, relocate equipment, services, doors, openings, furring and other work at no additional cost to Owner, provided such relocation involves only minor adjustments of up to a distance of 1000 mm within original dimension, and advance notice of at least 7 days is given in writing.

8. **COLD WEATHER WORK**

8.1. Continue Work during winter months, if applicable, until Work is completed and accepted.

8.2. Take precautions during inclement weather and provide adequate protection.

8.3. Inclement weather or extra work caused thereby shall not be considered valid reason for additional payment or delay in satisfactory conclusion of Work.

9. **MATERIALS AND EQUIPMENT**

9.1. Materials and equipment specified shall form basis of Bid and Contract. Where more than 1 brand or manufacturer is named in Specifications or on Drawings, choice is Bidders/Contractors provided all requirements of Drawings and Specifications are met.

9.2. Unless explicit statement is made in Bid/Contract Documents to say no substitutions will be permitted, then words "or approved equal" are hereby deemed to apply to all materials and equipment specified by brand or manufacturer, subject to following conditions:

9.2.1. Request for substitution is made in a timely manner after award of Contract.

9.2.2. Proposed substitution satisfies all other indicated or specified requirements and conditions.

9.3. Materials and equipment shall not be damaged or defective and shall be of best quality compatible with Specifications for purpose intended. If requested, provide evidence as to type, source and quality. Remove and replace defective products at own expense, regardless of previous inspections, and be responsible for delays and expenses caused thereby.

9.4. Replace factory finished equipment, or parts thereof, whose paint finish is damaged and cannot be reasonably remedied by paint touch-up.

10. **MATERIAL STORAGE AND HANDLING**

10.1. Store packaged materials in original, undamaged containers with manufacturers' labels and seals intact. Handle and store materials in accordance with manufacturers' and suppliers' recommendations and in manner to prevent damage to materials during storage and handling.

11.. **CONCEALMENT OF WORK**

11.1. Conceal pipes, ducts, conduits, tubing, wiring and other items requiring concealment in floor, wall and ceiling construction of finished areas except where indicated or specified otherwise.

11.2. Lay out mechanical and electrical work in advance of concrete placement and furring installation to allow for proper concealment.

11.3. Test and inspect work before applying pipe covering and before work is concealed.

12. **LINES, LEVELS AND DIMENSIONS**

12.1. Lay out work in accordance with lines, levels and dimensions indicated and/or provided on drawings.

12.2. Verify lines, levels and dimensions. Report errors or inconsistencies in Drawings and obtain direction before commencing work.

13. **GENERAL QUALITY OF WORK**

13.1. Do Work in accordance with industry practice for type of work unless Contract Documents

stipulate more precise requirements.

13.2. Do Work in neat and careful manner to retain Work plumb, square, and straight.

13.3. Ensure Work is properly related to form closed joints and appropriately aligned junctions, edges and surfaces and is free of warp, twist, wind, wave or other irregularities.

13.4. When required by Specifications or by manufacturer's recommendations, have manufacturer, supplier or accredited agent inspect work which incorporates their products.

13.5. Do not permit materials to come in contact with other materials whether in presence of moisture or otherwise if conditions will result in corrosion, stain or discolouration or deterioration of completed Work. Provide compatible, durable separators where such contact is unavoidable.

14. **FASTENINGS**

14.1. Supply appropriate fastenings, anchors, accessories and adhesives required for fabrication and erection of work.

14.2. Unless specified otherwise, use exposed metal fastenings and accessories of same texture, colour and finish as product being fastened.

14.3. Use metal fastenings of same material as metal component being fastened or of metal which will not generate electrolytic action and cause damage to fastening of metal component under moist conditions. In general, use non-corrosive or hot dip galvanized steel anchors occurring on or in exterior wall, slab or other exterior locations, unless a higher standard is indicated or specified.

14.4. Fastening devices or adhesives shall be of appropriate type, used in sufficient quantity and in such manner to provide positive, permanent fastening which will not shift, work loose or fail during occupancy of building due to vibration or other causes resulting from normal use of building. Install anchors at spacing to provide required load/stress carrying capacity. Do not use wood plugs.

14.5. Lay out fastenings neatly, evenly spaced and aligned. Keep exposed fastenings to minimum.

14.6. Supply adequate instructions and templates and, if necessary, supervise installation where fastenings or accessories for 1 Section are required to be built into work of other Sections.

14.7. Do not use fastenings which will cause spalling, cracking, or deformation or deterioration of material being fastened by or to.

14.8. Do not use powder actuated fastening devices which are used in tension, without approval. Take stringent safety precautions when using powder actuated fastenings. Use only low velocity plunger-type devices.

14.9. Use adhesives specified, or if not specified, those recommended by manufacturer of materials involved, compatible with materials to be joined, and effective in forming a permanent joint of adequate strength.

14.10. Use screws, nails, staples and other similar, driven fasteners suitable to materials to be joined and to conditions under which they are installed and used. Ensure that in finished work, fasteners are sized to take durable hold under stress to be encountered without damage to, or weakening of, elements secured together, and that fastenings will not corrode or cause staining of exposed surfaces.

14.11. Do brazing or soldering to form durable connections of strength adequate to resist stresses to be encountered without deformation of elements joined. Prepare base metals and use methods and materials to ensure clean joint, and to prevent staining, corrosion, discolouration, deformation or other damage to finished Work.

14.12. Do welding to CSA W59-M (Steel) or CSA W59.2-M (Aluminum) for material and methods, unless specified otherwise. Have welding performed by industry certified operatives to CSA W47.1 or CSA W47.2-M.

15. **ACCESSORIES**

15.1. Provide accessory items or materials required, such as brackets, cleats, connectors, sealants, lubricants, cleaners, protection, and similar items, whether specified or not, so that Work is complete and will perform as required.

16. **DESIGN AND SAFETY REQUIREMENTS FOR TEMPORARY WORK**

16.1. Be responsible for erection, operation, maintenance and removal of temporary structural and other temporary facilities to produce safe and satisfactory results.

17. **PROTECTION AND SAFETY**

17.1. In addition to requirements of GC 9.4 of General Conditions of the Contract regarding Construction Safety, comply with requirements of all Acts with respect to health and safety, including Occupational Health and Safety Act (as amended), and Workplace Hazardous Materials Information System (WHMIS) Regulation, including the following:

17.1.1. Before commencement of Work, and throughout Contract, maintain on site, and readily accessible to all those who may be exposed to hazardous materials, a list of all hazardous materials proposed for use on site or workplace together with current Materials Safety Data Sheet (MSDS).

17.1.1.1. Provide Consultant with a copy of list for his transmittal to Owner.

17.1.1.2. Ensure hazardous materials used and/or supplied on Site are labelled in accordance with WHMIS requirements.

17.1.2. Provide detailed written procedures for safe handling, storage and use of such hazardous materials including special precautions, safe clean-up and disposal procedures. Conform to Environmental Protection Act for disposal requirements.

17.1.3. Ensure those who handle, and/or are exposed to, or are likely to handle or be exposed to hazardous materials are fully instructed and trained in accordance with WHMIS requirements.

17.2. Protect excavation, trenches and building from damage by rainwater, ground water, backing up of drains or sewers and other water, frost and other weather conditions. Provide sheeting, piling, shoring, pumps, equipment, temporary drainage, protective covering and enclosures. Provide necessary pumps including spare pump for keeping project free of water throughout construction period.

17.3. Protect, relocate and maintain existing, active services wherever they are encountered. Wherever inactive services are encountered, cap them off and remove unwanted portion, with approval of authorities having jurisdiction or public utility concerned in manner approved by them.

17.4. Load no part of structure during construction with load greater than it is calculated to bear safely when completed. Make temporary supports as strong as permanent supports. Place no load on concrete structure until it has sufficient strength to safely carry such load.

17.5. Adequately protect floors and roofs from damage. Take special measures when moving heavy loads or equipment on them.

17.6. Keep floors free of oils, grease or other materials likely to discolour them or affect bond of applied surfaces including fumes generated by temporary heating devices. Take care not to spill or allow oil, grease, gasoline, diesel and fuel oil, chemicals and other substances to contaminate soil or water on or adjacent to site. Should such contamination accidentally occur, report it immediately and clean up to satisfaction of Consultant.

17.7. Protect work of other Sections from damage resulting from subsequent work. Damaged work shall be made good wherever possible by Section whose work is damaged but at expense of those causing damage.

17.8. Protect glass and other finishes against heat, slag and weld splatter using suitable protective shields or covers.

17.9. Conform to Construction Safety Association of Ontario's manual on Propane in construction. Watch work area for a minimum of thirty minutes after hot work is completed. Provide Site fire security when required by local building department and/or municipal fire department. Ensure that water supply is adequate for fire fighting.

17.10. Provide and maintain in working order, suitable Underwriters' labelled fire extinguishers and locate in suitable positions, to approval of authorities having jurisdiction.

17.11. Protect public and those employed on Work from injury. Mobile equipment when not in use shall have keys removed and be locked up in secure location.

18. **ENVIRONMENTAL PRACTICES**

18.1. Take active role in implementing environmentally sound business practices and producing goods and services that lessen burden on environment in production, use and final disposition. Support implementation of reduction, reuse and recycling strategies and use of environmentally sound products. Reduce or eliminate excessive packaging, and promote use of environmentally responsible packaging practices.

19. **PROTECTION OF NATURAL ENVIRONMENT**

19.1. Submit to Consultants environmental plan, Site waste management implementation plans (if any), and sketch showing areas proposed to be used for construction storage, areas for implementation of site separation of construction waste, and including dimensions of such areas, and location and size of trees within and adjacent to these areas.

20. **SITE WORK AREA**

20.1. Confine operations to limits of Site working area as agreed to with Owner at pre-construction meeting.

20.2. If requested by Owner, install suitable fencing to clearly define limits of site working area, parking areas, access routes and maintenance areas to ensure construction activity is confined to these areas.

21. **SURFACE DRAINAGE AND WATERCOURSES**

21.1. Maintain ditches and watercourses for surface water drainage of site and external properties during construction. Be responsible for damage due to negligence.

22. **NOISE CONTROL**

22.1. Adhere to local noise bylaws. Equip vehicles and equipment with efficient noise attenuation devices (mufflers) to minimize noise levels in vicinity of Site. Place noise attenuation devices (barriers) around stationery pumps and compressors where necessary.

23. **DUST CONTROL**

23.1. Undertake control measures to prevent dust during all phases of construction. Application of calcium chloride shall be kept to minimum and shall be restricted to vehicle right-of-way. In close proximity to watercourses, frequent applications of water shall be preferred method. Obtain Consultant's approval before chemicals for dust control are used. Transport dusty materials in covered haulage vehicles. Transport wet materials in suitable watertight haulage vehicles.

24. **WASTE DISPOSAL**

24.1. Do not burn rubbish on Site. Obtain approval for use of any off-site disposal alternatives.

25. **EQUIPMENT FUELLING, MAINTENANCE AND STORAGE**

25.1. Obtain Consultant's acceptance of refuelling areas.

25.2. Procedures for interception and rapid clean-up and disposal of fuel spillages shall be submitted to Consultant for review prior to starting Work.

25.3. Ensure that materials required for clean-up of fuel spillages are readily accessible on Site at all times.

25.4. Carry out refuelling of equipment at acceptable refuelling areas.

25.5. Ensure that water used for cleaning of equipment does not drain into streams, lakes or watercourses. Do not empty fuel, lubricants and/or pesticides into any watercourse, or on ground.

25.6. Clean construction equipment prior to entering public roadways to prevent littering. Debris from cleaning equipment shall not be permitted into storm sewers or watercourses.

25.7. Store equipment and materials in orderly manner in location acceptable to Consultant.

26. **MISCELLANEOUS REPAIRS TO EXISTING WORK**

26.1. Further to requirements of GC 9.1 of General Conditions of the Contract regarding Protection of Work and Property, restore site to condition equal to, or if specified elsewhere, to condition better than existing conditions.

26.2. Restore lands outside of limits of Work which are disturbed due to Work to original condition.

27. **SPILLS REPORTING**

27.1. In event of spill or other emission of pollutant into natural environment, notify:

27.1.1. Local office of Ministry of the Environment and MOE Spill Action Centre (SAC),

27.1.2. Municipality or Regional Municipality within boundaries of which spill occurred, and

27.1.3. Person having control of pollutant, if known, and of circumstances surrounding spill, and of any action taken or intended to be taken.

28. **SCAFFOLDING**

28.1. Erect scaffolding independent of walls. Use it in manner as to interfere as little as possible with work of other Sections. When not in use, move it as necessary to permit installation of other work. Construct and maintain scaffolding in rigid, secure and safe manner. Remove it promptly when no longer required.

29. **CLEANUP**

29.1. In addition to requirements of GC 3.13 of General Conditions of the Contract regarding Cleanup, keep site, existing building, new addition, including concealed spaces, free from accumulation of dirt, debris, garbage and excess material. Remove oily rags and waste from premises at close of each day, or more often if required by Owner.

27. **MANUFACTURER'S INSTRUCTIONS**

27.1. Except where specified otherwise, use each product in accordance with manufacturer's published or written instructions, specifications or recommendations regarding handling, storage, preparation, Site conditions, ancillary products or accessories, methods of installation, protection and cleaning. Submit copy of such instructions, and indicate if and where there is a discrepancy between them and requirements of Specifications and obtain direction from Consultant.

27.2. Whenever specific reference to manufacturer's directions or instructions is made in Specifications, submit three copies thereof for review before commencing such work.

28. **EXISTING SERVICES**

28.1. Further to requirements of GC 9.1 of General Conditions of the Contract regarding Protection of Work and Property, before commencing Work, establish location and extent of existing services in area of Work and notify Consultant and Owner of findings.

28.2. Whenever it is necessary to cut, interfere with, or connect to existing services, do so with prior approval of Owner. Owner must approve of all proposed shut-down of active services to existing pavilion.

28. If unknown services are encountered, immediately notify Consultant and confirm findings in writing and/or on drawings. Obtain Consultant's written direction if such services require cutting, capping or relocation to do Work.

29. **NO SMOKING POLICY**

29.1. Contractor shall fully cooperate, respect and comply with Smoke-Free Workplace policy. Smoking is not permitted anywhere on project premises.

29.2. The Contractor shall, during the full term of the Contract, ensure that the Contractor's employees, Subcontractors and suppliers, performing work on site on the Contractor's behalf, are instructed to comply with the Smoke-Free Workplace policy requirements.

**END OF SECTION**

1. **SHOP DRAWINGS AND OTHER SUBMITTALS**

1.1. Submit shop drawings and other submittals in accordance with GC 3.10 of General Conditions of the Contract.

1.2. Submit shop drawings and other submittals for review and comment by Consultants as specified in subsequent specification sections, and/or as specified on drawings, prior to ordering products or delivery of products to project site.

1.3. Unless otherwise specified, submit shop drawings electronically. Submit samples with accompanying transmittal or letter. Keep one complete set of approved shop drawings on site during construction and keep one clean set for inclusion into Maintenance Manual.

1.4. Fully identify shop drawings and other submittals by project name, name of Sub-Contractor, name of manufacturer, date, drawing sheet or sample number, trade name of product or generic name of product as it appears in specifications. Where applicable, clearly mark each sheet of printed material using arrows, underlining or circling to identify particular product features.

1.5. Finished work shall conform to final reviewed shop drawings and other submittals for all visual characteristics designated, such as colour, texture, gloss and to all other requirements of Contract Documents unless otherwise authorized in writing.

2. **COLOURS**

2.1. Colours and gloss values shall be selected by the Architect and Owner. Obtain direction on colours and gloss values in advance of need. If requested, submit samples for colour and gloss selection. Follow colour schedule provided by Architect and use colours and gloss designated.

3. **MAINTENANCE MANUAL**

3.1. Provide printed or type-written copies of recommended maintenance procedures from those doing Work of each Section whose materials or equipment require regular maintenance. Submit information in 3-ring binder with table of contents.

4. **AS-BUILT DRAWINGS**

4.1. On 2 sets of white prints of drawings, record the following information as Work progresses:

4.1.1. Dimensioned locations of buried and concealed services and utilities including existing ones found during course of work; and,

4.1.2. Changes and deviations to Work as built.

4.2. Regularly update as-built drawings during construction.

4.3. At completion of project, provide Consultant with 2 final, neat, clear, and clean sets of as-built drawings.

**END OF SECTION**

1. **INSPECTION AND TESTING**

1.1. In addition to inspection and testing specified to be provided as part of Work, such as certification of helical pile load capacities, or as provided by Contractor for his/her own verification of Work, Consultant or Owner may appoint separate inspection and testing companies for certain work where specifically stated or where he/she may later require. Wherever documents state that inspection and testing companies may be appointed by Consultant or Owner, provide adequate notice to Consultant to determine if such inspection and testing companies will be appointed. In such cases, the following will apply:

1.1.1. Owner will pay costs of such additional inspection and testing, except where such additional tests or inspections reveal work tested is not in accordance with Contract, then Contractor shall bear cost of such tests and further tests as required to verify acceptability of corrected work.

1.1.2. Consultant will advise Contractor of work to be inspected and companies appointed to inspect and will supply inspection companies with necessary Drawings and Specifications if required.

1.1.3. Advise Consultant and applicable inspection and testing company(s) not less than 5 working days prior to commencement of work to be inspected or tested and ensure proper facilities and coordination are provided. Do no work without required inspection and testing.

**END OF SECTION**

1. **TEMPORARY LIGHTING, POWER AND WATER**

1.1. Provide temporary lighting, power and water as required to perform work.

1.2. Provide extension cords, lamps and hoses for those trades requiring them.

2. **TEMPORARY PROTECTION**

2.1. Take necessary precautions to prevent damage to Work affected by temperature, water, weather and other environmental conditions.

2.2. Remove temporary screens, coverings and construction promptly when no longer required, and make good adjacent surfaces.

3. **TEMPORAY HEAT FOR WORK**

3.1. Provide, operate and maintain heat, heating equipment and shelters to keep work which requires protection from cold adequately warm and sheltered from elements, and to allow it to be done safely and well. Provide minimum required temperature, and do everything necessary to produce suitable environment for Work to proceed without delay at all times. Temporary heaters shall be forced air type, operated in well ventilated location and vented to exterior. Provide protection on floors and adjacent surfaces to prevent damage, particularly when re-fuelling.

3.2. Temporary heating system, fuel, and fuel storage shall be satisfactory to authorities having jurisdiction, to Consultant and Owner.

4. **TOILETS**

4.1. Provide portable, weatherproof toilets and sanitary facilities, serviced at least weekly for use of workers. Facilities shall be in compliance with Occupational Health and Safety Act, Ministry of Labour and applicable codes and by-laws.

5. **CELLPHONE AND COMPUTER**

5.1. Provide Site Superintendent with cell phone and computer with internet connection for communication purposes. Internet connection shall be provided by Owner's internet service provider.

6. **TEMPORARY HOISTING**

6.1. Provide, install, maintain, locate where directed and pay all costs for hoisting equipment if required. Operate equipment by qualified hoist operator. All subtrades shall make their own financial and scheduling arrangements with Contractor for use thereof.

7. **TEMPORARY CLEANING**

7.1. Vacuum-clean all areas prior to painting. Take care to settle and minimize dust before painting begins. Use commercial type vacuum cleaners.

**END OF SECTION**

1. **CLEANING**

1.1. Further to requirements of GC 3.13 of General Conditions of the Contract regarding Cleanup, keep access areas to Work reasonably clean during construction period.

1.2. Upon completion of Work, remove stains, smudges, and dust caused by work within work areas of this Contract. Wash and polish interior and exterior glass surfaces and window and door frames according to manufacturer's recommendations. Make good any damage caused outside work area, including doing necessary cleaning required due to Work.

1.2. Replace broken, damaged or scratched glass which are part of Work.

1.3. Use appropriate apparatus and cleaning materials. Clean Work in strict compliance with manufacturer's instructions.

1.4. Upon completion of final cleaning, remove cleaning equipment, materials and debris from building and site.

1.6. Close rooms and areas finished and cleaned to all but authorized persons. Notify Consultant as rooms become ready for final review.

**END OF SECTION**

1. **GENERAL**

1.1. Work of this Section includes but is not limited to layout of lines and grade stakes for site work and placement of addition, excavating for foundations, and rough grading, including removal of all minor obstructions which interfere with the proper completion of works.

1.2. Environmental Requirements: Comply with Ministry of Environment guidelines and regulations respecting disposal of excess excavated and contaminated materials.

1.3. Protection: Provide complete protection to existing structures, landscaping and existing services. Rectify any damage caused thereto resulting from this work to satisfaction of Consultant.

1.4. Shoring and Bracing: Whenever trench or excavated face is to exceed 1200 mm in depth or height, shore and brace to prevent failure in accordance with Occupational Health and Safety Act, except as otherwise provided by sheet piling and shoring specified under separate section.

1.5. Dewatering Excavations: Unless otherwise specifically provided, dewater excavations so concrete and services may be placed under dry conditions.

1.6. Soil Compaction Tests: Contractor will appoint independent inspection and testing agency to test and verify soil densities as specified. Cost of such Work is paid by Contractor under Section 01400. Field density determination is made in accordance with requirements of either ASTM D1556 or ASTM D2167. Deficiencies in the work are to be reviewed by Structural Engineer who shall determine an appropriate course of action.

2. **PRODUCTS**

2.1. Granular Materials: Aggregates meeting physical requirements of Ontario Provincial Standard Specifications (OPSS) Form 1010, for Granulars `A', `B' and `C'.

2.2. Granular Fill: At Contractor's option, either granular 'B' well-graded gravel or crushed stone, or surplus excavated native material, if approved by Geotechnical Engineer.

2.3. Native Subgrade Material: Any non-organic soil free from rubbish, wires, cans or debris of any sort, clay chunks, boulders or rock greater than 0.01 $m^3$, concrete or masonry fragments greater than 150 mm in their largest dimension, and roots, stumps, trees or timber. Material shall have capability of being compacted to densities specified hereinafter.

2.4. Requirements For Crushed Stone: 19 mm crushed stone or other clean granular material.

2.5. Requirements For Sand Fill: Uniform quality and unwashed river sand or any clean sand containing less than 5% organic materials, clay or silt (passing 125 micrometer sieve) is acceptable. It can contain a limited amount of small stones or rocks as it comes from the pit; or sharp, clean, coarse sand, water washed, free from clay, salts and organic matter, and in accordance with CSA A82.56-M for masonry sand.

2.6. Synthetic Filter Fabric: "Terrafix 270R" by Terrafix Erosion Control Products Inc., or "Mirafi" by Celanese Canada Ltd., or "Typar Driveway Fabric" by DuPont Canada.

3. **EXECUTION**

3.1. General:

3.1.1. Do all clearing, grubbing, excavating and filling, including that for mechanical and electrical work.

3.2. Location and Layout:

3.2.1. Set out all pertinent lines, grades and levels shown on or interpolated from Drawings, and as required for proper and accurate setting out of Work. Maintain accuracy of line and grade stakes during construction.

3.2.2. Correct over-excavation errors by filling back up to required elevation with 25 MPa concrete in accordance with requirements of this Specification, where subsequent concrete Work is scheduled to be carried out directly over. At all other over-excavated areas, fill with compacted granular materials of appropriate gradation and degree of compaction as directed.

3.3. Removal and Stockpiling of Materials: Excess material not required for backfilling purposes shall be hauled to disposal location off Site, or onsite as directed by Owner.

3.4. Backfilling to Exterior Foundations: Granular `B' placed in 200 mm loose lifts (maximum) and compacted to 100% Standard Proctor Maximum dry density. Carry backfill up evenly on each side of walls.

3.5. Fill Under Floor Slabs: Compact uppermost 300 mm of undisturbed soil to 95% Standard Proctor; unless otherwise indicated, fill to within 150 mm of slab bottom with Granular `B' and compact to minimum 98% Standard Proctor Density, final 150 mm with Crushed Stone and compact with normal haulage vehicle traffic.

3.6. Fill Under Soft Landscaping: Native excavated material compacted to 90% Standard Proctor.

3.7. Place granular materials in uniform compacted layers as follows:

3.7.3. Granular `A'; 115 mm

3.7.4. Granular `B'; 150 mm

3.7.5. Granular `C'; 225 mm

3.7.6. Native Fill; 300 mm

3.8. Keep moisture content to within 2% of optimum during compaction. No frozen fill.

**END OF SECTION**

1. **GENERAL**

1.1. Furnish Portland cement concrete slab-on-grade exterior paving as shown on Site Paving Plan.

1.2. Allowable Tolerances: Grade base courses with surfaces within 13 mm of established elevations and within a tolerance of 13 mm under a 3000 mm long straight edge. Install pavement within plus or minus 6 mm of indicated finished elevations.

1.3. Quality Assurance:

1.3.1. Qualifications: Provide adequate equipment for project, and skilled tradesmen so that Work is performed expeditiously.

1.3.2. Quality Control: Refer to Section 01400, inspection and testing, to ensure granular base is installed in conformance with Specifications.

1.4. Submittals:

1.4.1. Samples: Perform on site, at location specified by Consultant, trial surface finishing of concrete paving for acceptance of surfaces to be used as standard of finish for balance of Work.

1.5. Site Conditions:

1.5.1. Environmental Requirements: Commence placing and perform compaction of granular base courses when subgrade temperature is at least 2°C and rising.

1.5.2. Perform casting of concrete in weather conditions stipulated under Section 03300.

1.6. Protection: Prevent damage to adjacent pavilion, wall surfaces, and existing concrete paving to remain. Keep traffic of any kind off this Work until materials have cured and reached design strength.

2. **PRODUCTS**

2.1. Concrete: To meet requirements of Section 03300; 20 MPa minimum, air entrained.

2.2. Concrete Reinforcement: To meet specified requirements of Section 03300, with epoxy coating conforming to Ontario Provincial Standard Specifications requirements, OPSS Forms 1442 and 1443.

2.3. Concrete Surface Retardant: "Rugasol-S", or similar type acceptable to Consultant.

2.4. Granular Base Course: Compacted granular crushed or uncrushed of bank or pit run gravel and conforming to requirements for Class `A' Aggregate, Ontario Provincial Standard Specifications (OPSS), Specification Form 1010.

2.5. Granular Sub-Base Course: Compacted granular crushed or uncrushed material of pit run gravel obtained from a certified pit source and conforming to requirements for Class`B' Aggregate, Ontario Provincial Standard Specifications (OPSS), Specification Form 1010.

2.6. Expansion Joints: Proprietary fibre type, 12.7 mm thick.

3. **EXECUTION**

3.1. Examination: Examine prepared sub-grade and fill areas and Work upon which Work of this Section depends and report discrepancies to Consultant. Notify Consultant and obtain permission at least 24 h prior to proceeding with concrete operation.

3.2. Placing Granular Sub-Base and Base Courses:

3.2.1. Ensure sub-grade is dry and compacted to a smooth surface at required grade and slopes prior to placing granular base material. Sub-grade density; min. 98% maximum dry density as determined by ASTM D698 (Standard Proctor Density).

3.2.2. Immediately after sub-grade is accepted by Consultant, place granular sub-base to uniform cross-section over required area in layers not exceeding 100 mm un-compacted thickness.

3.2.3. Add water in such quantities as may be necessary to compact granular sub-base to 98% Standard Proctor Density.

3.2.4. Finish granular sub-base surface true to grades shown and to finished thickness of 200 mm at foot traffic areas.

3.3. Installation of Concrete Components:

3.3.1. Prior to pouring concrete, review layout of control joints and expansion joints shown on Site Paving Plan with Architect. Upon approval of layout, proceed with pour. Ensure concrete work is air entrained and free of surface spalling.

3.3.2. Work in control joints to a depth of 1/4 of overall slab thickness. Ensure aggregate is not exposed while creating control joints.

3.4. Finish: Finish new concrete surfaces in non-slip texture to match finish of existing paving to remain. Finish edges of new concrete slabs to match edges of existing paving to remain.

3.5. Replacement of Defective Work: Replace defective concrete Work to match balance of Work.

3.6. Cleaning: Clean finish surfaces to remove stains, mortar, sealants and other foreign materials without damaging surfaces.

**END OF SECTION**

1. **GENERAL**

1.1. Furnish helical piles in quantity shown and with minimum load capacity as specified on structural drawing S-1.

1.1.1. Shop Drawings: Submit shop drawings of helical piles for Consultant's review and approval prior to procurement.

1.1.1.2. Shop drawings shall be prepared under supervision of a professional engineer licensed to practice in Province of Ontario. Drawings of components designed by the fabricator shall bear seal of engineer responsible for design.

1.2. Documentation: Maintain accurate log for each helical pile, as noted on structural drawing S-1.

2. **PRODUCTS**

2.1. Supply helical piles in accordance with material specifications, as specified on structural drawing S-1.

3. **EXECUTION**

3.1. Install helical piles in accordance with manufacturer's specifications, and to achieve load capacities specified on structural drawing S-1.

**END OF SECTION**

1. **GENERAL**

1.1. Provide cast-in-place concrete grade beam and foundation walls for pavilion shelter addition. Coordinate work with helical pile installation to ensure foundation layout is as shown on drawings, and grade beam is installed at correct depth.

1.2. Design and Code Requirements: CAN/CSA-A23.1-M, A23.2-M90 and A23.3-M.

1.3. Tolerances of Reinforcing Bars: Fabricating and placing tolerances shall meet requirements of ACI 301-72, Article 504.

1.4. Testing: Provide materials for testing in accordance with Section 01400 and CAN/CSA-A23.1, Clause 29.3.2.: 4 cylinders/40 $m^3$; slump and air for each truck load.

2. **PRODUCTS**

2.1. Forms: New G1S Douglas Fir plywood to CSA 0121-M, or prefabricated steel forms free of dents and deformations for exposed concrete. Used formwork may be used for surfaces which will be concealed.

2.2. Form Ties: Adjustable snap ties, formed to break 25 mm from surface of concrete after form removal, with minimum working strength of 13 kN. Do not use wire ties.

2.3. Form Tape: Plastic film tape "No. 471" by The 3M Company.

2.4. Formwork Release Agent: Sternson's "C.R.A." , W.R. Meadows of Canada Ltd. "Duogard" or Conchem Lafarge "Procote". For formed concrete work in contact with soil, use material that does not alter sulphate resistant qualities of concrete.

2.5. Premoulded Joint Filler: 13 mm thick "Sealtight" by W.R. Meadows or "Rodofoam GR" by W.R. Grace Construction Products or "Kono-Bord" by Goodco Ltd. For horizontal slabs-on-grade with sealed joints; non-asphalt, non-extruding fungus and rot-proof compressible fibre compatible with sealant, conforming to ASTM D1751, or Type 1 sponge or Types 2 and 3 cork conforming to ASTM D1752.

2.6. Anchor Bolts: Unless otherwise indicated, ASTM A307, Grade A, complete with nuts and washers (complete with 3 hexagonal nuts and 2 hardened washers).

2.7. Reinforcement: Deformed bars; CSA G30 Series, Grade 60; stirrups, ties and spirals, Grade 50; welded wire mesh, CSA G30.5-M. Fabricate to ACI 315. Do not straighten or re-bend fabricated reinforcing bars.

2.8. Welded Steel Wire Fabric: CSA G30.5-M, flat sheets only.

2.9. Deformed Steel Wire: CSA G30.14-M.

2.10. Cold-Drawn Annealed Steel Wire Ties: CSA G30.3-M.

2.11. Chairs and Spacers: By Drummond and Reeves Ltd., Acrow Richmond or Superior Concrete Accessories Ltd. of sufficient strength to rigidly support weight of reinforcement and construction loads. (Use non-corrosive type over metal floor deck). At epoxy coated reinforcing steel, conform to CAN/CSA-S413, Clause 6.5.1.

2.12. Tie Wires: Min. 1.29 mm annealed wire or approved patented system. At epoxy coated reinforcing steel, conform to CAN/CSA-S413, Clause 6.5.2.

2.13. Reinforcing Bar Supports: Proprietary type fabricated from commercial pre-galvanized, cold-drawn wire. Legs shall be turned up 3 mm.

2.14. Concrete Mix: Cement, normal; strength 27 MPa complying with Tables 7 and 8, Exposure Classification, `F-2', `C-1', `C-2' and `C-4' as applicable; slump 50 mm for slabs, 75 mm for balance; weight, normal 100 kg/m$^3$; coarse aggregate, Table 2, Group 1, 40 to 2.5 mm; and with a minimum cementing material content of 320 kg/m$^3$. Concrete shall not contain calcium chloride admixtures or chlorinated-based admixtures.

2.15. Shrinkage Control Fibres: Beakert "Dramix" steel fibres 60/.80 ga, and 30/.50 ga for traprock topping and concrete fill in metal pan stair treads. At all other areas, use "Fibre Mesh" fibrillated polypropylene fibres by Fibermesh Canada Ltd., 19 mm in length.

2.16. Non-Shrink Grout: Embeco 153 or In-Pact Pre-Mix, min. 27.5 MPa.

2.17. Bonding Agent: Supply Sternson "ST-433", Sika Chemical "Sika-Dur Hi-Mod" or W.R. Meadows of Canada Ltd. "Bondlok", Euclid Chemical "SBR Latex" or C.C. Chemicals Limited "Acrylic Adhesive".

2.18. Wet Curing: Water conforming to CAN/CSA-A23.1-M90, Clause 4, clear and entirely free from any elements which might cause staining of concrete, and minimum 0.1 mm thick polyethylene film as specified herein.

## 3. EXECUTION

3.1. Treatment of Forming Surfaces: Apply coating to inside surfaces of forms prior to placing of reinforcing steel, anchoring devices and embedded parts.

3.2. Joints in Concrete: Neatly form construction and expansion joints along straight lines; level and plumb. Install water-stops in horizontal and vertical construction joints below finished grade.

3.3. Embedded Parts and Openings: Provide formed openings where required for pipes, conduit, sleeves and other Work to be embedded in and passing through concrete members. Accurately locate and set in place items which are to be cast directly into concrete.

3.4. Place reinforcement to CAN/CSA-A23.3. Use bar supports for bars. Place welded wire mesh in centre of slabs.

3.5. Concrete Finishes:

3.5.1. Formed Surfaces Exposed: Finish to CAN/CSA-A23.1, Clause 24.3.4.4.

3.5.2. Formed Surfaces Concealed: CAN/CSA-A23.1, Clause 24.3.2.

3.5.3. Slab Finishes: Finish to match texture of adjacent slab finish.

3.6. Non-Shrink Grout: Under all structural bearing points, except lintels built into masonry during erection of walls.

3.7. Removal of Formwork: CAN/CSA-A23.1, Clause 11.3.5.

3.8. Crack Repair: After concrete has cured, examine concrete floor surfaces and repair all cracks. Rout out cracks with mechanical router to a minimum depth of 13 mm. Clean and fill cracks in same manner as control joints.

**END OF SECTION**