Engineers

YWCA TORONTO – DAVENPORT WOMEN'S SHELTER

KITCHEN AND SPRINKLER MODIFICATIONS

348 Davenport Road
Toronto, ON M5R 1K6

TECHNICAL SPECIFICATIONS AND DRAWINGS

Prepared for:

City of Toronto
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RJC No. TOR.121290.0014

July 2024 - Issued for Permit and Tender

Division 00 - Procurement and Contracting Requirements

Division 01 - General Requirements

Division 02 - Existing Conditions

Division 03 - Concrete

Division 05 - Metals

Division 09 - Finishes

Division 11 - Equipment

Division 26 - Electrical

Division 32 - Exterior Improvements

1.0 Drawings

The drawings listed below will be included in the General Contractor/Owner agreement and will become part of the contract.

Drawing No.	Drawing Title	Date
	Cover Page and General Notes	July 2024
P1	Ground Floor Phasing Plan	July 2024
P2	B1 Level Phasing Plan	July 2024
P3	B2 Level Phasing Plan	July 2024
S1	B2 Level Foundation Plan	July 2024
M0.1	Fire Protection Diagrams Existing and New Layout (Phase 1)	July 2024
M0.2	Basement 2 Plumbing Existing and New Layout (Phase 2)	July 2024
M0.3	Domestic Hot Water Diagrams Existing and New Layout (Phase 2)	July 2024
E0.1	Basement 1 and 2 Power	July 2024
QF-000	Cover Sheet	July 2024
QF-100	Overall Plan	July 2024
QF-101	Foodservice Equipment Layout and List	July 2024

END OF SECTION

1.0 GENERAL

1.1 Description of Work

.1 In general, this program includes the upgrade of the building kitchen equipment and sprinkler system at the YWCA Toronto – Davenport Women's Shelter located at 348 Davenport Road in Toronto, Ontario.

.2 It is the Contractor's responsibility to provide all labour, material, equipment, and supervision to complete the repairs outlined in these specifications, taking into account all site conditions, noise restrictions, work area restrictions, protection requirements, accessibility restrictions, etc. No extras will be entertained for inconveniences after the award of this contract.

.3 In particular, the work, briefly described below, includes, but is not necessarily limited to the following:

.1 The installation and maintenance of hoarding dust protection and construction signage around each phase and area of work as described in Section 01 10 01 – General Requirements

.2 The design, installation, and maintenance of excavation shoring and temporary works as required to carry out the Work, including submission of shop drawings sealed by a professional engineer licensed in the province of Ontario.

.3 Coordination of all temporary closures with the Owner and YWCA as required to perform the Work.

.4 Protection in place or temporary removal and reinstatement of existing fixtures, furniture, or equipment as required to perform the work.

.5 Third party verifications and inspections as required to close the building permit.

.6 Sprinkler Upgrades

.1 Removal and disposal of existing sprinkler hose and reel.

.2 Localized removal and disposal of existing concrete slab-on-grade and underlying granular materials as required to install new sump pit.

.3 Installation of new corrugated steel pipe sump pit and prefabricated cover.

.4 Installation of new reinforced cast-in-place concrete sump pit slab.

.5 Installation of new unshrinkable fill in sump pit excavation.

.6 Reinstatement of concrete slab-on-grade.

.7 Modification of existing sprinkler system and sanitary sewer piping.

.8 Installation of new sump pump and piping connected to existing sanitary sewer system.

.9 Installation/modification of existing electrical power to suit new equipment.

.10 Installation/modification of existing controls to suit new equipment sensors and alarms.

.11 Replacement and sealing of existing sump pit covers.

.7 Kitchen Equipment Modifications

.1 Removal of existing Combi Oven and turnover to City of Toronto, including delivery to Owner-selected location.

.2 Removal of existing kettle and relocation to a new location on site.

.3 Supply and installation of new convection over.

.4 Supply and installation of new stainless steel spacer table.

.5 Modification of existing dishwasher condensate hood and adjustment of positioning of existing dishwasher and dish tables.

.6 Modification of plumbing and drainage as required to suit kitchen equipment modifications.

.7 Modification of electrical power to suit kitchen equipment modifications.

.8 Modification of existing architectural finishes as required to suit kitchen modifications.

.8 Hot Water Tank Upgrades

.1 Installation of new concrete housekeeping pad.

.2 Installation of new domestic hot water heater (DHWH-4) and piping connected to existing domestic hot water system.

.3 Modification of existing plumbing and drainage as required to suit new and existing hot water equipment.

.4 Installation/modification of existing electrical power to suit new hot water equipment.

.5 Modification of existing architectural finishes as required to suit new and existing equipment and associated connections.

.9 Repair all areas damaged by construction activity; specifically, the Contractor shall repair all damage resulting from the construction to the satisfaction of the Consultant including repainting of surfaces in accordance with these specifications which have been damaged.

.10 Final cleaning of the site, structure, fixtures, piping, etc. and the disposal of all waste products and/or debris generated by the construction activity, as well as, any material present in the work area prior to the commencement of the work. The areas requiring cleaning shall consist of all areas affected by the work.

1.2 Work Sequence

.1 The Work areas will be available as of **7:00 AM** on **Monday, October 7, 2024**. Contractor to confirm date of mobilization.

.2 Subject to adjustments in Contract Time agreed upon by Change Order, attain Substantial Performance of the Work by **Friday, December 13, 2024**. This provides a Contract Time of up to **10** weeks.

.3 The site will operate regularly during construction. The B2 level areas of work may be closed for the duration of construction. The kitchen, B1 and residential floor areas of work shall be open for regular use, with work undertaken outside of meal preparation and dining hours. Access to areas outside the designated work areas must be maintained in accordance with phasing requirements.

.4 Power and water shut downs shall be closely coordinated with the YWCA and City of Toronto. Provide minimum 72 hours notice. Schedule to minimize disruption to regular operation of building.

.5 Time and time limits stated within Bid submittal and Contract Documents are of the essence to the Contract. Perform work expeditiously and with adequate forces to complete the Contract Work within the time specified.

1.3 Schedule

.1 In conjunction with and in a form acceptable to the Consultant and Owner, provide within one week of contract award a schedule indicating phasing and procedures required to complete the Work within the submitted time frame.

.2 Construction schedule shall reflect completion of all work under the Contract within the time specified and in accordance with these Specifications.

.3 Submit a revised schedule to the Consultant if, after commencing the Work, the schedule fails to reflect actual progress or the Contractor wishes to make a major change to their approach. Submit a revised construction schedule in advance of beginning a revised approach.

1.4 Contractor's Use of Site

.1 Use of all equipment is to be restricted in accordance with noise by-laws. Contractor has access to the work areas with quiet work proceeding around the clock if desired.

.2 Noise or dust generating work is to be performed between 0700 and 1700, Monday to Friday. Work and access outside of these hours must be approved by the Owner and YWCA. However, use of premises will be restricted due to user occupancy.

.3 Schedule operations to minimize interruption of the normal use of the site and building, and to comply with laws, ordinances, rules, and regulations relating to Work.

.4 Building is to remain open and operational through the Contract. It is the Contractor's responsibility to ensure the building remains operational and that areas outside those designated for closure remain available and safely accessible at all times.

.5 Confine construction equipment, temporary work, storage of products, waste products and debris, and operations of employees and subcontractors to limits indicated by laws, ordinances, permit, or Contract Documents and do not unreasonably encumber the Place of Work.

.6 Construction-related debris shall not be permitted to accumulate on site where visible to users. Remove daily if necessary.

.7 Do not overload the structure.

.8 Do not close, obstruct, or store materials in roadways, sidewalks, or passageways without prior approval from the Owner. Do not interfere with safe passage to and from building and adjacent public sidewalks and roads. Move stored products or equipment that interfere with building operations.

.9 Take all precautions and provide all required protection to maintain the safety of the general public.

.10 No storage of materials or equipment is allowed outside designated work areas without Owner approval.

.11 During transportation of materials or equipment through occupied areas, protect the public, property, and finishes from damage. All damage caused by the Contractor is to be repaired or rectified at the Contractor's expense.

.12 Propane powered equipment not permitted within interior areas.

.13 Arrange all construction access into occupied areas with the Owner to allow the Owner to provide proper notice, where required.

.14 Maintain work areas and the vicinity clean and tidy to the satisfaction of the Owner and Consultant.

.15 Obtain and pay for all permits required for completion of the Work, excluding the Building Permit. Do not start construction until the Building Permit has been issued. Provide copies of permits to Consultant and post on-site where required.

1.5 Temporary Lighting

.1 Provide and maintain temporary lighting as required for safe demolition and working conditions, in accordance with Ontario Occupational Health and Safety Act.

1.6 Temporary Field Offices and Sheds

.1 The Contractor shall store all materials and equipment in a locked tool bin located within their work area.

.2 No other field office or staging space shall be provided.

1.7 Temporary Heating and Ventilation

.1 Provide and maintain supplementary heating as required to maintain sufficient application and curing temperatures.

.2 Provide and maintain supplementary ventilation as required. Ventilation requirements shall conform to Ontario Occupational Health and Safety Act. Do not modify base building systems without coordination and approval of the Owner.

.1 Maintain existing ventilation rates and building's interior air quality, including but not necessarily limited to reasonable retention of interior heat, dust, and other contaminant control. If sealing building openings, such as vent exhausts and windows as a means of dust control, an alternate means of interior ventilation must be established to maintain the existing ventilation rate and indoor air quality.

.2 If alternate means of ventilation is required, provide Owner and Consultant with pre- and post-modification indoor air quality monitoring results. Should a permanent modification occur to the original ventilation system, indoor air quality testing is required to confirm that indoor air quality is equal to or better than pre-modification results.

.3 Temporary heating and ventilation used during construction -- including the cost of installation, fuel, operation, maintenance and removal of equipment -- shall be paid for by the Contractor. Use of direct-fired heaters discharging waste products into enclosed work areas is not permitted.

1.8 Electrical Power

.1 Discuss available power with the Owner prior to bidding.

.2 Contractor shall pay for any alternations to the electrical system needed to accommodate the Contractor's equipment. Coordinate any required alterations with the Owner. Reinstate system to its original condition upon completion of the Work.

.3 Owner will pay for electrical consumption from building sources made available by the Owner.

1.9 Water Supply

.1 Contractor shall pay for the cost of any temporary water connections or alterations required to perform the Work. Reinstate system to its original condition upon completion of the Work.

.2 Owner will pay for water consumption from building sources made available by the Owner.

1.10 Sanitary Facilities

.1 Provide portable washrooms at time of initial mobilization and maintain throughout the course of work where washroom facilities are not available on-site for the Contractor's use. Locate where agreeable to the Owner.

1.11 Traffic Control and Signage

.1 Provide all signage necessary to protect the public from the construction and work area, control pedestrian traffic flow, and to inform users that construction activity is in progress. Signage to be of professional quality to the Consultant's satisfaction, and as indicated on the Drawings.

1.12 Protection of Work and Property

.1 Take all reasonable precautions necessary to protect the Work and property from damage during performance of the Contract, and rectify any damage to the Work or property caused by the Contractor or its Subcontractors.

.2 Protect all property from dust and damage. Clean interior areas that require access outside of working hours at the end of each work shift to provide a functional environment for the user.

.3 Contain dust, dirt, construction debris, water, and fumes from the Work so as to not affect areas remaining in operation outside designated work areas. Damage to all property, mechanical equipment, motors, elevator equipment, fixtures, air intakes, etc. resulting from contamination is the responsibility of the Contractor.

.4 Completely enclose and ventilate work areas (fresh air in and exhaust out) without allowing dust to escape from the work area. Exhaust system must filter dust out of the air before it is released into the atmosphere. All exhaust systems must be filtered and directed to the outside through ducting, which is to be installed in a manner acceptable to the Owner and Consultant. Clean and replace filters regularly.

.5 Provide protection for all entrance and exit-ways, floors, walls, standing fixtures, air intakes, and equipment rooms.

.6 Use temporary vestibules to hoard areas that are to be protected but still require access, such as elevator lobbies and stairs. Adjust pressurization (by providing necessary fans) to prevent dust from entering these areas.

.7 Patch and repair all finishes or painted surfaces damaged during the course of the Work, including surfaces damaged by tape, fasteners, or similar materials during hoarding and protection.

.8 Do not keep secure doors open for extended periods without the Owner's permission. Any resulting damage caused to building finishes or equipment, and any resulting property losses due to compromised building security, shall be the responsibility of the Contractor.

1.13 Construction Barriers and Enclosures

.1 All work areas are to be completely enclosed by hoarding and dust protection and only accessible to the Contractor, Owner, and Consultant.

.2 Supply and construct hoarding, barriers, and enclosures as indicated in these Specifications, on Drawings, and as directed by the Consultant or Owner as construction progresses.

.3 No extras will be entertained for hoarding, barriers, and enclosures after bid closing unless the scope of work significantly changes.

.4 The following types of enclosures / hoarding systems will be required for this construction project:

.1 Full Height Dust Protection

This system consists of full height poly-weave tarping fastened to the floor and ceiling with 2" x 4" construction grade wood nailers wedged tight to the floor and ceiling with 2 x 4 studs or post shores at 4'-0" c.c. The seams of the poly-weave tarping, if any, are to be fastened together with duct tape.

.1 Main purpose of this system is to control dust and keep it from escaping work area, thus it must be dust tight.

.5 All seams in poly-weave tarping are to be taped together to provide dust tight enclosure.

.6 Repair anchor holes after construction hoarding is removed. Repair all finishes and painted surfaces damaged by fastening materials used as part of hoarding and protection systems.

.7 Simple barriers required to control traffic (i.e., not enclosing work areas) are to consist of screw jacks at maximum 8’-0” centres with nylon webbing (4’- 0” high snow fence) between each screw jack. Jacks are to be fully tightened to plywood spacers at the slab surface and soffit, and nylon webbing is to be securely fastened to all jacks. Directional signs are required.

.8 Restrict access for unauthorized personnel by placing barricades or posting guards around areas of the Work. Unauthorized personnel means the public and anyone not directly involved with execution, supervision, or inspection.

1.14 Protection of Existing Exposed Facilities / Services

.1 Make allowance in price to cover all costs of temporary removal and replacement and/or relocation of existing electrical wiring and hardware required for completion of the Work.

.2 Protect exposed conduit, fixtures, attached devices, wet sprinkler fire system plumbing, mechanical system components, louvers, and ducts or correct damages at own expense. Promptly report any damage to the Owner and Consultant.

.3 Prior to commencing the Work, contact the Owner to locate all protective or alarm systems and sensors. Protect services against damage or interruption. Provide Owner with 48 hours minimum advance notice of any necessary interruption. All claims resulting from damage are the responsibility of the Contractor.

1.15 Walk-Through Inspection of Site

.1 Perform a thorough inspection of the site prior to the start of Work, and provide a written notice to the Consultant detailing all damaged property as well as all items that appear to be of poor working order or appearance (i.e. sign fixtures, dirt, etc.)

.2 Upon receiving this notice, the Consultant and Owner will verify the validity of the items listed.

.3 If written notice is not given within five days of commencement of Work, it will be assumed the Contractor reviewed the site and accepted the condition of the property as being free of damage.

.4 Any damages not listed as part of the written notice of clause 1.15.1 above, found after completion of the Work will be the Contractor's responsibility to rectify. Complete rectifications in a timely and satisfactory manner.

1.16 The Work, Work In Progress, Property, and Persons

.1 Protect the Work during construction from damage by weather.

.2 Provide protection as required to protect work in progress and other property from damage and to provide suitable conditions for the progress of finishing work.

.3 Take reasonable and required measures, including those required by authorities having jurisdiction, to protect the public and those employed on the Work from bodily harm.

.4 Comply with requirements of the Ontario Occupational Health and Safety Act and Regulations for Construction Projects.

.5 Be prepared to provide respirators, dust protection, ear protection, hard hats, etc. for those employed by the Consultant and Owner on-site.

.6 Direct all Subcontractors to protect their own work, existing property, adjacent public and private property, and work of other Sections from damage while working.

1.17 Location of Existing Utilities

.1 Locate all existing utilities prior to construction and protect them during construction.

1.18 Work Site Safety – Contractor is "Prime Contractor"

.1 Contractor shall, for the purposes of the Ontario Occupational Health and Safety Act, and for the duration of the Work and Contract:

.1 Be designated as "Prime Contractor" pertaining to safety at the "Work site".

.2 Do everything reasonably practicable to establish and maintain a system or process for compliance with the Act and its regulations, as required to maintain the health and safety of all persons at the "Work site".

.2 Direct all subcontractors, workers, and any other persons at the “Work site” on safety related matters, to the extent required to fulfill its “Prime Contractor” responsibilities pursuant to the Act.

1.19 Material and Equipment

.1 Unless otherwise specified, provide, maintain, and pay for all materials, tools, machinery, equipment, temporary facilities, controls, and conveniences necessary for execution of the Work. All materials shall be new, of merchantable quality, and suitable for the intended purpose.

.2 Unless otherwise specified, comply with manufacturer’s latest printed instructions for materials and installation methods. Notify the Consultant in writing of any conflict between Contract Documents and manufacturer’s instructions. Deliver, store, and maintain packaged materials with manufacturer’s seals and labels intact.

1.20 Coordination

.1 Contractor is responsible for coordination of trades. Lines of demarcation between Contractor’s work and trades’ work are sole responsibility of the Contractor. Consultant assumes no responsibility for division of the Work or for any jurisdiction regarding such division.

.2 Contractor is responsible for coordinating with the Owner for on-site activity as it affects operation of the building.

.3 Notify the Consultant at least 24 hours in advance for site review. No work shall be covered or concealed until the Consultant has reviewed it, unless informed by Consultant that a site review will not be performed. Such review does not absolve the Contractor from their responsibility to perform the Work in accordance with Contract Documents.

1.21 Cutting and Remedial Work

.1 Perform cutting and remedial work required to make affected parts of the Work come together properly.

.2 Coordinate the Work so that cutting and remedial work are kept to a minimum.

.3 Cutting and remedial work shall be performed by specialists familiar with the Products affected and in a manner that neither damages nor endangers the Work.

1.22 Waste Removal and Cleaning

.1 Maintain the Place of the Work free from unsightly or hazardous accumulations of waste materials and rubbish, and perform all required cleaning during the Work.

.2 Provide on-site containers for collection of waste materials and rubbish.

.3 Remove wastes that create hazardous conditions from the premises daily.

.4 Dispose of waste products in strict accordance with product manufacturer Safety Data Sheets (SDS) and provincial waste control regulations. Drainage systems shall not be used to dispose of project wastes and materials.

.5 Remove moisture sensitive equipment (i.e. exposed electrical and mechanical systems, etc.) or protect against moisture infiltration during washing and dust-generating activities.

.6 Remove all construction-related grease, dust, dirt, stains, labels, fingerprints, over-spray, and other foreign materials immediately prior to Consultant's final review. Return all adjacent areas, equipment, duct work, etc. to the Owner in a dust-free condition. Leave site in a neat and tidy condition at completion of the Work.

1.23 Superintendence

.1 Provide a full time on-site Superintendent who is responsible for quality, control, organization, and coordination of the Work.

.2 Superintendent shall attend all site meetings.

.3 Superintendent shall have a cell phone.

.4 Superintendence shall be satisfactory to the Owner and Consultant.

.5 Superintendence shall be deemed unsatisfactory and changes or additions to superintendence can be demanded by the Owner or Consultant when control, organization, or coordination of the Work is not adequate, quality of the Work does not meet Contract Document requirements, directions given in accordance with Contract Documents are not followed, or progress is behind schedule.

1.24 Administration of Project Meetings

.1 Consultant will preside at meetings.

.1 A representative of the Consultant will record minutes, including significant proceedings and decisions, and identifying "action by" parties.

.2 Consultant will reproduce and distribute copies of minutes to the Owner, Contractor, meeting participants, and affected parties not in attendance.

.2 Consultant will schedule and administer project meetings.

.1 Prepare agenda for meetings.

.2 Distribute written notice of each unscheduled meeting three days in advance of meeting date to the Contractor, Owner, and relevant Subcontractors.

.3 Contractor shall provide physical space and make arrangements for meetings on site.

.4 Representatives of Contractor, Subcontractors, and suppliers attending meetings shall be qualified and authorized to act on behalf of the party each represents.

1.25 Pre-Construction Meeting

.1 After award of Contract, a meeting of all parties in the Contract shall be held to discuss and resolve administrative procedures and responsibilities.

.2 Representatives of the Owner, Consultant, Contractor, major Subcontractors, and construction review personnel will attend.

.3 Consultant will establish a time and location for the meeting and notify concerned parties at least five days before the meeting.

.4 Agenda to include the following:

.1 Appointment of official representatives of participants of the Work.

.2 Schedule of Work, progress scheduling.

.3 Shop drawings (if required) and schedule of shop drawing submissions.

.4 Requirements of temporary facilities, site signage, hoarding, dust protection, offices, storage sheds, utilities, fences.

.5 Delivery schedule of critical equipment.

.6 Site security.

.7 Contemplated change orders, procedures, approvals required.

.8 Take over procedures, acceptance, warranties.

.9 Monthly progress claims, administrative procedures, holdbacks.

.10 Appointment of inspection and testing agencies or firms.

.11 Insurance, transcript of policies.

1.26 Progress Meeting

.1 During course of Work, the Consultant or Contractor shall schedule progress meetings every two weeks. Further progress meetings may be scheduled by the Consultant, Contractor, or Owner as required to expedite the Work.

.2 Consultant, Contractor, major Subcontractors involved in the Work, and Owner, when required, will attend.

.3 Consultant will notify parties minimum three days prior to scheduled meetings of any changes to time or place.

.4 Agenda to include the following:

.1 Review, approval of minutes of previous meeting.

.2 Review of Work progress since previous meeting.

.3 Field observations, problems that impede construction schedule, conflicts.

.4 Progress, schedule, during succeeding work period.

.5 Corrective measures and procedures to regain projected schedule.

.6 Revisions to construction schedule.

.7 Review of off-site fabrication delivery schedules.

.8 Review submittal schedules; expedite as required.

.9 Maintenance of quality standards.

.10 Pending changes and substitutions, Notices of Proposed Change, Change Orders.

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

.12 Other business.

END OF SECTION

1.0 GENERAL

1.1 Section Includes

.1 Cash Allowances

.2 Contingency Allowances

.3 Determination of Actual Costs

.4 Adjustment of Contract Price

1.2 Allowances

.1 Allowances include for the following:

.1 Inspection and Testing

.2 Unless otherwise specified, amounts for each allowance include:

.1 Actual product cost

.2 Applicable taxes and tariffs

.3 Freight, handling, unloading, and storage

.4 Contractor services

.5 Labour for installation and finishing

.6 Construction machinery and equipment

.7 Authorized expenditures

.3 Value Added Taxes do not form a part of the allowances.

.4 Contractor’s overhead and profit to be included as follows:

.1 Overhead and profit for each cash allowance will be included in Contract Price.

.2 Overhead and profit for contingency allowance, as noted in the Construction Contract.

.5 Contractor will provide the Owner with at least three (3) competitive prices for work of each allowance. The Owner shall determine actual costs as specified in Paragraph 8.

.6 Additional expenditures not identified as part of the allowances will be submitted for review by the Owner and where deemed applicable authorized in writing by the Owner.

.7 Notification in writing by the Owner is required prior to the Contractor executing work outlined under each allowance.

.8 The Owner will provide the Contractor with applicable documentation, equipment, and products within the time specified or, where such time is not specified, in sufficient time to permit the construction schedule to be maintained.

1.3 Cash Allowance – Third Party Material Testing and Inspection

.1 Include in Stipulated Sum, a cash allowance of $15,000 to retain a third party material testing and inspection company.

.2 Contractor coordination costs of the material tester shall be via the project general requirements. No Contractor overhead and profit shall be permitted via this cash allowance.

.3 The Consultant will prepare a scope of material testing and inspection services on behalf of the Owner for quotation. The Contractor will retain the selected material tester. The Contractor will be reimbursed by Change Order on a monthly interval for material testing services with results in conformance with the Contract Documents.

.4 Costs for material testing services with results not in conformance with the Contract Documents shall be the Contractor’s costs.

1.4 Determination of Actual Costs

.1 Invoices, bills of sale, and notes payable for actual cost of items and services covered in an allowance amount shall be submitted by the Contractor for verification by the Owner.

.2 Trade discounts and refunds shall be credited to Owner.

.3 Where applicable, the valuation for a change shall be in accordance to the Construction Contract.

1.5 Adjustment of Contract Price

.1 When actual costs are determined for each allowance, the Contract Price will be valued accordingly by a Change Order.

END OF SECTION

1.0 GENERAL

1.1 Substitution of Materials Prior to Bid Closing

.1 Substitution of specified products or systems is permitted only when alternatives have been approved by the Consultant, in writing, prior to bid closing.

.2 Inform the Consultant in writing when specified products or systems are not anticipated to be available at the Place of the Work during construction. The Consultant will advise Bidders of alternatives.

.3 If specified products or systems are not available and the Consultant was not notified prior to bid submission, the Consultant will choose a suitable substitute product at the time of construction.

1.2 Request for Approval of Alternatives

.1 A Bidder or Supplier of a product or system may apply for approval of their product or system as an alternative up to five calendar days prior to bid closing. The Consultant will advise applicants of the status of their request prior to bid closing.

.2 Provide the Consultant with sufficient information to review the alternative. This information may include:

.1 Project name and number

.2 Specification sections affected by the proposed alternative

.3 Product technical data sheets

.4 Supplier installation instructions and requirements

.5 Supplier warranty and warranty requirements

.6 Product application sample at specified material thickness and finish on sample substrate

.7 Installation history, including:

.1 Installation locations, dates, project sizes, project values

.2 Description of project and product usage

.3 Owner and consultant

.8 Test data

1.3 Approval of Alternatives

.1 The Consultant reserves the right to reject any requests for approval of alternatives.

.2 The Consultant will outline approved alternatives by addenda issued prior to bid closing. The addenda will indicate the alternative Product or system, where and how it may be used, and limitations. If an addendum is not issued, the bid is to be based on use of the specified Product or system.

.3 The Contractor assumes full responsibility and bears all associated costs where an alternative Product or system is incorporated into the Work. Claims for increases to the Contract Price or for changes to the Date for Substantial Performance of the Work due to changes in the Work that are necessitated by the use of an alternative will not be considered. All associated costs are to be included in the bid.

.4 The Contractor is to reimburse the Owner for their additional costs associated with incorporating alternatives into the Work. This may include additional consulting costs billed to the Owner to accommodate changes to the Contract Documents necessitated by the change.

.5 Contractor cost savings arising from approval of alternatives are to be reflected in the Contract Price.

END OF SECTION

1.0 GENERAL

.1 This Section specifies general requirements and procedures for shop drawing, product data, sample, and mock-up submissions for Consultant's review. Additional specific submission requirements may be specified in other Sections.

.2 Do not proceed with Work until relevant submissions are reviewed by Consultant.

.3 Present shop drawings, product data, samples, and mock-ups in SI metric units. Where items or information is not produced in SI metric, converted values are acceptable.

.4 Contractor's responsibility for errors or omissions in any submission is not relieved by Consultant's review of the submission.

.5 Notify Consultant, in writing at time of submission, of any deviations from the requirements of Contract Documents that form part of submissions. Also indicate the reasons for the deviations.

.6 Contractor's responsibility for deviations from the requirements of the Contract Documents in submissions is not relieved by Consultant's review of the submissions unless Consultant provides written acceptance of the identified deviations.

.7 Make any changes in submissions that Consultant may require consistent with the Contract Documents and resubmit where directed by Consultant.

.8 Notify Consultant in writing of any revision other than those requested by Consultant when resubmitting.

1.1 Submission Requirements

.1 Coordinate each submission with requirements of work and Contract Documents. Individual submissions will not be reviewed until all related information is available.

.2 Submit electronic copies of product data, manufacturer's catalogue sheets, brochures, literature, performance charts, and diagrams.

.3 Comply with the following requirements in regards to submission of product data:

.1 Delete information not applicable to project.

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

.3 Provide certification of compliance to applicable codes.

.4 Provide manufacturer's certification as to current production.

.4 Allow 10 working days for Consultant's review of each submission.

.5 Accompany submissions with an electronic transmittal letter that contains:

.1 Date.

.2 Project title and number.

.3 Contractor's name and address.

.4 Identification and quantity of each shop drawing, product data, and sample.

.5 Other pertinent data.

.6 Submission shall include:

.1 Date and revision dates.

.2 Project title and number.

.3 Name and address of:

.1 Subcontractor.

.2 Supplier.

.3 Manufacturer.

.4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.

.5 Details of appropriate portions of Work as applicable:

.1 Fabrication.

.2 Layout, showing dimensions, including identified field dimensions and clearances.

.3 Setting or erection details.

.4 Capacities.

.5 Performance characteristics.

.6 Standards.

.7 Operating weight.

.8 Wiring diagrams.

.9 Single line and schematic diagrams.

.10 Relationship to adjacent work.

.6 After Consultant's review, distribute electronic copies to relevant affected subcontractors.

1.2 Shop Drawings

.1 Provide electronic copies of shop drawings pertaining to installations and fabrications required by the Contract for Consultant review prior to commencing work. Provide full-size hard copy submissions if requested by Consultant. Unless noted otherwise, submit shop drawings for the following:

.1 Sump Pump

.2 Excavation Shoring

.3 Kitchen Equipment

.4 Domestic Hot Water Heater

.5 Steel Sump Pit Covers

.2 As part of RJC's field services, RJC will review shop drawings pertaining to work shown on RJC's drawings by means of an appropriate rational sampling procedure and will comment on the accuracy with which the Contractor prepared the shop drawings.

.3 Review of shop drawings is for the sole purpose of ascertaining conformance with the general design concept and is not an approval of the detail design inherent in the shop drawings. Design responsibility remains with the Contractor submitting the shop drawings.

.4 Review of shop drawings does not relieve Contractor of their responsibility for errors and omissions in shop drawings or for meeting all requirements of the Contract Documents.

.5 Contractor is solely responsible for information pertaining to fabrication process, techniques of construction and installation, and coordination of subcontractors.

.6 Cross-reference shop drawing information to applicable portions of Contract Documents.

.7 Shop drawings that require approval of any legally constituted authority having jurisdiction shall be provided by the Contractor to such authority for approval.

1.3 Product Data

.1 Product Data: Manufacturer's catalogue sheets, brochures, literature, performance charts, and diagrams, used to illustrate standard manufactured products.

.2 Submit electronic copies of product data.

.3 Sheet Size: 215 x 280 mm.

.4 Delete information not applicable to project.

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

.6 Cross-reference product data information to applicable portions of Contract Documents.

1.4 Samples

.1 Samples: Examples of materials, equipment, quality, finishes, workmanship.

.2 Where colour, pattern, or texture is criterion, submit full range of samples.

.3 Reviewed and accepted samples will become standard of workmanship and material against which installed work will be reviewed.

1.5 Mock-Ups

.1 Mock-Ups: Field-erected examples of work complete with specified materials and workmanship.

.2 Erect mock-ups at locations acceptable to Consultant.

.3 Reviewed and accepted mock-ups will become standards of workmanship and material against which installed work will be reviewed.

END OF SECTION

1.0 GENERAL

1.1 Take Over Procedure

.1 Contractor's Review

.1 The Contractor and their Subcontractors shall conduct a review of the work and correct all noted deficiencies.

.2 The Contractor shall notify the Consultant, in writing, of satisfactory completion of the "Contractor's Review" after the correction of all noted deficiencies and shall request a "Consultant's Review".

.2 Consultant's Review

.1 The review team shall consist of the Consultant and the Contractor. The Owner or their representative shall attend at their option.

.2 The Consultant will prepare a list of deficiencies noted during the "Consultant's Review" and will issue the list to the Contractor.

.3 The Consultant will determine the value of work associated with any outstanding deficiencies noted during the Consultant's Review. Payment of these retained funds will be withheld until the deficiencies have been rectified to the satisfaction of the Consultant and Owner.

.4 The Contractor shall correct all deficiencies indicated on the list in a timely and satisfactory manner.

.3 Final Review

.1 The Contractor shall request a "Final Review" when the Contractor is satisfied that all deficiencies have been corrected. The request shall be made in writing.

.2 The "Final Review" shall be conducted by the Consultant and the Contractor. The Owner or their representative will attend at their discretion.

.4 Certificate of **Substantial Performance**

.1 The Contractor must submit a request in writing to the Consultant for a Certificate of Substantial Performance.

.2 The Contractor shall comply with the following during Contract close-out:

.1 The requirements of the Construction Lien Act.

.2 The requirements of the Workers Compensation Act.

.3 All other contractual requirements.

.5 Total Performance

.1 Immediately following the issuance of the Certificate of **Substantial Performance**, the Consultant, in consultation with the Contractor, will establish a reasonable date for the “Total Performance of the Work”.

.2 The Contractor shall supply all guaranties and review certificates in accordance with the requirements of the Contract Documents prior to the date established for “Total Performance of the Work”.

.6 Release of Holdback

.1 The lien holdback amounts will be released pursuant to the Construction Lien Act.

END OF SECTION

1.0 GENERAL

1.1 Warranty / Guaranty Period

.1 Provide a one-year minimum warranty for all Work of Contract commencing on date of Ready-for-Takeover and ending one year thereafter.

.2 Warranty shall be secured by a Performance Bond for one year, in accordance with Article **Error! Reference source not found.**.

.3 Extended and/or product warranties beyond the minimum period are outlined in the technical specifications/drawings, if any.

1.2 Remedial Work Under Guaranty/Warranty

.1 Perform any warranty repair work required during the warranty period at no extra cost. Refer to 1.2.3 for additional information on costs.

.2 Owner will notify Contractor within 30 days of discovery of any suspected warrantable defect in the Work. Immediately take necessary steps to protect area against further damage and take corrective action to bring defect into conformance with Contract Documents and rectify any damage incurred. Schedule repair work with Owner and make every attempt to correct defects within three weeks of notice.

.3 In event of a valid warranty claim resulting in corrective work, Contractor and Owner shall contact Consultant to determine what level of involvement, including but not limited to field review, may be necessary. Should Consultant determine that field reviews are required during warranty repair work, Contractor shall be responsible for Consultant fees.

.4 Remedy is at no cost to Owner and includes all labour, material, equipment, supervision, and field review necessary to correct defective areas of the Work and any damages incurred to obtain access to defective areas.

.5 Reimburse Owner for resulting assessment costs, including fees associated with Consultant involvement, incurred to define extent of defect and for testing costs incurred to confirm acceptability of repairs.

.6 Warranty periods for areas requiring repair are to be extended by amount of time elapsed between issuance of notice and completion of remedial work. Warranty/ guaranty period will re-commence upon completion of remedial work.

.7 Warranties are not to be deemed to restrict liability of Contractor arising out of applicable law.

END OF SECTION

1.0 GENERAL

1.1 Record Drawings

.1 Consultant will provide Contractor two sets of clean white prints for as-built drawing purposes.

.2 The Contractor shall maintain accurate as-built drawings on one set of white prints throughout the course of the Work that indicate deviations from the Contract Documents in red ink.

.3 Record following information:

.1 Field changes of dimensions and details.

.2 Modifications made via Change Order, Change Directive, or Supplemental Instruction.

.3 Deviation from electrical and mechanical installations shown on Drawings.

.4 Other significant deviations that are concealed in construction and cannot be identified by visual inspection.

.5 Type, approximate size, and location of structural repairs, delaminations, etc.

.6 Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.

.4 At completion of the Work and prior to final review, neatly transfer “as-built” records to the second set of white prints using a fine red marker. Neatly print lettering and numbers to match original size. Lines shall be neat and accurate.

.5 Add “AS-BUILT RECORD” at each drawing title block.

.6 Contractor shall submit both sets of “as-built” record drawings to the Consultant prior to submission of the final progress payment application.

.7 Project record drawings shall be available for reference purposes and review by the Consultant at all times. Provide reproducible prints to the Consultant or Owner upon request.

.8 If the Project is completed without significant deviations from the Contract Documents, a written declaration may be submitted to the Consultant in lieu of as-built drawings.

1.2 Operation and Maintenance Manuals

.1 Submit electronic copies of manufacturers' printed operation and maintenance manuals where outlined in the technical specifications.

.2 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance as requested within the related Specification sections.

END OF SECTION

1.0 GENERAL

1.1 Work Included

.1 Installation of hoarding/dust protection and shoring around the Work as indicated on phasing drawings in accordance with Section 01 10 01.

.2 Provide all labour, material, equipment, and supervision required to remove and dispose of all material and debris resulting from removal of:

.1 Concrete slab-on-grade and granular fill at new sump pit excavation in B2 Level, as indicated on the Drawings.

.2 Sump pit covers at Client Storage, as indicated on the Drawings.

.3 Sprinkler equipment and piping, hose and reel and signage, as part of modifications.

.4 Plumbing and drainage equipment and piping as part of modifications.

.5 Electrical equipment, conduit and wiring as part of modifications.

.6 Kitchen equipment as part of modifications.

.7 Localized finishes to facilitate the construction.

.3 Cutting and remedial work required to make the affected parts of the Work come together properly.

2.0 PRODUCTS

Not applicable.

3.0 EXECUTION

3.1 Inspection

.1 Visit and examine the site and note all characteristics and features affecting the Work of this Section.

.2 Properly identify all services, whether buried, built-in, or exposed, as to position, type of service, size, and direction of flow.

.3 Inspect materials, equipment, and components to be re-used or turned over to the Owner. Note their condition and advise the Consultant in writing of any defects or conditions that would affect their removal and re-use.

3.2 Preparation

.1 Prevent movement, settlement, or damage of elements of existing building that are to remain. Provide bracing, shoring, and supports as required. Protect existing surfaces not to be restored from damage during removal procedures.

.2 Cut and/or cap existing services within the work area, if any, prior to start of Work as required, but do not affect services of areas not under construction or essential to on-going operation of the building.

.3 In all cases, exercise reasonable care during removal operations to avoid damaging items to be salvaged, re-used, or items that are not part of the Work.

.4 Seal off work areas to prevent dust and debris from affecting other areas outside of work area. Prevent public access to areas being repaired.

.5 Tape and/or seal and provide protection to all mechanical and electrical services and all fire alarm and security devices still functioning adjacent to work areas to prevent damage resulting from dust, water, or impact.

.6 Cover drains as required to prevent any construction-related materials and debris from entering the drains. Ensure that all drains continue to operate as required during construction.

.7 Remove or protect in place all surface-mounted or permanent fixtures not to be demolished from damage during demolition procedure.

.8 Apply filter cloth to all exhaust and ventilation vents within work area to prevent dust generated by construction activity from escaping.

.1 Clean or replace filter cloth if filter cloth becomes unsuitably dirty as determined by Consultant.

.9 Provide proposed demolition sequence for Consultant review prior to commencing work.

.10 Provide temporary lighting and ventilation as required to work areas. Owner to provide 110 volt, 220 amp service to work area for Contractor’s use.

3.3 Demolition

.1 Remove and dispose of material and debris resulting from removal of delaminated and sound concrete slab-on-grade.

.2 Remove and dispose of material and debris resulting from removal of concrete slab-on-grade and granular fill at new sump pit excavation in B2 Level.

.3 Remove and dispose of material and debris resulting from removal of sump pit covers at Client Storage.

.4 Remove and dispose of material and debris resulting from removal of sprinkler equipment and piping as part of modifications.

.5 Remove and dispose of material and debris resulting from removal of plumbing and drainage equipment and piping as part of modifications.

.6 Remove and dispose of material and debris resulting from removal of electrical equipment, conduit and wiring as part of modifications.

.7 Remove and dispose of material and debris resulting from removal of kitchen equipment as part of modifications.

.8 Remove and dispose of material and debris resulting from removal of localized finishes to facilitate the construction.

.9 Jackhammer demolition of concrete shall be restricted to those areas where existing slab reinforcement is to be preserved intact and at locations adjacent to vertical surfaces where sawcut cannot reach, or where undercutting is required.

.1 Jackhammer size is specified in Section 03 01 32.

.10 Demolition procedures and equipment shall meet all applicable noise control by-laws and regulations at the Place of the Work.

.11 Provide shoring to support slab when removals reduce its load-carrying capacity, as directed by Consultant. No payment will be made for such shoring, as it is to be included in costs of repair as outlined in these documents.

.12 Take care not to damage the surface of sound material that is to remain through removal operation. Where any such damage is done, it is to be repaired by Contractor at their own expense to Consultant’s approval.

.13 Where new concrete is to be applied to existing concrete, leave surface clean and sound.

.14 All required re-painting due to damage overspray, etc. is Contractor's responsibility.

.15 At end of each day's work, leave work in safe condition so that no part is in danger of causing injury or damage.

3.4 Cutting and Remedial Work

.1 Perform cutting and remedial work required to make affected parts of the Work come together properly and complete the Work.

.2 Coordinate and perform the Work so that cutting and remedial work is kept to a minimum.

.3 Perform cutting by methods to avoid damage to other work.

.4 Provide proper surfaces to receive patching, remedial work, and finishing.

.5 Cutting and remedial work shall be performed by competent and qualified specialists familiar with the Products affected and in a manner that neither damages nor endangers the Work.

.6 Ensure that cutting and remedial work does not jeopardize manufacturers' warranties.

3.5 Waste Disposal

.1 Dispose of waste products and material in strict accordance with product manufacturer's material safety data sheets and governing waste control regulations.

.2 Existing drainage system is not to be used to dispose of project wastes and/or materials.

.3 Store volatile wastes or material in covered metal containers. Remove wastes that create hazardous conditions from premises daily.

END OF SECTION

1.0 GENERAL

1.1 Work Included

.1 Provide all labour, material, equipment, and supervision necessary to prepare slab-on-grade areas and place new concrete repair material.

.2 Use of pre-packaged materials is to be in targeted repair locations as directed by the Consultant.

.3 All repairs to painted surfaces are to be cleaned and repainted after the concrete repairs have been completed and sufficient time for concrete curing has elapsed.

1.2 References

.1 All referenced Standards are latest editions referenced by the Building Code in the Place of the Work, or latest editions if not referenced by Code.

.2 Ontario Building Code

.3	CSA A23.1/CSA A23.2	Concrete Materials and Methods of Concrete Construction / Test Methods and Standard Practices for Concrete
.4	CSA A3000	Cementitious Materials Compendium
.5	CSA S413	Parking Structures
.6	ASTM C260/C260M	Standard Specification for Air-Entraining Admixtures for Concrete
.7	ICRI 310.2R	Selecting and Specifying Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair

1.3 Performance Requirements

.1 Repaired concrete surfaces shall not scale or crack excessively.

.2 Concrete repair materials shall not spall or debond from existing concrete.

.3 Concrete repair materials shall achieve a minimum compressive strength of 20 MPa within 24 hours.

1.4 Submittals

.1 Submit manufacturer's product specifications and data sheets for the following products:

.1 Cement slurry bonding agent

.2 Slab-on-grade repair materials

.3 Curing compounds

.2 Submittals to be provided for review by the Consultant a minimum of two weeks prior to placement or use of products.

.3 Do not commence placement of repair products until review is complete and proposed products and procedures are accepted by Consultant.

.4 If requested by Consultant, provide a certificate signed by the Contractor and pre-packaged material manufacturer certifying the following:

.1 Surfaces to receive pre-packaged material were acceptable and satisfactory to receive the materials per the manufacturer’s requirements and these Specifications. Application of pre-packaged materials shall imply acceptance of surfaces.

.2 Pre-packaged materials were installed in accordance with manufacturer’s written instructions and these Specifications.

1.5 Qualifications

.1 Use only qualified concrete placers and finishers, with a minimum of two years’ experience in similar work.

2.0 PRODUCTS

2.1 Materials

.1 Portland Cement: Type GU to CSA A3000.

.2 Aggregate: Natural stone to CSA A23.1.

.3 Water: Potable and to CSA A23.1.

.4 Air Entraining Agents: To ASTM C260/C260M.

.5 Chemicals Admixtures: To CSA A3000. Calcium chloride is not permitted.

.6 Pozzolanic Mineral Admixtures: To CSA A3000.

.7 Curing Materials: To CSA A23.1.

.8 Blended Hydraulic Cementing Material: Type 10SF to CSA A3000.

.9 Supplementary Cementing Material: To CSA A3000.

.10 Superplasticizing Admixture: To CSA A3000.

2.2 Cement Slurry Bonding Agent

.1 Cement slurry grout consisting of a mixture of one part cement to one part fine aggregate and enough water to make a heavy cream consistency. Aggregate to conform to CSA A23.1 Clause 4.2.3.

.2 Contractor to provide written confirmation of manufacturer's recommended slurry bonding agent prior to placement of repair material.

2.3 Slab-on-Grade Repair Materials

.1 Proportion patch materials with specially graded aggregate to give the following properties in accordance with CSA A23.2:

	Description	Requirements
.1	Compressive Strength (24 hours)	20 MPa minimum
.2	Compressive Strength (7 days)	30 MPa minimum
.3	Flexural Strength (7 days)	5 MPa minimum
.4	Slant/Shear Bond Strength (7 days)	5 MPa minimum
.5	Linear Shrinkage	0.08% maximum
.6	Rapid Chloride Permeability	less than 1,000 coulombs
.7	Thermally compatible with concrete substrate under all applicable service conditions.	

.2 The patch materials listed below may conform to the specified properties and linear shrinkage requirements. Manufacturer's latest product data sheets for proposed patch materials shall demonstrate that the patch material conforms to the specified requirements. Where product data is incomplete, manufacturer is to provide supplementary independent test data that demonstrates conformance.

.3 Patch Materials:

	Product Name	Manufacturer
.1	MasterEmaco T1060	Master Builders Solutions
.2	MasterEmaco T1061	Master Builders Solutions
.3	MasterEmaco S 466CI	Master Builders Solutions
.4	MasterEmaco S 440MC	Master Builders Solutions
.5	Blue-Line Rapid Repair Grout	Con-Spec
.6	CPD Rapidcrete	CPD
.7	Eurocrete	Euclid Chemical
.8	Versaspeed	Euclid Chemical
.9	HP-S6	King
.10	HP-S10	King
.11	MS-S6	King
.12	MS-S10	King
.13	RS-S10	King
.14	Planitop 18	Mapei
.15	SikaTop 111 Plus w/Sikacem Accelerator	Sika
.16	SikaQuick 1000	Sika
.17	Structuroc H	Solhydroc
.18	Traffic Patch Coarse	Target
.19	Traffic Patch Fine	Target

2.4 Admixtures

.1 Use only compatible admixtures and add to mix in strict accordance with manufacturer's written instructions.

.2 Use of calcium chloride not permitted.

3.0 EXECUTION

3.1 Concrete Surface Preparation

.1 All concrete surfaces to receive new concrete repair material shall have a minimum No. 6 CSP per ICRI 310.2R and be thoroughly abrasive-blast prior to concrete placement to remove laitance, debris, and loose aggregate.

.2 Clean all existing concrete surfaces to receive new concrete of foreign material, dust, debris, grease, and oil as directed by Consultant. Emulsifiers shall be required for surfaces containing grease or oil.

.3 Contractor to notify Consultant to review surfaces prior to concrete placement.

3.2 Concrete Placement – Slab-on-Grade Repairs

.1 Prepare patch surfaces, mix patch material, and apply, finish, and cure in strict accordance with the more stringent requirements of the Contract Specifications and manufacturer’s written instructions.

.2 The patch perimeter shall be thoroughly wetted as required to achieve a saturated surface dry (SSD) state prior to placing concrete repair material.

.3 Puddles of free water shall be blown/drained from the patch area and the existing concrete surfaces are to be permitted to dry to a saturated surface dry (SSD) state prior to application of cement slurry.

.4 Apply a cement slurry bonding agent to the surfaces of the concrete just prior to placing new concrete.

.5 The cement slurry bonding agent shall be broomed or scrubbed into the patch perimeter to fully saturate the surface but not allowed to puddle.

.6 Pre-wet filter fabric, burlap, or cotton mats shall be available on site prior to placement of concrete to allow for immediate placement overtop of new concrete patches after their initial set.

.7 Prepare pre-packaged concrete mix per manufacturer’s specifications.

.8 Contractor to confirm the minimum and maximum application lift thickness prior to placement of concrete. If required and permitted by the manufacturer, the concrete repair material can be extended with aggregate.

.9 Contractor to submit proposed aggregate extension mix design to the Consultant prior to proceeding with Work.

.10 For slab-on-grade, place new dense concrete thoroughly compacted and vibrated into place to ensure good bond.

.1 Ensure reinforcing steel is secured in place and is not disturbed during placement.

.2 Vibrators are to be used for consolidation purposes only and are not to be used to an extent that causes segregation of the concrete.

.3 Internal vibrators shall conform to CSA A23.1 Clause 7.2.5.2 and Table 19: Internal Vibrators for Various Applications.

.4 Vibrators shall be inserted into concrete perpendicular to concrete surface.

.5 Vibrators shall be inserted such that zones of consolidation always overlap.

.11 Concrete surfaces to be flush with existing surfaces, free of voids and cracks, and have a uniform surface and transition to the existing surface.

.12 Finish concrete in accordance with CSA A23.1/A23.2. Initial finish shall be completed before any bleeding or free water is present on the surface of the concrete. Final finishing shall commence after the bleed water has disappeared and when the concrete has stiffened sufficiently to prevent the working of excess mortar to the surface. Do not add water to finish.

.13 Do not overwork concrete surface. Wood float finish is acceptable.

.14 Do not use steel trowels with air-entrained concrete. For air-entrained concrete, the surface can be further levelled and consolidated with a magnesium bull float for larger repairs or a magnesium trowel for smaller repairs. One or more passes shall be made at suitable time intervals to obtain a level finish free of float marks. Do not work bleed water on the concrete surface into the concrete during finishing.

.15 Tool crack control joints where indicated on Drawings or, if not shown on Drawings, per existing layout.

.16 Cure in accordance with the more rigorous requirements of this Section and manufacturer’s written instructions.

.17 Once forms have been removed, edges of through slab repair are to be ground, hand patched, etc. as required to produce smooth (form like) transition from new patch material to the existing slab.

.18 Do not load newly placed repair patches until 75% of the specified 28-day strength has been reached.

3.3 Concrete Mixing and Placing

.1 Concrete shall be machine mixed unless otherwise stipulated by the manufacturer. Mixing and placing shall be in accordance with CSA A23.1.

.2 Concrete shall be conveyed from the mixer to the place of deposit by methods that will ensure the required quality of concrete. Equipment for conveying the concrete shall be of such size and design as shall ensure a practically continuous flow of concrete at the delivery end without separation of materials.

.3 Concrete shall be deposited in the forms as near as practicable to its final position to avoid re-handling.

.4 Depositing shall be continuous throughout each division and the concrete shall be placed and worked so that a uniform texture will be produced.

.5 No concrete shall be placed later than one half hour after leaving the mixer. No re-tempered concrete shall be allowed.

.6 Mix concrete in accordance with the manufacturer’s written instructions.

3.4 Compaction and Vibration

.1 Concrete shall be consolidated by means of sufficient vibrators of adequate size operated by competent workers.

.2 The use of vibrators to transport concrete shall not be allowed.

.3 Concrete shall be thoroughly worked around reinforcement, around embedded items, and into corners.

.4 Compaction and vibration is to eliminate all air and stone pockets that may cause honeycombing, pitting, or planes of weakness.

3.5 Concrete Curing

.1 Ensure manufacturer's recommended curing conditions are maintained over the patch area. The more stringent curing conditions between the manufacturer’s written instructions and those outlined in this section will govern unless otherwise agreed upon by the Consultant in writing.

.2 Initiate surface concrete repair wet curing as soon as possible after the concrete has sufficiently set, and no later than 30 minutes after finishing.

.1 Minimum acceptable wet curing method on slab surfaces is installation of pre-saturated filter fabric, burlap, or cotton mats that are covered with soaker hoses and plastic sheeting. Overlap wet-curing mats 150 mm and ballast in place without marring the concrete surface.

.2 Wet curing procedures to be in accordance with manufacturer’s written requirements, but shall be no less than a one-day period at a minimum temperature of 10°C. Water shall not be permitted to evaporate from the concrete surfaces at any time within the wet cure period.

.3 Prevent airflow in the space between the wet-curing mats and the plastic sheeting. Protect wet-curing assembly from freezing during cold weather.

.3 The use of chemical curing compounds is not permitted.

.4 Protect concrete from the harmful effects of heat, cold, running or surface water, and mechanical shock.

.5 Do not place concrete when air temperature is below 10°C, or without implementing provisions to ensure proper curing of concrete when, in the opinion of the Consultant, there is a possibility of air temperature falling below 10°C. These provisions shall be reviewed by the Consultant and conform to the requirements of CSA A23.1.

.6 Maintain concrete material and forms between 15°C and 32°C until concrete placement whenever the surrounding air is below 5°C. No frozen material or material containing ice shall be used. All existing concrete, reinforcement, forms, and ground that the concrete will contact is to be free from frost.

.7 Maintain a curing temperature above 10°C for 10 days or longer to ensure proper concrete curing. Under no circumstances may dry heat be used. Provide means to humidify the air within the heated enclosure and ensure that moisture requirements for curing are maintained.

.8 Do not allow traffic onto patch until material has adequately cured to its specified 24-hour compressive strength.

.9 The Consultant will have cause to not certify payment for repairs undertaken without adequate wet-curing procedures or that become surface dry during the specified curing period.

3.6 Inspection and Testing

.1 Testing is to conform to CSA A23.2.

.2 Inspection and testing to be conducted by a testing agency designated by the Owner. The Owner will pay costs of inspection and testing described in this section.

.3 Contractor to inform testing agency 24 hours in advance of concrete placement.

.4 Testing shall include:

.1 Preparation and testing of concrete grout cubes or cylinders for compressive strength.

.2 Review manufacturer product data sheets submitted by the Contractor.

.3 Bond testing of concrete repair patches to existing concrete where designated by the Consultant.

.4 Submission of test results to the Owner, the Consultant, and the Contractor.

.5 A minimum of one set of concrete grout cubes (9 cubes) or cylinders (4 cylinders) shall be taken for compressive strength testing for of concrete patch material used each day unless otherwise directed by Consultant. Concrete test samples are to be placed in an area with similar curing conditions to that of the cast concrete.

.5 Testing procedures for concrete shall conform to the following requirements:

.1 Compression tests on concrete shall be carried out in accordance with CSA A23.1 and A23.2. Strength test on approved grout shall consist of nine grout cubes with three cubes tested at seven days and the remainder tested at 28 days. For cylinders, strength tests shall be undertaken on one cylinder each at 3 and 7 days with the remaining two tested at 28 days.

.6 The Contractor shall provide at no additional costs to the Owner:

.1 Samples of all material required for testing.

.2 Cooperation with the execution of concrete testing. which shall include protection against injury or loss of grout cubes or cylinders.

.3 Access for the testing agency to test and/ or inspect materials.

.4 Site storage facilities meeting requirements of CSA A23.2 for concrete test specimens prior to removal to laboratory.

.7 Bond Strength:

.1 After the concrete or grout has cured, the testing agency may perform bond strength tests if requested by Consultant.

.2 These cores are to be used for the evaluation of the bond strength of the new concrete to the existing by direct tensile force. The testing agency will drill through patches selected by Consultant.

.3 Failure to achieve a minimum tensile bond strength of 0.9 MPa shall constitute failure of patches.

.4 Contractor to fill all core holes with non-shrink cementitious grout upon completion of the tests.

.8 Contractor shall pay for costs of additional testing as follows:

.1 If Contractor fails to notify testing agency in event of pour cancellation.

3.7 Field Quality Control

.1 The Consultant shall evaluate bonding of fresh patch material to existing concrete after the fresh patch material has cured sufficiently.

.2 The evaluation shall be performed by sounding, using a "chain-drag" or other techniques.

.3 Hollow sounds detected in repair area provide reason to suspect inadequate bonding. Contractor to core these areas to determine bonding adequacy where requested by the Consultant.

.4 Coring shall be through the new concrete and into the existing concrete. Core diameter shall be 75 mm, or as required by the Consultant. Length of cores shall be twice the core diameter or twice the thickness of new concrete, unless otherwise requested by the Consultant.

.5 Scanning is to be completed prior to coring to avoid coring through embedded reinforcing, conduit, or other embedded items.

.6 Cores will be visually inspected after removal and any further testing that is required will be determined by the Consultant.

.7 Contractor to patch core holes.

3.8 Rejection of Defective Work

.1 The Consultant shall have the right to order additional concrete testing of any portion of repairs in accordance with CSA A23.1 if previous testing demonstrates non-conformance with specified requirements. The testing agency shall be selected by the Consultant and shall deal directly with the Consultant. Payment for costs associated with the additional concrete testing will be at the Contractor’s expense.

.2 Where it is the Consultant’s opinion that material or workmanship fails to meet the specified requirements, the work shall be replaced or repaired to the approval of the Consultant at no additional cost to the Owner.

.3 Bond failure between repair material and the existing concrete, or failure to meet compressive strength requirements based on compression testing of concrete cylinders, will result in drilling of additional core samples at the Contractor’s expense. Failure of these additional samples will require the work to be replaced or repaired to the approval of the Consultant at no additional cost to the Owner.

END OF SECTION

1.0 GENERAL

1.1 Work Included

.1 Provide all labour, materials, equipment, and supervision necessary to prepare slab-on-grade repair areas and place new concrete repair material as outlined in this Section.

.2 All repairs to painted surfaces are to be cleaned and repainted after the concrete repairs have been completed and sufficient time for concrete curing has elapsed.

1.2 References

.1 All referenced Standards are latest editions referenced by the Building Code in the Place of the Work, or latest editions if not reference by Code.

.2 Ontario Building Code

.3	CSA A23.1/CSA A23.2	Concrete Materials and Methods of Concrete Construction / Test Methods and Standard Practices for Concrete
.4	CSA A3000	Cementitious Materials Compendium
.5	CSA S413	Parking Structures
.6	ASTM C260/C260M	Standard Specification for Air-Entraining Admixtures for Concrete
.7	ICRI 310.2R	Selecting and Specifying Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair

1.3 Performance Requirements

.1 Concrete repair surfaces shall not scale or crack excessively.

.2 Concrete repair materials shall not spall or debond from existing concrete.

1.4 Submittals

.1 Submit all mix designs, product specifications, and manufacturer's recommendations for Consultant review a minimum of two weeks prior to placement or use of products.

.2 Submit details of proposed methods of concrete curing and provisions for weather protection for Consultant review a minimum of two weeks prior to placement.

.3 Submit manufacturer's product data sheets for proposed curing compounds, admixtures, and corrosion inhibitors.

.4 Do not commence placement of concrete until review is complete and proposed products and procedures are accepted by Consultant.

1.5 Qualifications

.1 Use only qualified concrete placers and finishers, with a minimum of two years' experience in similar work.

2.0 PRODUCTS

2.1 Materials

.1 Portland Cement: Type GU to CSA A3000.

.2 Aggregate: Natural stone to CSA A23.1.

.3 Water: Potable and to CSA A23.1.

.4 Air Entraining Agents: To ASTM C260/C260M.

.5 Chemicals Admixtures: To CSA A3000. Calcium chloride is not permitted.

.6 Pozzolanic Mineral Admixtures: To CSA A3000.

.7 Curing Materials: To CSA A23.1.

.8 Blended Hydraulic Cementing Material: Type 10SF to CSA A3000.

.9 Supplementary Cementing Material: To CSA A3000.

.10 Superplasticizing Admixture: To CSA A3000.

2.2 Mix Design Requirements – Interior Concrete Slab-on-Grade

.1 Normal weight “ready mixed” Portland cement concrete mixed in accordance with Section 4, Durability Requirements, Class of Exposure N of CSA A23.1, with the following requirements:

	Description	Requirements
.1	Compressive Strength (28 days)	30 MPa minimum
.2	Air Content	5.0% to 8.0%
.3	Aggregate Size	20 mm
.4	Slump	
	- Prior to Superplasticizer	50 mm maximum ± 20 mm
	- After Superplasticizer	125 mm maximum ± 25 mm
.5	Water/Cementing Materials Ratio	0.45 maximum
.6	Cement Content	335 kg/m^3 minimum
.7	Cement – Type GU	Normal Portland Cement
.8	Concrete Density	Normal weight (2,360 kg/m^3)

.2 Non-chloride based plasticizers shall be used to facilitate concrete placement as required. Costs associated with the use of such materials shall be included in the contract price. Plasticizer shall be compatible with the air entrainment agent.

.3 Note that although a maximum slump is specified, the Contractor shall endeavour to provide concrete at the minimum slump that permits placement and handling.

.4 Mix design is the responsibility of the Contractor.

.5 Do not add calcium chloride to concrete.

.6 Addition of water to the concrete mix shall not be permitted on-site. The Contractor shall be permitted to adjust only the quantities of superplasticizer and air entraining agent on-site.

.7 No concrete shall be placed later than two hours (120 min) after the time of batching. No re-tempered concrete shall be allowed.

.8 Should the Contractor wish to employ superplasticizers to facilitate concrete placement, the Contractor must demonstrate to the satisfaction of the Consultant that such admixtures are non-chloride based and will have no deleterious effect on the durability or strength of the proposed concrete mix.

2.3 Air Entrainment

.1 Air entraining chemical admixtures shall be according to ASTM C260. Ensure chemical admixtures are compatible with each other and that they will not negatively impact performance of the concrete.

.2 The total fresh air content of air entrained concrete will be tested via the pressure method with an air meter prior to the placement of concrete in accordance with CSA A23.2.

.3 Air content in hardened concrete shall meet the requirements of CSA A23.1 and this specification and, if directed by the Consultant, will be tested and determined in accordance with ASTM C457 as outlined in CSA A23.1.

2.4 Cement Slurry Bonding Agent

.1 Cement slurry grout consisting of a mixture of one part cement to one part fine aggregate and enough water to make a “heavy cream” consistency. Aggregate to conform to CSA A23.1 Clause 4.2.3.

3.0 EXECUTION

3.1 Concrete Surface Preparation

.1 All concrete surfaces to receive new concrete shall have a minimum No. 6 CSP per ICRI 310.2R and be thoroughly abrasive-blast prior to concrete placement, unless surfaces have received hydro-demolition acceptable to Consultant.

.2 Clean all existing concrete surfaces to receive new concrete of foreign material, dust, debris, grease, and oil as directed by Consultant. Emulsifiers shall be required for surfaces containing grease or oil.

.3 Notify Consultant to review surfaces prior to concrete placement.

3.2 Concrete Placement - Ready-Mixed Concrete

.1 The patch perimeter shall be thoroughly wetted for a minimum of three hours, and longer where required to achieve a saturated surface dry (SSD) state, prior to placing of concrete.

.2 Puddles or free water shall be blown or drained from the patch area and the existing concrete surfaces permitted to dry to a saturated surface dry (SSD) state prior to application of cement slurry.

.3 Apply a cement slurry bonding agent to the surface of the concrete just prior to placing new concrete.

.4 The cement slurry bonding agent shall be broomed or scrubbed into the deck to fully saturate the existing concrete surfaces but not to be allowed to puddle.

.5 Pre-wet fabric, burlap, cotton mats, or pre-approved alternative shall be available on site prior to placement of concrete to allow for immediate placement overtop of new concrete patches after their initial set.

.6 Addition of water shall conform to CSA A23.1. Do not add water after the initial introduction of mixing water at the plant unless the measured slump tested at the onset of discharge is less than specified requirements and less than 60 minutes have elapsed from the time of batching. Water may only be added in this circumstance under the on-site direction of the producer’s Quality Control Inspector. In no instance shall more than 16 L of water be added per cubic metre of concrete. The resulting concrete must satisfy specified requirements. The responsibility for the product will remain with the Contractor.

.7 For new sump pit at slab-on-grade, place new dense concrete thoroughly compacted and vibrated into place to ensure good bond.

.1 Ensure reinforcing steel is secured in place and is not disturbed during placement.

.2 Vibrators are to be used for consolidation purposes only and are not to be used to an extent that causes segregation of the concrete.

.3 Internal vibrators shall conform to CSA A23.1 Clause 7.2.5.2 and Table 19: Internal Vibrators for Various Applications.

.4 Vibrators shall be inserted into concrete perpendicular to concrete surface.

.5 Vibrators shall be inserted such that zones of consolidation always overlap.

.8 Concrete surfaces to be flush with existing surfaces, free of voids and cracks, and have a uniform surface and transition to the existing surface.

.9 Finish concrete in accordance with CSA A23.1/A23.2. Initial finish shall be completed before any bleeding or free water is present on the surface of the concrete. Final finishing shall commence after the bleed water has disappeared and when the concrete has stiffened sufficiently to prevent the working of excess mortar to the surface. Do not add water to finish.

.10 Do not overwork concrete surface. Wood float finish is acceptable.

.11 Do not use steel trowels with air-entrained concrete. For air-entrained concrete, the surface can be further leveled and consolidated with a magnesium bull float for larger repairs or a magnesium trowel for smaller repairs. One or more passes shall be made at suitable time intervals to obtain a level finish free of float marks. Do not work bleed water on the concrete surface into the concrete during finishing.

.12 If mechanical floats are to be used for final finishing of larger air entrained concrete surfaces, the mechanical floating of the concrete surface shall commence as soon as the concrete surface has reached initial set and will support the weight of a power float machine equipped with magnesium float blades and the operator.

.13 Tool crack control joints as indicated on Drawings.

.14 Cure concrete as outlined in this section.

.15 Areas of concrete repair completely through the thickness of the slab shall be patched with concrete that is well consolidated and vibrated into place. Edges of through slab repair are to be grinded, hand patched, etc. as required to produce smooth (form like) transition from new patch material to the existing slab.

.16 Do not load newly placed repair patches until 75% of the specified 28-day strength has been reached.

3.3 Concrete Mixing and Placing

.1 Concrete shall be machine mixed. Mixing and placing shall be in accordance with CSA A23.1.

.2 Concrete shall be conveyed from the mixer to the place of deposit by methods that will ensure the required quality of concrete. Equipment for conveying the concrete shall be of such size and design as shall ensure a practically continuous flow of concrete at the delivery end without separation of materials.

.3 Concrete shall be deposited into patch repairs as near as practicable to its final position to avoid re-handling.

.4 Depositing shall be continuous throughout each division and the concrete shall be placed and worked so that a uniform texture will be produced.

.5 No concrete shall be placed later than one half hour after leaving the mixer. No re-tempered concrete shall be placed.

3.4 Compaction and Vibration

.1 Concrete shall be consolidated by means of sufficient vibrators of adequate size operated by competent workers.

.2 The use of vibrators to transport concrete shall not be allowed.

.3 Concrete shall be thoroughly worked around reinforcement, around embedded items, and into corners.

.4 Compaction and vibration is to eliminate all air and stone pockets that may cause honeycombing, pitting, or planes of weakness.

3.5 Concrete Curing

.1 Incorporate fog-mist curing methods or evaporation retarder in order to prevent loss of moisture from concrete repair surfaces in all rapid drying conditions. In these conditions, fog-mist curing shall be initiated immediately after initial finishing, and continued until concrete is covered with wet-curing mats. Rapid-drying conditions may include any of the following:

.1 High concrete ambient temperatures

.2 Low humidity

.3 High winds

.4 Direct sunlight

.5 Heated interiors during cold weather.

.2 Initiate surface concrete repair wet curing as soon as possible after the concrete has sufficiently set, and no later than 30 minutes after finishing.

.1 Minimum acceptable wet curing method on slab surfaces is installation of pre-saturated filter fabric, burlap, or cotton mats that are covered with soaker hoses and plastic sheeting. Overlap wet-curing mats 150 mm and ballast in place without marring the concrete surface.

.2 Wet curing procedures are to keep the concrete surfaces continuously wet for a period of at least 10 consecutive days at a minimum temperature of 10°C. Do not permit water to evaporate completely from the concrete surfaces at any time within the wet cure period.

.3 Prevent airflow in the space between the wet-curing mats and the plastic sheeting.

.3 Provide the Consultant with proposed fog-curing and wet-curing procedures at least 2 weeks prior to concrete placement. Any revisions to the proposed procedures must be submitted to the Consultant for review a minimum of one week prior to concrete placement.

.4 The use of chemical curing compounds is not permitted.

.5 Protect concrete from the harmful effects of heat, cold, running or surface water, and mechanical shock.

.6 Do not place concrete when air temperature is below 10°C, or without implementing provisions to ensure proper curing of concrete when -- in the opinion of the Consultant -- there is a possibility of air temperature falling below 10°C. These provisions shall be reviewed by the Consultant and conform to the requirements of CSA A23.1.

.7 Maintain concrete material and forms between 15°C and 32°C until concrete placement whenever the surrounding air is below 5°C. No frozen material or material containing ice shall be used. All existing concrete, reinforcement, forms, and ground that the concrete will contact is to be free from frost.

.8 Maintain a curing temperature above 10°C for 10 days or longer to ensure proper concrete curing. Under no circumstances may dry heat be used. Provide means to humidify the air within the heated enclosure and ensure that moisture requirements for curing are maintained.

.9 Do not load patch until material has adequately cured to 75% of its specified 28-day compressive strength.

.10 The Consultant will have cause to not certify payment for repairs undertaken without adequate wet-curing procedures or that become surface dry during the specified curing period.

3.6 Inspection and Testing

.1 To conform to CSA A23.2.

.2 Inspection and testing to be conducted by a testing agency designated by the Owner. The Owner will pay costs of inspection and testing described in this section.

.3 Contractor to inform testing agency 24 hours in advance of concrete placement.

.4 Testing shall include:

.1 Preparation and testing of concrete cylinders for compressive strength.

.2 Establishment of slump and the percentage of entrained air for each concrete truck, unless otherwise directed by Consultant.

.3 Review of concrete mix designs submitted by the Contractor.

.4 Bond testing of concrete repair patches to existing concrete where designated by the Consultant.

.5 Submission of test results to the Owner, Consultant, and Contractor.

.6 A minimum of one set (4 cylinders) of concrete cylinders shall be taken for compressive strength testing of concrete patch material used each day unless otherwise directed by Consultant. Concrete cylinders are to be placed in an area with similar curing conditions to that of the cast concrete.

.5 Testing procedures for concrete shall conform to the following requirements:

.1 Compression tests on concrete shall be carried out in accordance with CSA A23.2 and A23.1 except that a Strength Test shall consist of four test cylinders and one cylinder shall be tested at the age of 3 days, the second cylinder shall be tested at the age of 7 days, and the remaining two at an age of 28 days.

.2 Slump and air entrainment test shall be conducted at the time of sampling concrete for compressive tests and shall be conducted in conformity with CSA A23.2. Slump and air entrainment tests shall be performed on all loads used each day.

.6 The Contractor shall provide at no additional costs to the Owner:

.1 Samples of all material required for testing.

.2 Cooperation with the execution of concrete testing, which shall include protection against injury or loss of cylinders.

.3 Access for the testing agency to test and/ or inspect materials.

.4 Site storage facilities meeting requirements of CSA A23.2 for concrete test specimens prior to removal to laboratory.

.7 Bond Strength:

.1 After the concrete repairs have cured, the testing agency may perform bond strength tests where requested by the Consultant.

.2 These cores are to be used for the evaluation of the bond strength of the new concrete to the existing by direct tensile force. Testing agency will perform the required drilling through patches selected by Consultant.

.3 Failure to achieve a minimum tensile bond strength of 0.9 MPa shall constitute failure of patches.

.4 Contractor to fill all core holes with non-shrink cementitious grout upon completion of the tests.

.8 Contractor shall pay for costs of additional testing as follows:

.1 Additional standby time required due to late delivery by concrete supplier.

.2 Additional slump and/or air tests if first tests indicate that concrete properties are outside of specified requirements and the Contractor wishes to modify the mix and retest. All modifications are to be approved by the Consultant.

.3 If the Contractor fails to notify the testing agency of pour cancellation.

3.7 Field Quality Control

.1 The Consultant shall evaluate bonding of fresh patch material to existing concrete after the fresh patch material has cured sufficiently.

.2 The evaluation shall be performed by acoustical sounding, using a "chain-drag" or other techniques.

.3 Hollow sounds detected in repair area provide reason to suspect inadequate bonding. Contractor to core these areas to determine bonding adequacy where requested by the Consultant.

.4 Coring shall be through the new concrete and into the existing concrete. Core diameter shall be 75 mm, or as required by the Consultant. Length of cores shall be twice the core diameter or twice the thickness of new concrete, unless otherwise requested by the Consultant.

.5 Scanning is to be completed prior to coring to avoid coring through embedded reinforcing, conduit, or other embedded items.

.6 Cores will be visually inspected after removal and any further testing that is required will be determined by the Consultant.

.7 Contractor to patch core holes.

3.8 Rejection of Defective Work

.1 The Consultant shall have the right to order additional concrete testing of any portion of repairs in accordance with CSA A23.1 if previous testing demonstrates non-conformance with specified requirements. The testing company shall be selected by the Consultant and shall deal directly with the Consultant. Payment for costs associated with the additional concrete testing will be at the Contractor’s expense.

.2 Where it is the Consultant’s opinion that material or workmanship fails to meet the specified requirements, the work shall be replaced or repaired to the approval of the Consultant at no additional cost to the Owner.

.3 Bond failure between repair material and the existing concrete, or failure to meet compressive strength requirements based on compression testing of concrete cylinders, will result in drilling of additional core samples at the Contractor's expense. Failure of these additional samples will require the work to be replaced or repaired to the approval of the Consultant at no additional cost to the Owner.

END OF SECTION

1.0 GENERAL

1.1 Work Included

.1 Supply, install, and remove shores as required to support the structure during new sump pit construction.

.2 Structural shoring costs are included in Lump Sum Prices.

1.2 Reference Standards

.1 All referenced Standards are latest editions referenced by the Building Code in the Place of the Work, or latest editions if not referenced by Code.

.2 Ontario Building Code

.3 CSA S269.1 Falsework and Formwork

.4 CSA S269.2 Access Scaffolding for Construction Purposes

.5 CSA S350 Code of Practice for Safety in Demolition of Structures

2.0 PRODUCTS

2.1 Equipment and Materials

.1 Unless otherwise specified by Contract Documents, use only commercially manufactured shoring and bracing systems.

.2 Minimum capacity of commercially manufactured equipment as follows:

.1 Post shores with a minimum capacity of 24 kN at 2.5 m height

.2 Standard scaffold frames with a minimum capacity of 22 kN per leg.

.3 Heavy-duty scaffold frames with a minimum capacity of 44 kN per leg.

.3 Manufactured shoring systems shall consist of pre-engineered steel or aluminium components, designed and produced specifically for structural shoring, and installed in accordance with manufacturer’s recommendations.

.4 Shoring members need not be new materials. Previously used materials are acceptable, provided that they are in good repair, unbent, and undamaged.

.5 Use of “scaffolding” equipment (i.e. where not specifically intended for use as structural shoring of heavy loadings), wood shoring or bracing members, or tube-and-coupler assemblies require preapproval by the Consultant or Specialty Professional Engineer.

.1 Use of wood materials shall be limited to wedges and shims, where not supporting vertical loading and where not subject to shrinkage or potential deterioration in wet conditions or long-term application.

.6 Design of shoring members or structural steel members and components that are not of a pre-manufactured system shall be in accordance with provisions of governing Building Code and Standards for specific material of member.

3.0 EXECUTION

3.1 Structural Slab Shoring

.1 Support the structure during the Work. Supply and install all shoring and bracing necessary to prevent movement, settlement, or damage to the structure, services, and property.

.2 Provide additional shoring prior to concrete removal where the Consultant deems it necessary to prevent movement, settlement, or damage to the structure, services, and property based on identified concrete delamination repair locations.

.3 Provide additional shoring to support suspended sprinkler, piping and mechanical systems during the Work.

.4 Provide additional shores at the Contractor’s expense where it is necessary to support stockpiled rubble and equipment.

.5 Formwork shoring requirements are in addition to structural shoring requirements.

.6 Install and arrange slab shoring in a manner that prevents sharp projections that may cause personnel injury.

.7 Modify the position of shores if requested by the Consultant at no additional cost to Owner.

.8 Manage and maintain shoring by regularly inspecting and checking installed shoring and bracing components to ensure that supports, fastenings, wedges, ties, and parts are secure.

.9 Tighten all shores below the level being repaired prior to placement of new concrete repair material.

.10 Do not strip shores until concrete repair material has reached 75% of design strength, and not sooner than seven days after concrete placement for full-depth slab repairs.

3.2 Lateral Wall Bracing

.1 Install a lateral bracing system in areas where large sections of suspended slab are being completely removed adjacent to exterior foundation walls. The lateral bracing system must be sufficient to support the lateral forces produced by the grade behind these walls.

.2 The lateral bracing drawings are to form part of the required engineered shop drawing submission.

.3 Contractor is to install bracing system prior to concrete removal.

.4 Bracing system is to remain in place until new concrete has attained 75% of its specified strength.

.5 Contractor is responsible for the management and maintenance of bracing and for removal of all bracing upon completion of contract.

END OF SECTION

1.0 GENERAL

1.1 Work Included

.1 Remove sound and unsound concrete from slab-on-grade where directed by Consultant and as described herein.

2.0 PRODUCTS

2.1 Equipment

.1 Provide hand-held jackhammers for concrete removal that are capable of efficiently removing sound and unsound concrete without causing excessive or unwanted removal.

.2 Maximum jackhammer size is 15 kg. Light chipping hammers are to be used where the Consultant deems it necessary to reduce the amount of concrete breakage. Maximum light chipping hammer size is 7 kg. The use of light chipping hammers is at no additional cost to the Owner.

.3 Chipping hammers shall be electrically powered.

3.0 EXECUTION

3.1 Full Slab Depth Concrete Removal

.1 Remove concrete in areas indicated on the Drawings and noted by the Consultant. The areas shall be initially located by the Contractor and marked on the concrete surface with a durable red-coloured paint. The Consultant will then review the markings and mark out the actual area of concrete to be removed.

.2 Use light chipping hammers at patch perimeters to minimize damage to sound concrete.

.3 Upon exposure of visibly corroded or debonded reinforcement, additional concrete removal shall be performed until bars appear to be rust-free for a minimum length of 75 mm and perimeter of designated area is sound or until otherwise directed by the Consultant.

.4 Excess or unnecessary concrete removal to be at no extra cost to the Contract.

.5 Outline patch area with a 13-mm deep vertical sawcut at surface of slab as close as possible to limits of concrete already removed. Reduce sawcut depth if necessary to avoid cutting reinforcement. Remove concrete to sawcut taking precautions to avoid damaging sawcut edge. Edges with spalls or chips will be rejected and shall be re-sawcut at Contractor's expense.

.6 Call for review by Consultant to confirm acceptability of patch preparation prior to cleaning of reinforcement.

3.2 Existing Exposed Electrical Services

.1 The Contractor shall perform temporary removal, replacement, or relocation of existing electrical wiring, conduit, equipment, fixtures, or hardware in designated concrete removal areas as required for completion of the Work.

.2 All exposed conduit, fixtures, attached devices, wet-sprinkler fire system piping, heads and pull stations, fire extinguishers, mechanical system components, louvers and ducts are to be protected or Contractor to correct damages at their own expense. The Contractor shall promptly report any damage to the Owner and the Consultant.

.3 Prior to commencing the Work, the Contractor shall contact the Owner to locate all protective or alarm systems and sensors. All services shall be protected against damage or interruption. The Contractor shall provide the Owner with minimum 48 hours advance notice of any necessary interruption. All claims resulting from damage shall be the responsibility of the Contractor.

3.3 Existing Embedded Electrical Services

.1 It is the Contractor's responsibility to ensure that all potential areas of buried conduit be identified and that all high voltage systems located in the area of work are switched off to prevent possible injury. Coordinate requirements with Owner.

.2 The Contractor shall take the utmost caution during concrete removal operations in order to prevent damage to embedded conduits. Any damage caused to such conduits will be immediately reported to the Owner and Consultant. In no instance will damaged or deteriorated conduits be covered up by the Contractor without specific approval from the Owner.

.3 Contractor to repair or abandon damaged conduit within the slab at the discretion of the Consultant. Owner to pay for repairs provided that damage did not result from Contractor's negligence.

.4 Contractor to coordinate required repairs with designated Electrical Sub-Contractor. Contractor shall designate Electrical Sub-Contractor for the Work.

END OF SECTION

1.0 GENERAL

1.1 Work Included

.1 Clean and prepare existing reinforcement exposed within new sump pit opening at existing concrete slab-on-grade and where otherwise designated by the Consultant.

.2 Supplement corroded or damaged reinforcement with new reinforcing steel and accessories, including supply, fabrication, handling, and placing.

1.2 Reference Standards

.1 All Reference Standards are latest editions referenced by the building code in the Place of the Work, or latest editions if not referenced by Code.

.2 Ontario Building Code

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

.4 CSA G30.18 Carbon Steel Bars for Concrete Reinforcement

.5 ACI Manual of Standard Practice for Detailing – 28th Edition

.6 CSA W186 Welding of Reinforcing Bars in Reinforced Concrete Construction

.7 Reinforcing Steel Institute of Canada (RSIC) Manual of Standard Practice

.8 SP-71 (08) ASTM Standards in 318-08

.9 ASTM A775/A775M Standard Specification for Epoxy-Coated Reinforcing Steel Bars

1.3 Product Handling

.1 Protect reinforcement in a manner that prevents excessive rusting and fouling with dirt, grease, form oil, and other bond-breaking coatings.

.2 Reinforcement shall be free from excessive corrosion, mud, oil or other coatings that adversely affect its bonding capacity at the time concrete is placed.

2.0 EXECUTION

2.1 Preparation - Reinforcement in Place

.1 Exposed reinforcement and steel shall be completely cleaned of cement paste, corrosion, oil, and contaminants. Dry abrasive-blast clean to near-white blast, completely cleaned of all grease, oil, dirt, mill scale, cement paste, debonded epoxy, etc. Additional cleaning shall be performed if subsequent corrosion occurs after initial cleaning.

.2 Wire brush, grinding, and similar hand-cleaning methods shall not be permitted in lieu of abrasive-blast cleaning of reinforcement, unless approved by the Consultant.

.3 The Contractor may elect to cut, remove, and replace damaged or corroded reinforcement with new reinforcement in lieu of cleaning existing exposed reinforcement, subject to approval of the Consultant. Provide required tension lap splices with existing cleaned reinforcement at no additional cost to the Owner and Consultant’s approval.

2.2 Installation

.1 Replace or supplement damaged or severely corroded reinforcement exposed in concrete delamination repair patches with new plain reinforcement where existing reinforcing steel has a section loss of 20% or greater.

.2 Replace or supplement damaged or severely corroded reinforcement where otherwise directed by the Consultant.

.3 Replacement or supplemental reinforcing bars shall be the same bar size or greater than the original bar.

.4 Additional concrete removal may be required to allow for placement of supplemental reinforcing bars. The length of the supplemental bars shall be equal to the length of the deteriorated segment of the existing bars, plus the required lap splices at each end. Splicing requirements shall be in accordance with indicated Reference Standards. Supplemental bars shall be placed parallel to, and approximately 20 mm from, the existing bars.

.5 Additional concrete removal required for supplemental reinforcement placement will be paid by Owner except where Contractor elects to replace bars in lieu of abrasive-blast cleaning.

.6 Reinforcement that is fully exposed in repair areas for the entire bar length shall be removed and replaced with new reinforcement of the same bar size or greater at no additional cost to the Owner.

.7 Accurately place supplemental reinforcement and secure existing reinforcement exposed in the delamination repair patches to maintain original design layout.

.8 Reinforcement shall be firmly tied and supported by bar supports and side form spacers to ensure proper concrete cover and spacing within allowable tolerances before and during concrete placement.

.9 Bar supports shall be sufficient in number and strength to carry the reinforcement they support and prevent displacement by workers or equipment before and during concrete placement.

.10 Bars shall be tied at all intersections where spacing is greater than 250 mm in each direction and at alternate intersections where spacing is less than 250 mm in each direction.

.11 Bars may be moved as necessary to avoid interference with other reinforcing steel, conduits, and embedded items. If bars are moved more than one bar diameter, or enough to exceed specified tolerances, the resulting arrangement of bars shall be subject to Consultant’s approval.

2.3 Welding

.1 Any welding of reinforcing steel shall be in accordance with CSA W186.

.2 Copies of the Canadian Welding Bureau approved welding procedure and certificate of current operator qualification shall be submitted to the Consultant prior to commencement of welding.

2.4 Inspection and Testing

.1 No concrete shall be placed until Consultant has reviewed reinforcing in-place. Provide minimum 24 hours of notice of time when reinforcement will be substantially in place and ready for Consultant’s review.

END OF SECTION

1.0 General

1.1 Work Included

.1 Provide all labour, materials, equipment, and services necessary to supply, erect, and strip all formwork and falsework for poured-in-place concrete shown or indicated on the Contract Drawings and Specifications.

1.2 Reference Standards

.1 All Reference Standards are latest editions referenced by the building code in the Place of the Work, or latest editions if not referenced by Code.

.2 Ontario Building Code

.3	CSA A23.1/CSA A23.2	Concrete Materials and Methods of Concrete Construction / Test Methods and Standard Practices for Concrete
.4	CSA S269.1	Falsework and Formwork
.5	ACI SP-004	Formwork for Concrete
.6	ACI 347	Recommended Practice for Concrete Formwork
.7	CSA O86	Engineering Design in Wood (Limit States Design)
.8	CSA O121	Douglas Fir Plywood
.9	CSA O153	Poplar Plywood

1.3 Handling Requirements

.1 Protect formwork materials before, during, and after installation. Protect installed work and materials of other Sections.

.2 In the event of damage, make required repairs or replacements to Consultant’s requirements at no additional cost to the Owner.

2.0 PRODUCTS

2.1 Formwork Materials

.1 Form Material:

.1 Exposed Surfaces: Use metal forms, plywood forms, or plywood lined forms of sufficient structural strength. Plywood to be to CSA O121 or CSA O153. Plywood lining to be new GIS exterior grade fir plywood manufactured with waterproof glue.

.2 Unexposed Surfaces: Use metal forms, plywood forms, or wood lumber. Plywood to be to CSA O121 or CSA O153. Wood lumber to be to CSA O86.

.3 Plywood and Wood Formwork Materials: Material to be to CSA S269.1. Material is to be free from warping and sawn straight so that lines and shapes are accurately retained.

.4 Formwork for unexposed surfaces shall be made with a good grade of lumber or plywood and fitted so that there is no leakage of mortar.

.2 Ties and Spreaders:

.1 Form ties shall be adjustable in length to permit tightening of forms. Use only the snap-off type of form tie that will leave no metal within 25 mm of the concrete surface after removal. Twisted wire form ties are not acceptable.

.3 Form Release Agent:

.1 Form release agent shall be a Consultant-approved chemical agent that is not an oil-based product.

3.0 EXECUTION

3.1 Formwork

.1 Lines and Levels

.1 Verify lines, levels, and column centers before proceeding with work and ensure that dimensions agree with Drawings.

.2 Coordinate forming and setting of recesses, chases, sleeves, inserts, bolts, and hangers.

.2 Design

.1 Design, construct, and erect formwork in accordance with CSA A23.1, CSA S269.1, ACI 347R, and all applicable construction safety regulations at the Place of Work.

.2 Build forms sufficiently strong and rigid to sustain the weight or fluid pressure of the concrete without noticeable deflection. Ensure forms are fitted sufficiently tight to prevent mortar leakage.

.3 The Contractor shall be responsible for design and construction of falsework.

.4 Do not exceed the safe live load of the structure, considering the strength and age of the concrete, with any construction or shoring loads.

.5 Provide 20 mm x 20 mm chamfer strips at exposed corners or edges of columns, walls, beams, and slabs.

.3 Construction:

.1 Construct forms so that the finished concrete will conform to the shape and dimensions shown on the Drawings.

.2 Construct forms so that they may be dismantled and removed without damaging the concrete.

.3 Set shores on wedges or use adjustable shores so they may be removed without causing undue strains in the concrete.

.4 Provide temporary openings at the bottom of column and wall forms to facilitate cleaning and review. Use water to flush out cuttings, shavings, debris, snow and ice, and foreign matter. Ensure that water and debris fully drain to the exterior through clean-out ports, and close the openings with a patch, flush on the inside.

.5 Notify the Consultant when formwork is completed and cleaned to allow for review.

.4 Treatment of Forms:

.1 Install form release agent on form surfaces and allow to dry before placing reinforcing steel, anchoring devices, and embedded parts.

.2 Keep untreated forms wetted down to prevent shrinkage before placing concrete and wet surfaces without allowing ponding at time of placing concrete.

.5 Alignment:

.1 Provide suitable means for checking the alignment and elevation of formwork and check frequently during concrete placement.

.2 Carry out corrective wedging as required until concrete is in place.

.3 Remove concrete that becomes misaligned during placing to satisfaction of Consultant.

.4 Align forms to ensure movement and deflections of the finished product are confined.

.5 Tolerances for all concrete work shall conform to the requirements of CSA A23.1 and ACI 347.

.6 Stripping:

.1 Do not remove shoring or strip formwork until the concrete has gained sufficient strength to carry dead loads and construction loads that are likely to be imposed. Notify the Consultant before removing formwork.

.2 Remove falsework progressively in accordance with CSA S269.1. Ensure that no shock loads or unbalanced loads are imposed upon the structure during removal.

.3 Loosen forms carefully using a method that prevents spalling and damage to the concrete surface and edges. Do not use wedge pry bars, hammers, or other tools against exposed concrete surfaces.

.4 Leave forms loosely in place for protection until curing requirements are complete.

.5 Completely remove forms from under steps and within void spaces. Provide temporary openings, if necessary.

.6 Remove metal spreader ties on exposed concrete by removing or snapping off inside the wall surface. Point up and patch the resulting pockets flush to surrounding areas.

.7 Re-Use of Formwork:

.1 Forms may be re-used after adequate cleaning if the surfaces are not cracked or roughened. The formwork shall be trimmed and properly patched to provide a smooth surface.

3.2 Inserts and Embedded Items

.1 Confirm the location of sleeves, openings, etc. that are shown on the Structural Drawings against Mechanical drawings. Any sleeves, openings, etc. that are not shown on the Structural Drawings must be approved by the Consultant.

END OF SECTION

1.0 GENERAL

1.1 Work Included

.1 Provide all labour, materials, equipment, and services necessary to supply and install new reinforcing steel work shown on indicated in all the Contract Drawings and Specifications, including accessories such as hanger bars, spirals, wire ties, support bars, chairs, spacers, supports, or other devices required to position reinforcing properly.

1.2 Reference Standards

.1 All referenced Standards are latest editions referenced by the Building Code in the Place of the Work, or latest editions if not reference by Code.

.2 Ontario Building Code

.3	CSA A23.1/CSA A23.2	Concrete Materials and Methods of Concrete Construction / Test Methods and Standard Practices for Concrete
.4	CSA A23.3	Design of Concrete Structures
.5	CSA G30.5	Welded Steel Wire Fabric for Concrete Reinforcement *(Withdrawn)*
.6	CSA G30.18	Carbon Steel Bars for Concrete Reinforcement
.7	ASTM A767/A767M	Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement
.8	ASTM A775/A775M	Standard Specification for Epoxy-Coated Steel Reinforcing Bars

.9 American Concrete Institute (ACI) Manual of Standard Practice for Detailing Reinforced Concrete Structures

.10 Reinforcing Steel Institute of Canada (RSIC) Manual of Standard Practice

.11	CSA S413	Parking Structures
.12	SP-71	ASTM Standards in 318-08
.13	CSA W186	Welding of Reinforcing Bars in Reinforced Concrete Construction

1.3 Submittals

.1 Mill Tests:

.1 Upon request, provide the Consultant with a certified copy of mill tests of steel supplied, showing physical and chemical analysis, minimum two weeks prior to commencing reinforcing work.

1.4 Product Delivery, Storage, and Handling

.1 Store and protect reinforcement in a manner to prevent excessive rusting and fouling with dirt, grease, form-oil, and other bond-breaking coatings.

.2 Reinforcement at the time concrete is placed shall be free from excessive rusting, mud, oil, or other coatings that adversely affect its bonding capacity.

.3 Special care shall be taken when handling epoxy-coated reinforcing steel to prevent damage to the epoxy coating. Bundle and transport epoxy-coated reinforcement in accordance with ASTM A775/A775M. Epoxy-coated reinforcing bars shall not be dropped or dragged, and shall be lifted with spreaders and non-metallic slings. Bar-to-bar abrasion and excessive handling of bundles must be prevented.

.4 The contractor shall repair all damages to the epoxy coating using a manufacturer’s approved epoxy patching materials. If damaged areas rust before being repaired, the rust shall be completely removed before the steel surfaces are repaired.

.5 Coat cut ends of epoxy coated reinforcing with approved epoxy patching material.

2.0 PRODUCTS

2.1 Materials

.1 Reinforcing steel bars shall conform to CSA G30.18 (grade 400 MPa) unless otherwise specified herein or on the drawings. Epoxy Coated finish.

.2 Reinforcing bars to be welded shall conform to CSA G30.18.

.3 Welded wire fabric shall conform to CSA G30.5. Sizes and gauges as shown on the drawings.

.4 Bar supports shall conform to ACI 316 unless otherwise approved by the Consultant.

.5 Chairs, bolsters, bar supports, and spacers shall be epoxy coated or plastic. The use of pebbles, pieces of broken stone or brick, pipe, or wooden blocks will not be permitted.

.6 Tie wire for coated reinforcing shall be plastic-coated.

.7 Mechanical splices to Consultant's approval.

2.2 Fabrication

.1 Fabricate reinforcing to CSA A23.1.

.2 Fabricate reinforcing steel within the following tolerances:

.1	Sheared length plus or minus	25 mm
.2	Depth of truss bar plus or minus	10 mm
.3	Outside dimension of stirrups, ties and spirals, plus or minus	10 mm
.4	Other bends plus or minus	25 mm

.3 Colour-code each bar to correspond with code mark appearing on bar list.

.4 Ship bundles of bar reinforcement clearly identified in accordance with bar lists.

.5 Bars shall not be field bent, straightened, or re-bent, except where indicated or authorized by the Consultant. When field bending is authorized, bend without heat, applying slow and steady pressure. Replace bars that develop cracks or splits.

.6 Splicing of reinforcing bars, unless indicated on the drawings, is prohibited except with the written approval of the Consultant. Such splices shall conform to the splice length for that class of splice according to CSA A23.3. Splices, where possible, shall be staggered.

.7 Fabrication, handling, and shipping of epoxy-coated steel shall conform to CSA S413.

2.3 Epoxy-Coated Steel

.1 All top reinforcing steel (reinforcing within 100 mm of the top surface of the concrete) in parking deck slabs and traffic ramps shall be coated with a fusion-bonded epoxy coating in accordance with ASTM A775/A775M.

.2 With each batch of coating material, provide a written certification properly identifying batch number, material, quantity represented, date of manufacture, name and address of manufacturer, and a statement that supplied coating material is the same composition as that pre-qualified. A batch is defined as quality of coating material designated by the manufacturer in their production quality control program.

3.0 EXECUTION

3.1 Installation

.1 Reinforcement shall be accurately placed in the positions shown on the drawings, firmly tied, and supported by bar supports and side form spacers to assure proper concrete cover and spacing within allowable tolerances before and during placing of concrete.

.2 Bar supports shall be sufficient in number and strength to carry the reinforcement they support and prevent displacement by workers or equipment before and during concreting. Bars shall be tied at all intersections, except where spacing is less than 250 mm in each direction, when alternate intersections shall be tied.

.3 Bars shall be placed to the following tolerances unless noted otherwise.

.1 Clear concrete protection of reinforcement 5 mm ±.

.2 Where the depth of a flexural member, thickness of a wall or smallest dimension of a column is:

.1 200 mm or less 5 mm ±.

.2 larger than 200 mm but less than 600 mm 10 mm ±.

.3 600 mm or larger 20 mm ±.

Lateral spacing of these bars shall be within 30 mm ± of the specified spacing.

.3 For longitudinal location of bends and ends of bars 50 mm ±.

.4 As Item 3 at discontinuous ends of members 20 mm ±.

.5 Specified spacing between bars 10 mm ±.

.4 Bars may be moved as necessary to avoid interference with other reinforcing steel, conduits or embedded items. If bars are moved more than one bar diameter or enough to exceed the specified tolerances, the resulting arrangement of bars shall be subject to approval of the Consultant.

3.2 Welding

.1 Any welding of reinforcing steel shall be in accordance with CSA W186.

.2 Copies of the Canadian Welding Bureau approved welding procedure and certificate of current operator qualification shall be submitted to the Consultant prior to commencement of welding.

3.3 Inspection and Testing

.1 No concrete shall be placed until the Consultant has completed their review of reinforcing in place. The Contractor shall provide a minimum of 24 hours notice of the time when the reinforcement will be substantially in place and ready for the Consultant’s review.

.2 Inspection and testing of factory-coated reinforcement to be conducted by a testing agency designated by the Consultant. The Owner will pay cost of inspection and testing described in this Section.

.3 Inspection and testing of reinforcement coated in place shall include visual inspection with flashlight and mirror.

END OF SECTION

1.0 GENERAL

1.1 Reference Standards

.1 All referenced Standards are latest editions referenced by the Building Code in the Place of the Work, or latest editions if not referenced by Code.

.2 Ontario Building Code

.3	ASTM A53/A53M	Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
.4	ASTM A269	Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service
.5	ASTM A307	Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 PSI Tensile Strength
.6	CAN/CGSB-1.40	Anticorrosive Structural Steel Alkyd Primer (Withdrawn)
.7	CAN/CGSB-1.108	Bituminous Solvent Type Paint (Withdrawn)
.8	CAN/CGSB-1.181	Ready-Mixed Organic Zinc-Rich Coating (Withdrawn)
.9	CSA G40.20/G40.21	General Requirements for Rolled or Welded Structural Quality Steel / Structural Quality Steel
.10	CSA G164	Hot Dip Galvanizing of Irregularly Shaped Articles
.11	CSA S16	Design of Steel Structures
.12	CSA W48	Filler Metals and Allied Materials for Metal Arc Welding
.13	CSA W59	Welded Steel Construction (Metal-Arc Welding)

1.2 Design Criteria

.1 Design is based on Limit States Design principles using factored loads and resistances.

.2 Loads and load factors are determined in accordance with the referenced Building Code and bylaws of the local municipality.

.3 Resistances and resistance factors are determined in accordance with the National Building Code and CSA S136.

.4 Conform to the requirements of specified fire rated assemblies.

.5 Install components or assemblies to accommodate specified erection tolerances of the structure.

.6 Design and install handrails, railings, landings, and stairs to conform to loading and safety requirements of the referenced Building Code, Occupational Health and Safety Act, and W47.2, as may be applicable.

.7 Maximum deflection for individual members shall not exceed 1/360th of the span.

.8 Work of this Section that will support other items or will be required to support structural loads of any nature shall be designed by a Professional Structural Engineer registered in Ontario, who shall affix their professional seal and signature to the shop drawings for such items.

1.3 Submittals

.1 Submittals to be made in accordance with Section 01 33 00.

.2 If requested, submit three certified copies of mill reports covering chemical and mechanical properties, and coating designation of steel used in this work.

.3 Submit samples of framing and fastener components to Consultant if requested.

.4 Product Data

.1 Submit product data for mechanical fasteners, indicating sizes, shear, and pull-over loading capacity where applicable, if requested. Provide data indicating thickness and type of corrosion protection coating.

.2 Submit product data indicating suitability of explosive powder actuated fasteners for application if requested.

.5 Shop Drawings:

.1 Submit shop drawings indicating materials, core thickness, finishes, connections, joints, methods of anchorage, number of anchors, supports, reinforcement, details, and accessories.

.6 Submit evidence of welder qualifications specified in this Section if requested.

1.4 Quality Assurance

.1 Provide proof of manufacturer training for installation of proprietary fastener systems.

.2 Welding shall be by company certified by the Canadian Welding Bureau to CSA W47.1.

1.5 Delivery, Storage, and Handling

.1 Deliver and store material undamaged in original wrapping or containers, with manufacturer’s labels intact.

.2 Prevent damage to materials during handling and storage. Any damaged materials will be rejected by the Consultant.

1.6 Site Conditions

.1 Maintain temperature and ventilation conditions for various components and materials of the system, as required by manufacturer.

.2 Protect work of other sections and sub-trades from damage resulting from work of this section.

.3 Take necessary care to avoid damage of adjacent surfaces.

.4 Examine the underlying visible surfaces and adjoining work, and report defects at time of installation that might impair the work of this section to the Consultant, in writing.

.5 Commencement of work implies acceptance of surfaces.

.6 Cooperate with other trades to accommodate fixtures and attachments in the system.

1.7 Inspection

.1 The Design Engineer responsible for the production of the shop drawings shall provide periodic field review during construction and submit reports to the Consultant.

.2 Additional inspection and testing of materials workmanship shall be carried out by a qualified independent Inspection Agency appointed by the Consultant.

.1 The cost of this additional inspection shall be paid by the Owner.

.2 Any testing or inspection required by the Consultant because of an error by the Contractor, or due to departure from the contract documents by the Contractor, shall be paid for by the Contractor.

.3 Inspection shall include:

.1 Checking that mill test reports are properly correlated to materials.

.2 Sampling fabrication and erection procedures for general conformity to the requirements of the specification.

.3 Checking fabricated members against specified member shapes.

.4 Sample checking of screwed and bolted joints.

.5 Sample checking that tolerances are not exceeded during fit-up or erection.

.6 General inspection of field cutting and alterations required by other trades.

.7 Submission of reports to the Consultant, Contractor, and authorities having jurisdiction covering the work inspected with details of deficiencies discovered.

.4 The Contractor shall provide the necessary cooperation for the inspection to proceed.

.5 The inspection provided in this section does not relieve the Contractor of their responsibility for the performance of the contract. The Contractor is solely responsible for quality control and shall implement their own supervisory and quality control procedures.

.6 Materials or workmanship not conforming to the requirements of the contract documents may be rejected at any time during the progress or work.

2.0 PRODUCTS

2.1 Materials

.1 Steel Sump Pit Covers: To CSA G40.21, Grade 300W, galvanized. Minimum 6 mm (1/4”) plate thickness with diamond pattern, size to match existing.

.2 Bolts and Anchor Bolts: To ASTM A307.

2.2 Fabrication

.1 Fabricate work square, true, straight, and accurate to required size, with joints fitted closely and secured properly.

.2 Fabricate items from steel and use galvanized steel for exterior items, unless indicated otherwise.

.3 Where possible, fit and shop assemble items ready for erection.

.4 Exposed joints and connections shall be tight, flush, and smooth unless otherwise indicated.

.5 Where work of other Sections is to be attached to work of this Section, prepare work by drilling and tapping holes as required to facilitate installation of such work.

.6 Insulate contact surface to prevent electrolysis due to metal-to-metal contact or between metal and masonry or concrete. Use bituminous paint, butyl tape, building paper, or other approved means.

2.3 Anchoring Devices

.1 Drilled Inserts: Steel, cadmium plated or hot-dip galvanized; sizes as indicated on drawings.

.2 Bolts and Nuts: To ASTM A307, sizes as indicated on drawings, with large flat-type steel washers sized to suit fasteners, hot-dip galvanized.

.3 Explosive Powder Actuated Fasteners: As recommended by manufacturer for the application, subject to approval by Consultant.

2.4 Framing Connection Devices

.1 Screws: Self-tapping and self-drilling, and as follows:

.1 Case hardened, non-corrosive screw, #10 or heavier with pan type washer heads, 1/2-inch diameter.

.2 Sheet metal screws shall be stainless steel or steel with a minimum coating thickness of 0.008 mm of zinc or cadmium. Other coatings providing equal or better corrosion protection may be used.

.3 Length: Adequate to penetrate not less than three fully exposed threads beyond joined materials.

.4 Thread types and drilling capability shall conform to manufacturer's recommendations.

.5 Screws covered by sheathing materials shall have low profile heads.

2.5 Surface Preparation

.1 Thoroughly clean and suitably pre-treat steel prior to finishing.

.2 Remove loose mill scale, rust, oil, grease, dirt, and other foreign matter using one or more of the following methods:

.1 Solvent cleaning

.2 Wire brushing

.3 Power wire brushing

.4 Sandblasting

.3 Grind smooth sharp projections.

2.6 Steel Finishes

.1 Galvanizing: Hot-dipped galvanizing with zinc coating 600 g/sq. m to CSA G164.

3.0 EXECUTION

3.1 General

.1 Fabrication and erection shall conform to shop drawings. Modifications required to accommodate as-built conditions, other than minor dimensional changes, must be submitted for approval.

3.2 Erection

.1 Erect items square, plumb, straight, and true, fitted accurately, with tight joints and intersections.

.2 Make all field measurements necessary for the proper fit of all members.

.3 Provide suitable means of anchorage acceptable to the Consultant by dowels, anchor clips, bar anchors, expansion bolts and shields, toggles.

.4 Exposed fastening devices to match finish and be compatible with material through which they pass.

.5 Make field connections with high tensile bolts to CSA S16.

3.3 Touch Up and Cleaning

.1 Touch-up damaged steel surfaces after completion of erection using zinc-rich paint for galvanized components to match original finish.

END OF SECTION

1.0 GENERAL

1.1 Work Included

.1 Provide all labour, materials, and equipment necessary for the complete supply, surface preparation, and application of paint required to restore original finishes.

.2 The work of this section shall include, but shall not necessarily be limited to, the following:

.1 Prime, painting, and finishing of all interior exposed items and surfaces noted on the Drawings and indicated in the Specifications.

1.2 Reference Standards

.1 All referenced Standards are latest editions referenced by the Building Code in the Place of the Work, or latest editions if not referenced by Code.

.2 Ontario Building Code

.3 New Surfaces: Canadian Painting Contractor's Architectural (CPCA) Painting Specifications Manual

.4 Existing Surfaces: Master Painters Institute (MPI) Maintenance Repainting Manual

1.3 Submittals

.1 Make submittals in accordance with Section 01 33 00.

.2 Before any work is commenced, submit sample panels (24" x 36") of each paint type and colour, specified in colour schedule, for Owner's review.

1.4 Quality Assurance

.1 Qualification of Applicators: Contractor shall have a minimum five years of proven satisfactory experience and shall maintain a qualified crew of painters throughout duration of the work who are qualified to fully satisfy the requirements of this Specification. Only qualified journeymen shall be engaged in painting and decorating work and have a provincial tradesmen qualification certificate of proficiency.

.2 Conform to standards contained in MPI Manual, latest edition.

.3 All paint manufacturers and products shall be as listed under “Approved Products” section of MPI Manual.

.4 All painting, unless otherwise specified, shall be to MPI Manual - Premium Grade.

1.5 Delivery, Storage, and Handling

.1 Delivery, storage, and handling of materials shall be in accordance with applicable sections of MPI Architectural Painting Specification Manual. Deliver and store on site in manufacturer’s sealed and labelled containers. Protect latex materials from freezing. Maintain stored materials at a temperature of 8°C or more.

.2 Take all necessary precautionary measures to prevent fire hazards and spontaneous combustion.

1.6 Protection

.1 Adequately protect all other surfaces from paint and damage and make good any damage caused by failure to provide suitable protection.

.2 Furnish sufficient drop cloths, shields, and protective equipment to prevent spray or droppings from fouling surfaces not being painted, including surfaces within the storage and preparation area.

.3 Mask all surfaces not being painted to obtain uniform termination.

.4 Remove all electrical plates, surface hardware, fittings, and fastenings prior to painting operations. Carefully store, clean, and replace upon completion of Work in each area.

1.7 Environmental Conditions

.1 Temperature and moisture content of all surfaces shall conform to ratings given in CPCA or MPDA manual.

.2 All areas where painting and decorating work are proceeding require adequate continuous ventilation and sufficient heating facilities to maintain temperature above 10°C for 24 hours before, during, and 24 hours after paint application.

.3 Do not paint where there is dust in the air.

.4 Provide adequate illumination on surfaces being painted.

1.8 Maintenance Materials

.1 At project completion, provide 16 L (4 gal.) of each type of colour to paint from same production run (batch mix) used, in unopened cans, properly labelled and identified for Owner's later use in maintenance. Store where directed.

2.0 PRODUCTS

2.1 Materials

.1 Use paint materials and products of paint manufacturers listed and approved in MPI Manual and CGSB Qualified Products List. No substitutions.

.2 All paints shall be Premium Grade; first quality products as manufactured by C.I.L., Bapco Paint Co., Brandram-Henderson Company, Sherwin Williams, Glidden, Pratt & Lambert, Benjamin Moore, and General Paint.

.3 Provide undercoat paint produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer, and use only within recommended limits.

.4 Interior Painting and Finishing Schedule

.1 Unless otherwise indicated, titles and code numbers in below listed schedule refer to MPI Architectural Painting Specification Manual, Chapter 3, for type surfaces, coating, grade, named products, and their manufacturers. Use products from only one manufacturer for each system. Drywall repairs and first coat (primer) of sills, jambs, and heads around doors, windows, etc. shall be included in the lump sum costs as indicated on the Drawings and Bid Form.

.2 Schedule:

.1 Gypsum Board: RIN 9.2A-Latex-DSD3

2.2 Mixing

.1 Paints shall be ready-mixed unless otherwise specified. Paint shall have good flowing and brushing properties and shall dry or cure free of streaks or sags to yield the desired finish specified.

3.0 EXECUTION

3.1 Inspection

.1 Examine all surfaces to be painted before commencing work.

.2 Commencement of work indicates acceptance of surfaces and job conditions.

3.2 Preparation of Surface

.1 Prepare surfaces in accordance with MPI Manual.

.2 Prepare existing exterior surfaces by high-pressure water or other approved method to remove all dust, loose paint, and other deposits on surfaces.

.3 Remove hardware, hardware accessories, machines surfaces, plates, lighting fixtures, and similar items in place and not to be finish-painted, or provide surface-applied protection prior to surface preparation and painting operations. Remove, if necessary, for complete painting of items and adjacent surfaces. Following completion of painting of each space or area, reinstall removed items.

.4 Program cleaning and painting so that contaminants from cleaning process will not fall onto wet, newly painted surfaces.

3.3 Application

.1 Perform painting and decorating work in accordance with the standards and requirements incorporated in the CPCA Manual and/or MPI Manual.

.2 Method of paint application shall be by either spray-on or roll-on, sufficient to fill all voids in existing surfaces and provide uniform appearance.

.3 Apply primer and two coats of approved paint to exposed surfaces of all repaired drywall or masonry surfaces, maximum coverage rate of 250 sq. ft. per imperial gallon per finish coat.

.4 Apply two coats of approved paint to all miscellaneous metal fabrications, maximum coverage rate 150 sq. ft. per imperial gallon per coat.

.5 Flammable rubbish, cotton waste, cloths, and material that may constitute a fire hazard shall be placed in closed metal containers and removed from site daily.

.6 Protect all signs and fixtures attached to the walls. Uncover and clean when painting has been completed.

.7 Parking stall numbers to be painted black using stencil to match existing numbers.

END OF SECTION

1. GENERAL

1.1 Related Documents

.1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section.

.2 The General Contractor shall be responsible for coordinating all work contained in this section of the specification including the work provided by the:

- .1 Foodservice Section 114000;
- .2 Electrical Division 26;
- .3 Plumbing Division 22;
- .4 Mechanical Division 23;
- .5 Structural Division 03;
- .6 Architectural Millwork Division 06; and
- .7 Other trades subcontractors.

.3 ABBREVIATIONS

S.S.	-	Stainless Steel
C/W	-	Complete With
A.F.F.	-	Above Finished Floor
A	-	Amperes
V	-	Volts
CY	-	Cycle
P	-	Phase
Pl. lam.	-	Plastic Laminate
Kw	-	Kilowatt
kPa	-	Kilopascals
J.B.	-	Junction Box
CFM	-	Cubic Feet per Minute
L.E.D	-	Light Emitting Diode
in	-	Inches
ft		feet
F	-	Fahrenheit
C.P.	-	Chrome Plated
I.P.S.	-	Inside Pipe Size
N.I.C.	-	Not in Contract (for Section 114000)
L.C.	-	Load Center
CBP	-	Circuit Breaker Panel
KEC	-	Kitchen Equipment Contractor

.4 Delivery and installation, removal, storage and relocation of all food service equipment, included in this specification to be as per the schedule set out by the General Contractor or other designated party.

1.2 Related Typical Work By Other Trades

.1 Work Provided By Electrical Division 26

.1 Supply, installation of all necessary electrical wiring in liquid tight flexible conduit required for the final connection and operation of foodservice equipment.

.2 Supply and installation of electrical wiring from the building source or distribution point of power, through disconnect switches to the terminals, connection box, circuit- breaker panel on the equipment. Equipment manufacturer's control panels and switches are not considered to be disconnect switches unless specifically permitted by applicable codes.

.3 Supply and installation of receptacles in all food service areas. All receptacles in wet areas such as the dish-room and pot wash areas must be waterproof and must have ground fault interrupters.

.4 Supply, rough-in and installation of all electrical wiring required for "Owners Supplied", "Existing", “Relocated” or "NIC" designated equipment, as well as final hook-up and connections.

.5 Supply and installation of all electrical receptacles located in floors, ceilings or walls located in the food service areas, including inside walk-in rooms and coolers.

.2 Work Provided By Plumbing – Division 22

.1 Supply, installation, rough-in and connection of all domestic hot and cold water, drains, vents, gas supply lines, as per code from building supply to the point of connection required for the complete operation of, the foodservice equipment.

.2 Supply and installation of domestic hot and cold water lines complete with shut off valves, back flow preventers, line strainers, shock absorbers, pressure, temperature and pressure gauges and control valves or devices (unless otherwise stated and/or supplied with the equipment of this section). This project will be constructed, using components (valving and piping) which satisfies the requirements for a “Lead Free” domestic water supply system as defined by the local codes. All valves, piping, and fittings 2” and

smaller, used in domestic water piping serving faucets or plumbing fixtures used to dispense water for drinking or food preparation shall conform to the local codes requirements.

.3 Supply and installation of drain lines complete with traps, vent piping and clean outs.

.4 Supply and installation of drain lines, traps, vent piping, clean outs and grease traps, drains for floor pans, connected drains for equipment, floor drains with funnels for open drains on equipment and exhaust ventilators.

.5 Supply and installation of combination funnel floor drains required for the condensate drain lines from each evaporator coil inside prefabricated, insulated walk-in refrigerated and frozen room assemblies.

.6 Supply and installation of all indirect drain lines including, those required for foodservice equipment, ware washing and waste management systems and any other open or indirect type connections from custom fabricated stainless steel equipment to a hub, funnel or combination drain at a rate of not less than 1” in 24”.

.7 Extend all open or connected drains on foodservice equipment, and ware washing/waste management systems to above funnel floor drains using chrome plated piping.

.8 Supply and installation of all floor drains for general drainage purpose, maintenance and cleaning. Finished floor to slope to all floor drains to ensure proper drainage and prevent pooling.

.9 Supply and installation of gas lines with manifolds to each piece of gas fired foodservice equipment complete with shut off valves. Installation of mechanical gas valve(s) as specified under the Foodservice Section of Section 114000, in conjunction with the fire suppression system. Install pressure regulating valves as specified under the Foodservice section of Section 114000.

.10 Connection of all equipment designated as "Owner Supplied".

.11 Disconnection and later reconnection of any equipment designated as “Existing Equipment to Be Relocated or Reused”.

.12 Capping off of all mechanical services for all equipment designated to be removed.

.13 Provide aluminum jacketing where piping is exposed.

1.3 Work Included By Foodservice Section 114000 Contractor

.1 General

.1 The work listed here includes, but is not limited to, the provision of all equipment indicated on the drawings and listed in the specifications together with labour, material, tools, plant, delivery, un-crating, setting-in-place of equipment, and cleaning herein ready for final connection of services by mechanical and electrical trades.

.2 The work listed here includes coordination of the schedule for the manufacture, delivery and setting into place of the food service equipment in conjunction with the overall construction schedule being maintained by the General Contractor.

.3 Attend project site meetings when requested by the General Contractor, food service consultant, owner and/or architect and provide coordination with the other construction team members as required.

.4 Oversee the scheduling, performance and delivery of all work and products being supplied by sub-contractors hired by the KEC.

.5 Provide all required drawings including by not limited to: plans, elevations, construction and fabrication details, refrigeration shop drawings, mechanical and electrical rough in and connection drawings in conjunction with the project schedule as maintained by the General Contractor. Note the KEC is to show services for owner supplied owner installed equipment on their shop drawings.

.2 Electrical

.1 All work shall comply with the standards for material and workmanship specified under Division 26.

.2 Supply and installation of low water cut-off devices for any equipment in which immersion type electric heating elements are utilized.

.3 Supply and installation of all motors integral with equipment complete with starters, motor control centers and internal thermal overload protection.

.4 Supply and installation of all internal wiring on custom fabricated items in a concealed and well supported manner and terminated inside circuit breaker panels or junction boxes ready for final connection by the electrical trades. All equipment shall be inspected by the local hydro authority and carry LOCAL and UL approval

.5 Supply and installation of all necessary junction boxes and circuit breaker panels (electrical load centers) required to terminate internal wiring within custom fabricated equipment, etc.

.6 Tag each multiple electrical wire or cable used in any custom fabricated piece of equipment to indicate the item serviced. When circuit breaker panels are used, identify each circuit and equipment item.

.7 Supply and installation of waterproof wiring, outlets, panels and controls in all wet areas. Note: Div 26 to provide all receptacles.

.8 Supply and installation of cords and plugs on equipment as required and match the plug with the respective receptacle.

.9 Supply and installation of junction boxes, electrical conduit for electrical outlets on all custom fabricated equipment, prefabricated insulated walk-in type refrigerated and frozen room assemblies, conveyors and ware washing/waste management equipment. Mount junction boxes with stainless steel cover plates and casings. On open tables, recess junction boxes in stainless steel housing under table top. On enclosed tables and counters, recess junction boxes in stainless steel insert pans in counter front.

.10 Supply and installation of all necessary cords and plugs to match designated receptacles.

.3 Mechanical & Plumbing

.1 All work shall comply with the standards for material and workmanship specified under Division 22 and 23.

.2 This project will be constructed, using components (valuing and piping) which satisfies the requirements for a “Lead Free” domestic water supply system as defined by the local codes. All valves, piping, and fittings 2” and smaller, used in domestic water piping serving faucets or plumbing fixtures used to dispense water for drinking or food preparation shall conform.

.3 Provision and installation of all faucets complete with aerators and replaceable seats, ready for connection by appropriate contractor.

.4 Supply and installation of chrome plated overflow assemblies, drain fittings and traps with tail pieces for all sink type assemblies.

.5 Supply and installation of chrome plated blow down piping from items with relief or safety valves, extend piping to nearest hub or floor drain approximately 4" above drain.

.6 Supply of any pressure regulating valves on domestic hot and cold water, low temperature chilled water, gas, steam or condensate lines for equipment supplied herein.

.7 Conceal and support of all piping and accessories within custom fabricated equipment.

.4 Warewashing And Waste Management System

.1 The KEC will be responsible for the manufacture, supply, relocation and set-in-place and on-site commissioning of the entire ware washing and waste management system.

.2 The KEC will be responsible to ensure that all these items function together as a complete and inter-related system, the entire system is fully operational and that all of the system sub-component parts are properly integrated.

.3 The electrical circuit that provides power to the main system control panel mounted on the scrapping table must have electrical ground fault protection (GFI) protection.

.5 Existing Equipment And Phasing

.1 The Foodservice Equipment Sub-contractor shall be responsible to coordinate the set-into-place and installation of all foodservice equipment being supplied by the Owner. This shall include incorporating all relevant mechanical and electrical service requirements in the shop drawings.

.2 All other specified work, not identified in this phasing schedule will be carried out in accordance with Section 3.3

1.4 Miscellaneous

.1 Supply and installation of all hardware and standard accessories normally part of the equipment whether shown and/or specified or not; ie locks, catches, handles, hinges, etc.

.2 Provision of rubber button feet or pads under any piece of equipment that will rest on a counter.

.3 Caulking and sealing of equipment to walls, curbs, bases, adjacent units and between any dissimilar materials. Use an approved silicone sealer for gaps under 0.33” and stainless steel trim strips and sealer for wider gaps. Prepare area being siliconed prior to silicone application.

.4 Securing of all permanent equipment to floor or base. Use stainless steel shims for levelling.

.5 Supply and installation of all stainless steel strips and filler pieces necessary to properly finish any individual or combined set of pieces of equipment as part of the contract.

.6 Protection, identification and recessing of all controls, pilot lights, switches and valves on any item of equipment.

.7 Provision of all necessary access panels within each piece of equipment to allow for proper maintenance and service. Allow access when two (2) or more units are adjacent to each other.

.8 Supply of all standard equipment accessories normally furnished with all items specified whether indicated or not.

.9 Provision of all inserts, bolts, anchors, sleeves, ferrules, sleepers and other assorted hardware as may be necessary for the proper anchorage, fixing or attachment of equipment to the building.

.10 Verification of the dimensions and services of all pieces of equipment that may be supplied by the Owner but are to become a part of a unit specified under this work in order to ensure a proper fit and co-ordination of installation.

1.5 Quality Assurance

.1 The work of this section shall be executed by qualified Foodservice Equipment Sub-Contractors such as foodservice equipment dealer/custom stainless steel fabricator.

.2 If the Foodservice Equipment Sub-Contractor performing the work included in this specification is an equipment dealer only, the firm shall at the time of tendering, provide in writing the name, address and qualifications of the fabricator proposed for the manufacturing and installation of custom stainless steel equipment.

.3 If the Foodservice Equipment Sub-Contractor performing the work included in this specification intends to further sub contract out any portions of the work they are to perform to another individual or firm including but not limited to research and development, design, sub-fabrication, stamping, sub-assembly, electrical wiring or controls and any parts or all of the installation, the name of the proposed individual or firm who the Foodservice Sub-contractor intends to further sub-contract work to, must be identified at the time of tender. No further subcontracting will be permitted after tender award without written authorization by the food service consultant.

.4 Before submitting tenders, it is the responsibility of the bidder to carefully examine the drawings, specifications and the site to become aware of all existing conditions and limitations and to ensure that all of the work called for will be included in the tender submission.

.5 All equipment and components supplied from manufacturers shall be the latest model or issue and shall be new and unused in every respect.

1.6 Tender Format

.1 Comply with Division 1, General Requirements and all documents referred to therein.

.2 Conform to the tender form provided by owner.

.3 Submit an itemized price breakdown of the cost for each piece of equipment specified, including labor and materials. Separately indicate the total Sales Taxes if applicable and a separate cost for transportation, delivery, un-crating and setting into place.

.4 Prices tendered shall be for the manufacturer as specified in the first instance for each piece of equipment listed in the item specification section and shall form a base stipulated price bid.

.5 Prices tendered for the other acceptable manufactures as indicated in the item specification shall be included on a separate form and shown as either an addition to, or deletion from, the base stipulated price bid.

.6 List the item number, name and quantity of each item together with the manufactures name and model number.

.7 Failure to provide the itemized list of equipment with identification of the manufacturer, model number and individual price forming the base stipulated price bid will automatically disqualify the tender submission.

1.7 Alternatives And Substitutions

.1 Refer to Division 1 - General Requirements.

.2 The specifications, drawings and mechanical and electrical services etc., have been prepared on the basis of the brand names and models identified in the first instance for each individual piece of equipment as listed in the item specification. The tender must include a base stipulated price bid for the foodservice equipment as specified in the first instance for each individual piece of equipment. Tenders which include any other brand or model other than what was specified in the first instance for any individual piece of equipment in the base stipulated price bid, will be automatically rejected.

.3 Should the bidder elect to use one of the acceptable alternative manufactures listed in the item specification, he/she may do so by submitting an alternative price for this item together with the chosen manufacturer and model number etc. Acceptable alternative manufacturers proposed for any equipment item must be listed on a separate page for “Acceptable Alternative Manufactures” located at the end of the tender form. Acceptable alternatives proposed, must indicate the addition to, or deletion from, the cost of the base stipulated price bid. The alternative price must also show and include the cost of all changes or modifications in the building necessary to accommodate the installation of the alternative item.

.4 Alternatives proposed other that those listed in the specification as being acceptable alternative manufacturers may be submitted for review and consideration by the Owner and/or Consultant. These must be submitted in advance of the tender close.

.5 Alternatives proposed must meet the physical and technical requirements of the specified item, be of a known and recognized manufacturer and satisfy the performance criteria and design intent originally determined by the Consultant in conjunction with the Owner.

.6 Any alternative that is judged not to meet the above requirements, criteria or intent for whatever reasons shall be rejected and the model and manufacturer originally specified shall be supplied and installed at no additional cost to the Contract.

.7 The proposed alternative and costs will be evaluated against the requirements set for the original specified manufacturer or model and a final decision made prior to the signing of a contract.

.8 If any alternative is accepted, it is the responsibility of the respective Foodservice Equipment Sub-contractor to coordinate and bear all costs for mechanical, electrical, structural, architectural and any other adjustments necessary as a result of the substitution.

.9 The Foodservice Equipment Sub-contractor awarded the work under Section 114000, shall also pay the costs of all professional fees and disbursements required to make necessary adjustments to the plans, specifications, mechanical and electrical requirement schedules or other information as a result of the substitution and for any coordination that must be done by the other project Consultants to accommodate any alternatives that are accepted.

1.8 Rejection Of Tenders

.1 The Owner or Consultant reserves the right to reject any or all tenders without explanation.

.2 The lowest tender in terms of cost, will not necessarily be accepted.

.3 Tenders not conforming to any or all instructions may be rejected.

1.9 Addenda

.1 The tender shall include any and all addenda that may change the original plans, specifications or other coordination information.

.2 It is the responsibility of the bidder to report in writing any and all discrepancies, errors, omissions, contradictions or ambiguities to the Consultant. The necessary clarification will be issued in an addendum or bulletin to all bidders. If any uncertainty remains, base price on the most expensive interpretation.

.3 The Owner, Food Service Consultant, Architects or Engineers will not be responsible for oral instructions.

1.10 Certificates Of Approval

.1 All work and materials shall be in accordance with the latest rules and/or regulations of agencies/ authorities having jurisdiction. All regulations, including building codes, and other codes applying to this jurisdiction should be followed. In addition all equipment shall comply with the following:
- .1 National Electric Manufacturer's Association, (N.E.M.A.).
- .2 Underwriter's Laboratories Inc. (U.L.), must bear label.
- .3 National Electric code, (N.E.C.).
- .4 National Sanitation Foundation, (N.S.F.), must bear label.

.5 American Society of Mechanical Engineers must carry the (A.S.M.E.) stamp.
.6 American Gas Association (A.G.A.).
.7 State and Local Health Department Requirements.
.8 American with Disabilities Act (ADA) as applicable to this project.

.2 The Contract Documents shall govern whenever they require larger sizes or higher standards than are required by regulations.

.3 The regulations shall govern whenever the Contract Documents require something which will violate the regulations.

.4 No extra charge will be paid for furnishing items required by the regulations, but not specified and/or shown on the drawings.

.5 Rulings and interpretations of the enforcing agencies shall be considered a part of the regulations.

.6 The KEC is responsible to maintain the accuracy of equipment drawings and cut books to reflect as built conditions due to equipment deletions, manufacturer and/or model number changes and unanticipated changes to site conditions. It will be the KEC's sole responsibility to notify the Health Department having jurisdiction of all revisions until the project is issued its Certificate of Occupancy.

.7 Conform to all laws, bylaws, rules, regulations and requirements of all authorities having jurisdiction.

.8 All electrical equipment must conform to the National Electrical Code, the Electrical Inspection Department Bulletins, the National Electric Code. All equipment must have an approval label. Equipment that is not N.E.M.A. approved will be rejected, removed from the site and substituted for at no additional cost to the Contract.

.9 Gas equipment shall conform to the A.G.A.

.10 Any plumbing or drainage systems shall conform to the Local Plumbing Code.

.11 Each piece of equipment shall be accompanied by a label or certificate of approval.

.12 Equipment design and fabrication must conform with the National Sanitation Foundation and Provincial as well as Local Municipal Health Department Regulations.

1.11 Permits

.1 The General Contractor shall obtain and pay for all necessary permits, inspections and certificates and licenses required and necessary for the performance of the work and post all notices required by law and comply with all laws, ordinances and regulations bearing on conduct of the work as drawn and specified.

1.12 Shop Drawings And Plumbing, Mechanical And Electrical Requirements

.1 All fabricated items and assemblies of equipment shall be completely illustrated by shop drawings with detailed descriptions, clearly indicated methods of construction, gauges, assembly, fastenings and services, etc.

.2 Ensure that all component parts and assemblies of each piece of equipment will support the loads anticipated without detriment to function, safety or appearance.

.3 Prepare shop drawings on the same size sheet as plans and elevations, in a scale of not less than 1:1/4 for plans and 1:1/2 for details and sections so as to clearly illustrate the construction and arrangement of equipment.

.4 Prepare fully dimensioned "roughing-in" and final connection point drawings for mechanical and electrical services. Separate mechanical and electrical, or combined drawings, may be submitted. In either case, drawings must be a minimum of 1:1/4. Include walk-in and fire suppression schematics and any pertinent installation diagrams including dimensioned "sleeving" drawing.

.5 “Rough-in” and “final connection point drawings” must include a list of symbols for each type of connection and must show the location of connections on equipment as well as the location of the rough-in point for all mechanical and electrical services. Both connections to the equipment and the rough-in point must be dimensioned so as to show the relative distances from grid lines or architectural wall reference points as well as the height above the finished floor.

.6 Verify the energy requirements for any piece of equipment that is being supplied by the Owner or is existing and being reused. Incorporate this information into the shop drawings, "rough-in" and connection point drawings.

.7 Submit equipment data sheets and shop drawings in the following order:
- .1 Catalogue cuts and illustrations.
- .2 Plan lay out drawing with mechanical and electrical "roughing-ins"
- .3 and "connection points"
- .4 "Sleeving" drawing

.5 Custom fabricated items

.8 All shop drawing submissions shall be checked and signed by a senior member of the firm qualified to evaluate the function and construction necessary.

.9 Prior to manufacture, the Foodservice Equipment Sub-Contractor shall provide a schedule outlining the proposed manufacture and installation dates for all equipment.

.10 Submit shop drawings in accordance with Division 01 requirements.

.11 "Rough-in" and connection point drawings will not be reviewed unless the catalogue cuts and illustrations are submitted first.

1.13 Catalogue Cuts And Illustrations

.1 All manufactured items being purchased by the Foodservice Equipment Sub-Contractor must be illustrated by catalogue cuts and data sheets.

.2 Submit two (2) sets of illustration/cuts bound in booklet form for review. Sheets are to be in numerical order, properly labelled with the name of the project and accompanied by a lead sheet with an itemized list of contents. The lead sheet must include the project name, the name of the General Contractor (if applicable), the name of the KEC, the item number, the manufacturers name and model number, all options and accessories included as well as mechanical and electrical service requirements (see typical example provided).

BROCHURE LEAD SHEET (typical information required)

ITEM NO: _____ QUANTITY: _____

DESCRIPTION: _____

MANUFACTURER: _____

MODEL NUMBER: _____

SERVICES;

ELECTRIC: ____VOLTS,____PHASE, ____WATTS,
____KW ____ AMPS
NEMA PLUG CONFIGURATION: _____
PLUMBING: ____ NPT (HW) ____ NPT (CW)
____ I.W., ____ WASTE
STEAM: (INLET) (CR) PSI

.3 Ensure that the equipment suits the space allocations and the intent of the design.

.4 After the illustrations have been reviewed, provide the required number of sets for distribution.

1.14 Design Drawings And Site Dimensions

.1 In addition to preparing shop drawings illustrating custom fabricated equipment or assemblies, the Foodservice Equipment Sub-contractor shall be responsible to prepare a set of final plan layouts of the foodservice equipment included. These final plan layouts are to include:

.2 1:1/4” final plan drawings of the site, on AutoCad version 2014 or later

.3 Finalized itemized list of food equipment by component and functional area indicating item number, quantity, manufacturer, model number, etc. for all new and relocated existing equipment;

.4 Detailed schedule of the mechanical, electrical and structural requirements for new and re-used existing equipment with connection size information; and

2. PRODUCTS

2.1 Commercially Manufactured Equipment

.1 All items of standard equipment shall be the latest model at time of delivery.

.2 Manufacturer's directions shall be followed in cases where the manufacturers of articles used in this contract furnish directions or prints covering points not shown on the drawings or specifications.

.3 All doors shall be hinged as shown on plans.

.4 Free-standing work tables and counters with flanged feet shall be secured to the floor with smooth head stainless steel fasteners or with pins concealed in all legs of the table/counter, when specified or required by code.

.5 All equipment units that "pass thru" wall openings are to have an "equal" finish on front and rear. The intent is that the equipment unit will project a finished "look" on the rear (kitchen side) as on the front (customer side).

2.2 Foodservice Equipment Flexible Connectors

.1 The KEC Contractor shall furnish the following cooking appliances with appropriately sized (length and diameter) flexible connectors, coiled restraining devices and installation hardware, as indicated below:

.2 Gas Appliances (Mobile) Dormont Model BPQ-2SR Series flexible connector with two (2) Supr-Swivel couplings and one (1) coiled restraining device with installation mounting hardware.

.3 Gas Appliances (Stationary) Dormont Model BPQ-2S Series Flexible Connector with two (2) Supr-Swivel couplings.

.4 Stationary/Mobile Appliances other than Counter-Top Dispensing Units with Water Connections (hot, cold) Dormont Model W-BP2Q Series flexible connector. When mobile, provide unit with coiled restraining device with installation mounting hardware.

.5 Length restraining device on mobile units to be sufficient to allow movement of equipment for housekeeping.

.6 Flexible connectors to be NSF and AGA certified.

.7 Division 23 00 00 shall connect all quick-disconnect hoses to equipment.

2.3 Buy Out Equipment

.1 The following is a list of standards for all “buy out” equipment:

.1 The intent is that exposed metal surfaces of buy-out equipment units have a

.2 Stainless steel finish except where the model number of the unit dictates aluminum. For those items where stainless fronts, tops, rears and sides are “optional” we expect that a stainless finish will be provided in those areas where the finish is exposed.

.3 All range units if not provided with a rear riser as a standard component by the manufacturer are to be provided with a stub back (min.).

2.4 Plumbing Work

.1 Provide suitable pipe slots, chases and/or do all drilling, punching and cutting of equipment required to provide access for Division 22 connections and/or runs. Such work performed at the job site shall be of the same quality as similar work in the shop.

.2 To insure proper clearance for cleaning, all horizontal piping lines shall be run at the highest possible elevation and not less than 6" above floor, through equipment wherever possible.

.3 Indirect waste piping (except from sinks and ventilators) shall be installed in accordance with the codes in effect at the job site. Piping shall run as described hereinafter, and shall discharge into floor sinks. Extend piping to a point of at least 2" (50 mm) above rim of floor sink and cut bottom on 45 degree angle. All indirect waste piping shall be installed and routed in a manner to insure proper drainage and shall conform with shelves, spaces, equipment or building conditions. Secure all indirect waste piping as required to achieve same.

.4 Water inlets shall be located above the positive water level to prevent siphoning of liquids into the water system. Wherever conditions shall require a submerged inlet, a suitable type of check valve and vacuum breaker shall be placed on the fixture to form part of same to prevent siphoning.

.5 Where exposed, piping and fittings shall be chrome plated.

.6 All valves shall be American made to insure availability of replacement parts.

2.5 Electrical Work

.1 For all fabricated equipment, furnish and install all outlets, switches, controls, conduit, service fittings and load centers. Load centers shall be complete with individual "visi-trip" circuit breakers for each device built into or forming an integral part of the unit. Furnish to Division 26 a wiring schematic including circuit breaker diagram for load center.

.2 All installations and products shall comply with Div 26 specifications. All electrical components on the project shall be submitted as one submittal per spec section as defined in Div 01 to ensure consistency across the project.

.3 Insure that all equipment furnished under this contract shall be so wired, wound or constructed as to conform with the characteristics of electrical and other services at the premises.

.4 Appliances shall be new, of manufacturer's current production and furnished complete with motors drive mechanism, Starters and controllers, including master switches, timers, cut-outs, reversing mechanism and other electrical equipment if and as applicable. Wiring and connection diagrams shall be furnished with electrically operated machines and for all fabricated equipment.

.5 Only rigid steel conduit shall be used as per Div 26 specifications, only stainless steel conduit to be used in unexposed and exposed areas.

.6 Supply on each motor driven appliance or electrical heating unit, a suitable control switch or Starter of proper type wherever such equipment is not provided with same.

.7 All switches, controls, etc., shall be conspicuously labeled as to use with phenolic plastic name plates screwed to adjacent surfaces, with white recessed lettering on black background. Submit a sample to the Designer for approval.

.8 All electrically heated, fabricated equipment shall be internally wired to a thermostatic control and an "on/off" red neon light indicator, both to be mounted in a terminal box with a removable access panel and located outside the heated area. Wiring to be nickel-plated copper, properly insulated.

.9 KEC to coordinate electrical interconnections, completed by Division 26, at field joints on equipment assembled at the job site.

.10 All wiring within custom fabricated counters and tables to be concealed.

2.6 Fabricated Equipment

.1 All specially fabricated equipment must be by one manufacturer acceptable to Consultant and the Owner.

.2 All work must be done in an approved workmanlike manner to the complete satisfaction of Consultant and the Owner.

.3 All stainless steel shall be the U.S. standard gauge, 18-8, type 304, finish as noted in paragraph 2.05N.

.4 All galvanized steel shall be electro-galvanized.

.5 All seams and joints shall be shop welded or soldered as the nature of the material may require. Welds to be ground smooth and polished to match original finish.

.6 Framework of galvanized steel shall be welded construction. Where galvanizing has been burned off, the weld shall be touched up with high grade aluminum paint.

.7 The underside of all metal top tables, counters, drainboards, sinks and dishtables shall be provided with sound deadening material similar to Component Hardware Model Q85-5225 Tacky Tape; 3/4" wide x 3/32" thick strips. Spray or painted material or exposed mastic will not be acceptable.

.8 Metal Top Construction

.1 All seams and joints shall be one-piece welded construction, reinforced on the underside with galvanized steel secured to top with weld studs and stainless steel or chrome plated cap nuts so tops can support heavy weight without deflection. Cross braces to be not more than 48" (1200 cfm) on center.

.2 Tops supporting coffee urns, ice/soda dispensers, Etc…shall have additional bracing to support the heavy loads.

.3 Field joints in stainless steel tops; where required due to limitation of sheet sizes, equipment sizes or installation requirements shall be welded, ground smooth and polished to blend with adjacent surfaces.

.4 If inverted hat sections are used in lieu of channels, close ends.

.5 Stainless steel counter tops and overshelves exposed to heat shall be properly braced to maintain level work surfaces and to prevent warping.

.9 Fasteners

.1 Exposed bolt heads will not be permitted on fixtures.

.2 Butt joints made by riveting straps under seams and then filled with solder will not be accepted.

.3 Rivets of any kind, including pop-rivets, will not be accepted.

.4 Exposed screw heads, when necessary, shall be countersunk flush.

.5 Exposed fasteners shall be one of the same material and finish as the pieces held in place.

.6 Exposed bolt ends not permitted. Chrome plated hexagon type cap nuts to be provided on all exposed bolt ends.

.10 Rolled edges shall be as detailed with corners bullnosed, welded, ground and polished.

.11 Corners of dishtables, drainboards, splashbacks and turned up edges shall have 1/2" (15 mm) or larger radius bends in all horizontal and vertical corners, coved at intersections unless specified otherwise.

.12 Legs and Cross Rails

.1 Equipment legs and cross rails shall be 1-5/8" (40 mm) 16 gauge stainless steel tubing unless otherwise noted. All welds at cross rails shall be continuous and ground smooth. Tack welds are not acceptable. Tops of legs to be fitted with Component Hardware Model # A20-0206 16 gauge stainless steel gusset or approved equal. Gussets are to be secured as hereinafter described to fixtures.

.2 Sinks - weld gussets to triangular 12 ga. stainless steel gusset plates, which are in turn welded to underside of sinks.

.3 Tables and Dishtables - to metal top tables and dishtables with gussets which shall be welded to reinforcing channel/hat sections 14 gauge or heavier.

.13 Metal Gauge

.1 Unless otherwise noted in itemized specification or details, all gauges to be manufactured to the following minimum thickness:

Stainless Steel USS Gauge	Decimal Thickness	Millimeter Thickness
12	.1094	2.78
14	.0781	1.98
16	.0625	1.59
18	.0500	1.27
20	.0375	0.95

.14 Materials

.1 All fabricated items to be provided in gauge, metal type and finish per the following table.

Description	Gauge	Metal	Finish No.
Dishtable, Table and Counter tops	14	S.S	4
Hat Sections/Channel:			
Unexposed	14	Galvanized	4
Exposed	14	S.S	4
Counter Body:			
Framework	14	Galvanized	
Aprons, Partitions, Backs and Ends	18	S.S	4
Shelves (Intermediate)	18	S.S	4
Shelves (Base Shelf)	16	S.S	4
Refrigerators			
Interiors	20	S.S	2B
Doors			
Outside Faces	18	S.S	4
Inside Faces	20	S.S	2B
Drawer Pans			
General	18	S.S	2B
Plastic	Uniroyal "Royalite" Series		
Refrigerated	18	S.S	2B
Shelf			
Wall Mounted	16	S.S	4
Fixture Mounted	16	S.S	4
Table	16	S.S	4
Refrigerator		S.S Wire	
Shelf Bracket (Exposed)	14	S.S	4
Ventilators & Hoods			

Exterior Frame	14	S.S	4
Interior	18	S.S	4
Wall Flashing	20	S.S	4
Equipment Legs & Cross Rails	16	S.S Tubing	4

.15 Closure

.1 Return backsplashes, when exposed to have enclosed finished rear.

.2 Exposed backs of all equipment, fixtures, back splashes, shelves, etc., shall be closed.

.3 Exposed backs of counter top equipment in an island configuration will be provided with a full height stainless steel enclosure to conceal utility connections.

.4 Where the rear of a piece of equipment placed in a wall opening is exposed and unfinished, the KEC will provide a finished rear.

.5 Provide finished stainless steel on exposed rear of all equipment units.

.16 Casters shall be Colson Caster Corp. Series 2, or equal, non-marking, ball bearing NSF approved type with greaseproof polyurethane tires, Wheels shall be 5" (130 mm) diameter. Minimum width treads of 1-1/4" (30 mm). Minimum capacity per caster 250 lbs. (115kg). Where a set of four casters is specified, two are to be provided w/ brakes.

.17 Flanged Feet Pinned to Floor - free-standing work tables and counters with flanged feet shall be secured to the floor with smooth head stainless steel fasteners or with pins concealed in all legs of the table/counter when specified.

.18 Backsplash “Returns” - backsplashes on tables and counters are to be returned at the sides where adjacent wall, columns and other equipment to match the dimension of the adjacent element.

.19 Wall Flashing to include Component Hardware Model # J64-1450 divider bars and Model # J-63-1451 cap strips as required. No exposed fasteners will be accepted.

.20 Protection of Tops/Shelves - in order to protect finishes of fabricated items, all exposed horizontal surfaces of counter, tables & shelves are to be covered with cardboard & held in place with duct tape until such time that the work of related trades is complete.

.21 Adapter Bars - provide a full complement of adapter bars for “buy-out” and “custom fabricated” equipment units where adapter bars are necessary to optimize storage. Provide maximum number of adapter bars based on the smallest pan size to be used.

.22 Integration of “Buy Out” Item’s - custom Fabrication integrated with “buy out” items must satisfy the recommendation of the manufacturer of the buy out item for clearances, tolerances, ventilation, etc. Modifications to custom fabrication to satisfy these manufacturer’s recommendations will be at the expense of the custom fabricator.

2.7 Itemized Equipment Specifications

.1 The following numbers correspond to those on the Foodservice Equipment Drawings.

.2 .2 Where a manufacturer's name and model number is indicated, the item shall be supplied with all standard components, features and materials whether specifically identified or not, and shall be considered inherent in this specification.

.3 .3Items identified as custom fabricated shall be constructed of stainless steel unless otherwise specified. Refer to detail drawings at the end of this section for general fabrication methods for all items.

.4 .4 Verify mechanical and electrical services on owner supplied equipment. Approved alternative manufactures must supply a product that is equal in performance to the specified item.

.5 .5The following are preliminary lists of generic equipment required in the Main Kitchen.

ITEM NO. 1.084: CONDENSATE HOOD

Quantity: One (1) Existing to be Modified – by K.E.C.

Components:

- Manufacturer's standard components.
- KEC to remove baffle located at the back inside of the hood.
- KEC to grind smooth the removed section of the hood where the baffle was located.
- See picture below.

Work By Trades on site:

- Plumbing Division to connect drain from condensate hood to indirect floor drain.

ITEM NO. E.001: DISHWASHER

Quantity: One (1) Existing to be Modified – by K.E.C.

Components:

- KEC to relocate the dishwasher to suit the modified condensate hood item 1.084 closer to the wall.

Work By Trades on site:

- Plumbing Division to disconnect the water lines and drain lines to allow for the relocation of the dishwasher to the new location under the condensate hood.
- Electrical Division to disconnect the electrical to allow for the relocation of the dishwasher to the new location under the condensate hood.

ITEM NO. E.002: SOILED DISH TABLE

Quantity: One (1) Existing to be Modified – by K.E.C.

Components:

- KEC to pull dish table away from the wall to suit the location of the dishwasher.
- KEC to ensure the door of the dishwash can open and close with the new location of the dish table.
- KEC to add stainless steel filler panel between the table and the architectural to enclose the gap and silicone edges.

Work By Trades on site:

- Plumbing Division to disconnect the water lines and drain lines to allow for the relocation of the dish table to the new location.

ITEM NO. E.003: CLEAN DISH TABLE

Quantity: One (1) Existing to be Modified – by K.E.C.

Components:

- KEC to pull dish table away from the wall to suit the location of the dishwasher.
- KEC to ensure the door of the dishwash can open and close with the new location of the dish table.
- KEC to add stainless steel filler panel between the table and the architectural to enclose the gap and silicone edges.

Work By Trades on site:

- None.

ITEM NO. 1.045: COMBI OVEN

Quantity: One (1) Existing to be Relocated – by K.E.C.

Components:

- KEC to remove equipment from site and relocate to location as directed by the owner.

Work By Trades on site:

- Plumbing Division to disconnect the water lines, drain and gas lines to allow for removal of the equipment from site.
- Electrical Division to disconnect the electrical to allow for removal of the equipment from site.

ITEM NO. 1.045A: WATER FILTER

Quantity: One (1) Existing to be Relocated – by K.E.C.

Components:

- KEC to remove equipment from site and relocate to location as directed by the owner.

Work By Trades on site:

- Plumbing Division to disconnect the water lines and drain lines to allow for removal of the equipment from site.
- Electrical Division to disconnect the electrical to allow for removal of the equipment from site.

ITEM NO. 1.047: TILTING KETTLE

Quantity: One (1) Existing to be Relocated – by K.E.C.

Components:

- KEC to remove equipment from site and relocate to location as directed by the owner.

Work By Trades on site:

- Plumbing Division to disconnect the water lines and drain lines to allow for removal of the equipment from site.
- Electrical Division to disconnect the electrical to allow for removal of the equipment from site.

ITEM NO. 1.106: S.S. TABLE

Quantity: One (1) – by K.E.C.
Nominal size: 254mm long x 876mm wide x 914mm high
Type: Custom fabricated s/s construction in accordance with the specification for this section.

Components:

- 14 ga. s.s. top with dished and boxed edge as per Detail 401.
- Full length 150mm high x 50mm wide integral splash at back, splayed to wall. Enclose back splash at the rear.
- Secure table to the floor.
- Open section below for foodservice equipment complete with flat bar reinforcing at rear to allow undercounter equipment to be flush with front counter top edge.
- Fabricator to verify dimensions on-site prior to fabrication.
- Refer to Elevation on QF-300 series of drawings.

Work By Trades on site:

- None.

ITEM NO. 1.107: GAS CONVECTION OVEN

Quantity: One (1) – by K.E.C.
Manufacturer: GARLAND or equivalent by SOUTHBEND
Model: MCO-ES-10-S

Components:

- Manufacturer's standard components.
- Power to be 208/60/3 power.
- Electric, single-deck, standard depth 39", (2) speed 3/4 HP fan, Master 200 solid state controls with 1 hour timer, dependent 60/40 doors with windows, stainless steel front, sides & top, porcelain cavity, 25-1/2" legs, 10.4kW, NSF, UL, cUL.

Work By Trades on site:

- Electrical Division to wire in 208/60/3 28amp power to new oven.

3 PART 3 - EXECUTION

3.0 Site Inspections

.1 All dimensions shown on the Drawings or listed in this Section of the Specification are to be considered nominal and for guidance only. It is the responsibility of the Foodservice Equipment Sub-contractor to check dimensions on the site and to co-ordinate any adjustments which may be necessary for the proper fabrication and set-in-place of the foodservice equipment.

.2 If significant variances are apparent to the Project Co. or Foodservice Equipment Sub-contractor which may require changes affecting the intent of the contract, immediately notify the consultant.

.3 Fabricate equipment in sections that will allow easy access into the building and to final location within the foodservice area. Any damage to the building or the equipment will be the Foodservice Equipment Sub-contractor's responsibility.

.4 Verify on the job site all actual dimensions of storerooms and walk-in refrigerators and freezers and adjust if necessary the size of shelving units specified in the item specification.

.5 Verify all points of access into the job site and ensure that all pieces of equipment or fabricated items installed or relocated are able to pass through doors, hallways etc. in order to arrive at designated location on plans.

3.1 Samples

.1 If requested by the Consultant, submit samples of components or fabrication methods, materials or finishes, for review and approval before proceeding with that aspect of the work. Where necessary, request a shop inspection of an assembly which cannot be submitted for approval. Include in the base bid price, the cost of samples which may be rejected.

.2 Samples must be the precise articles proposed to be furnished.

.3 All samples must be supplied in the required quantity and all except one (1) will be returned.

.4 Reviewed samples will become the standard of workmanship and material against which installed work will be checked.

.5 Obtain from the Owner, all necessary samples of china, baskets, trays, etc. to determine proper sizes for openings, angle slides dispensers, conveyors, dishmachines, carts, wrapping machines, etc.

.6 Prior to ordering dishwashing or traywashing equipment, obtain from the Owner a sample of all service wares, trays and carts etc. and assure their compatibility with warewashing or cartwashing equipment.

3.2 Delivery Storage Of Equipment

.1 The Foodservice Equipment Sub-contractor will coordinate deliveries of equipment in conjunction with construction activity and progress at the site and as dictated by the Project Co.

.2 The Foodservice Equipment Sub-contractor shall obtain and/or hold equipment ready for delivery in accordance with an agreed schedule which will permit completion of the work at the specific date.

.3 Deliver, unpack and set in place all equipment in the designated position, ready for final connection of services, for units with electrical or mechanical connections.

.4 Supply to the Project Co., in sufficient time, any information or items of service, articles, components or equipment which requires building in or which may overlap or impede the work of others.

.5 Provide all necessary information within adequate time and in proper sequence regarding the exact location of openings, chases and any attachments or other fittings required for foodservice equipment.

.6 Supply and deliver to the site in sufficient time all inserts, anchors, bolts, sleeves, ferrules and similar items for attaching to, or building into, masonry, concrete and other work for the proper anchorage and fixing of the equipment. Include necessary templates, instructions, directions and/or assistance in the location and installation of all items by other Sub-contractors.

3.3 Installation

.1 Supply to all other trades in sufficient time, any services, articles, or equipment that require “building-in” or overlapping coordination. Also notify exact locations of openings, chases, anchors, floor pan, etc., required for the foodservice equipment covered in this contract.

.2 Caulk and seal equipment to walls, base pads, curbs, and adjacent equipment where required.

.3 Leave installed work neat, cleaned and polished, well fitted into position, level, and in proper operating condition.

.4 Promptly remove all rubbish and debris from the building and site as the work proceeds and on completion.

.5 Activate, test and adjust all equipment and apparatus installed under this Contract. Refinish and repair any painted and finished surfaces damaged during erection and installation. Hand over the completed installation in first class condition and working order.

.6 Ensure electrical equipment is accompanied by label or certification of approval by Canadian Standards Association, Hydro Electrical Power Commission or Local Authority.

.7 Ensure steam pressure equipment is accompanied by a "Certificate of Boiler" to satisfy Federal and Provincial requirements.

.8 Finished work must be perfectly true and plumb with no warping, buckling or open seams. All edges, hidden or exposed must be ground smooth and rounded. Rivet heads, weld marks, or other imperfections are not acceptable.

.9 Cutting and repairs for the proper installation of services are part of the work in this Contract.

.10 Obtain permits or special inspections. No allowance will be made for costs incurred.

.11 Identify equipment with metal plates or labels permanently secured which include, where applicable:

- Manufacturer's name or recognized trademark
- Complete model identification
- Model, serial number and CSA U.L.C. and NSF identifications

- Electrical characteristics
- Direction of drive
- Controls
- Circuits, lines, etc.
- Specific operating instructions

.12 Identify equipment with temporary labels showing location and Item number per Specifications.

.13 After installation has been completed and all items checked and adjusted where necessary for satisfactory operation, arrange for inspection of equipment. If items are found unsatisfactory, make necessary corrections and adjustments.

3.4 Protection And Cleaning

.1. Protect properly and efficiently all work against any damage. Repair without charge to the Owner any damage to equipment and/or building. Cooperate at all times to keep the area clean and free of all rubbish and debris. At the end, clean all equipment to permit immediate use by the Owner without further cleaning.

3.5 Maintenance Manuals

.1. Supply one digital copy and four (4) hard sets of manuals, bound and labeled, incorporating operating and maintenance instructions, including spare parts list and optional accessories for all items specified.

.2. Identify each item, arrange in proper sequence and ensure that the numbers correspond to the specifications and drawings.

.3. Provide an itemized lead sheet at the front of the manual with a list of the contents and the name and phone number of the service company.

3.6 Demonstration

.1 After completion of installation, cleaning, testing and final inspection, instruct the Owner or their authorized personnel in the correct operation and maintenance of the equipment.

.2 A demonstration shall be made of each piece of equipment requested by the Consultant, and such demonstration shall be carried out by a competent representative of the manufacturer's equipment.

.3 It is the responsibility of the Project Co. and/or Foodservice Equipment Sub-contractor to correct deficiencies and make adjustments to items which are not functioning properly at the time of demonstration.

.4 The Contractor shall co-ordinate the schedule for equipment demonstrations with the Owner representative, with adequate time allowed for each demonstration.

.5 Submit to the Foodservice Consultant prior to Facility Takeover, cleaning, final inspection and testing, a schedule of demonstration by the suppliers of purchased equipment. Indicate clearly the timing for each supplier to start up and demonstrate the proper use and maintenance of their equipment to the Owner.

.6 The Consultant will inspect equipment on substantial completion of work and will issue a deficiency report immediately thereafter. A final inspection will also be made to verify corrected deficiencies.

.7 The Owner reserves the right to inspect equipment at the factory of the Foodservice Equipment Sub-contractor, or at other locations as necessary.

.8 Rejection of any item of equipment, components or fabrication will be based on degree of conformance to the Specification and Drawings, and is subject to the Conditions of the contract in any matter of dispute.

3.7 Guarantee

.1 All new equipment shall be guaranteed for a minimum of One (1) years from the date of facility takeover against defects in material, manufacture, assembly, labour and installation. Those items or components which have inherent guarantee periods beyond this minimum shall be sustained to the maximum time provided by the manufacturer.

.2 This guarantee applies to new purchases and fabricated equipment specified under this Division. Repair and/or replace at no cost to the Owner, parts and labour included, any and all equipment covered in this contract, which proves defective within the guarantee period.

.3 The One (1) year warranty shall include service, inspection, and maintenance for the fire extinguishing system as requested by the national and/or local authorities and N.F.P.A. - Code 96.

.4 All mechanical refrigeration system components including compressors, condensing units, parallel packs and condensors shall be supplied with a One (1) year replacement guaranteed including parts and labour and an additional four (4) year parts guarantee on compressors.

.5 If defects become apparent during the guarantee period they shall be made good by the Foodservice Equipment Sub-contractor/supplier or authorized service representative. The supplier means the manufacturer of the equipment item, but under all circumstances it is the responsibility of the Project Co./Foodservice Equipment Sub-contractor to maintain the obligation of guarantee whether or not the supplier provides this service.

.6 If defects identified at any time during the One (1) year warranty period are not corrected prior to expiration of the warranty period, the warranty period will automatically be extended until the defect is corrected to the “Owners” or “Consultants” satisfaction.

.7 If deficiencies identified at the point of substantial completion of the food equipment installation or during the One (1) year warranty period are not corrected or resolved prior to the expiration of the One (1) year warranty period, the warranty period will automatically be extended until such time as the outstanding deficiency is corrected to the “Owners” or “Consultants” satisfaction.

.8 The guarantee shall not apply where it can be clearly shown that a defect or malfunction is due to misuse or neglect by the Owner or their representatives.

.9 The guarantee period shall commence upon acceptance of the equipment by the Owner, or such date(s) as may be mutually agreed upon after facility takeover of the work. In no event shall the period of guarantee begin later than the date upon which the lien holdback expires.

3.8 Inspection, Rejection And Factory Testing

.1 The Owner and Consultant reserve the right to inspect the fabrication of any items at the fabricating plant and they may reject any equipment which does not comply with Plans and/or Specifications. The Contractor will replace without charge all rejected material or equipment within (10) days or rejection.

.2 Factory test and verify all items such as cold pans, refrigerated display cases, ice cream freezers, custom built refrigerators, etc., to be sure that they are in proper working order before shipment. Inform the Consultant of the date of these tests in advance in writing so that he may observe and inspect these items in the ship if necessary. Advise the Consultant when installation is complete and ready for inspection.

END OF SECTION 11 40 00

1.0 GENERAL

1.1 Work Included

.1 This Section outlines repair and inspection procedures to be undertaken when existing electrical conduits, fixtures, etc. are damaged due to the construction activity.

.2 Damaged electrical conduits, fixtures, etc. must be repaired in a timely fashion. If repair cannot be made in a timely fashion, a temporary system must be installed.

.3 Visit site to ascertain and note existing conditions that will affect the Work.

1.2 Regulatory Requirements

.1 Comply with Safety Codes Act and rules and regulations made pursuant thereto, including Canadian Electrical Code.

.2 Unless otherwise indicated, all references in the Contract Documents to "Canadian Electrical Code" or "CEC" shall mean the edition of the Canadian Electrical Code, Part I, CSA C22.1 and the variations made thereto by Ontario regulation, which are in force on the date of bid closing for the Contract.

.3 All electrical products shall be tested, certified, and labelled in accordance with a certification program accredited by the Standards Council of Canada.

.4 Submit drawings and specifications to authority having jurisdiction and local utility company for examination and approval before commencement of electrical work. Pay any associated fees required to obtain a permit for the Work.

.5 Submit a copy of electrical permit obtained from the Authority Having Jurisdiction to the Consultant.

1.3 Examination of Site

.1 Visit and examine the site and all applicable Drawings before Bid. The Bid shall include all costs for required electrical work necessary for performance of the Work. No extras will be paid due to failure to visit the site or adequately review all required interfacing details.

1.4 Delivery, Storage, and Handling

.1 Submit copies of Safety Data Sheets (SDS) for all products prior to arrival on site.

.2 Deliver, store, and maintain packaged material with manufacturer's seals and labels intact.

.3 Store material in regulation containers in accordance with the Occupational Health and Safety Act and manufacturer instructions.

.4 Toxic or hazardous chemicals shall be secured in a locked storage area with appropriate protection measures in accordance with the Occupational Health and Safety Act.

.5 All containers to be labelled with material expiration dates. Material that is older than the expiry date shall be rejected. Shelf life shall be strictly adhered to and material shipped without dates will be rejected. Immediately remove rejected materials from site.

2.0 PRODUCTS

2.1 Materials

.1 Use new products unless otherwise specified.

.2 Provide electronic copies of maintenance instructions for finished surfaces and maintenance material before Substantial Performance of the Work.

3.0 EXECUTION

3.1 Exposed Conduits, Fixtures, Etc.

.1 All exposed conduits and fixtures are to be properly protected and operational at all times during the Work. Refer to Section 01 56 00.

.2 Repair or replacement of damaged exposed conduits, cables, and fixtures is Contractor's responsibility when damage was caused by Contractor's operations. Required repair or replacement work to exposed conduits, fixtures, etc. may be performed by Contractor's own electrician.

3.2 Existing Embedded Electrical Services

.1 Identify potential areas of buried or hidden conduit, and locate or switch off high voltage systems in the area of Work to prevent possible damage and injury. Coordinate requirements with Owner.

.2 Take utmost precaution during demolition operations to prevent damage to buried or hidden conduit and cables. Immediately report damage to hidden conduits, cables, and systems to Owner and Consultant.

.3 Damaged or deteriorated conduits are not to be covered up without specific approval from Owner.

.4 Allow reasonable time in scheduling of the Work for implementation of any required repairs to buried or hidden conduit, cables, and systems.

.5 Take all precautions to ensure embedded conduits uncovered by the work are not live before performing demolition work around them. Anticipate uncovering lighting conduits, 600V main power lines, exhaust fan conduits, alarm lines, telephone lines, etc.

.6 Repair or abandon damaged conduit, cabling, and systems uncovered by the Work at discretion of Owner. Owner will pay for repairs to damaged hidden conduit, cabling, and systems, provided damage did not result from a lack of Contractor care or negligence. Negligence shall be determined at discretion of Consultant.

.7 All repairs to embedded electrical conduit, cabling, and services will be performed by an electrician that is agreeable to Owner and paid via Change Order through contingency allowance.

3.3 Temporary Systems

.1 If damage to surface-mounted or hidden conduit, cabling, and systems cannot be repaired in a timely fashion, Owner may, at their discretion, request that Contractor provide a temporary system or connection to maintain operation.

.2 Costs for requested temporary systems will be allocated to Owner for damage to hidden conduit, cabling, and systems and to Contractor for damage to surface mounted conduit, cabling, and systems.

3.4 Inspection of Work

.1 All electrical system repair work is to be inspected as required by the authority having jurisdiction.

.2 Arrange for required inspections of repairs within 48 hours of repairing damage. Schedule all required inspections, regardless of whether Owner's or Contractor's electrician performed the repair.

.3 Cost of inspections shall be responsibility of Contractor.

.4 Copies of inspection certificates for required inspections shall be distributed to Owner and Consultant upon completing the Project.

END OF SECTION

1.0 GENERAL

1.1 Work Included

.1 Preparation of existing subgrade material and installation of new unshrinkable fill.

1.2 References

.1 All referenced Standards are latest editions referenced by the Building Code in the Place of the Work, or latest editions if not referenced by Code.

.2 Ontario Building Code

.3	ASTM C117	Standard Test Method for Materials Finer than 75-μm (No. 200) Sieve in Mineral Aggregates by Washing
.4	ASTM C136/136M	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
.5	CAN/CGSB-8.1-88	Sieves, Testing, Woven Wire, Inch Series (Withdrawn)
.6	CAN/CGSB-8.2-M88	Sieves, Testing, Woven Wire, Metric Series (Withdrawn)
.7	OPSS 501	Compacting
.8	OPSS 1010	Aggregates - Base, Subbase, Select Subgrade, and Backfill Material

1.3 Submittals

.1 Obtain certificates from suppliers that attest that supplied materials comply with Specifications and submit to Consultant.

.2 Obtain copies of waybills for supplied granular backfill material and submit to Consultant at end of each workday.

.3 Unit weight of supplied materials will be determined by average of three compaction tests conducted in the field or by using minimum specified weights and volume based on measured areas.

2.0 PRODUCTS

2.1 Materials

.1 Gradations to be within specified limits when tested to ASTM C117 and ASTM C136/136M. Sieve sizes to CAN/CGSB-8.1 and/or CAN/CGSB-8.2.

.2 Granular base to be Granular “A” to OPSS 1010. Inclusion of reclaimed asphalt pavement (RAP) and/or reclaimed concrete materials (RCM) will be at Consultant’s discretion.

.3 Granular subbase to be Granular “B” to OPSS 1010. Inclusion of reclaimed asphalt pavement (RAP) and/or reclaimed concrete materials (RCM) will be at Consultant’s discretion.

.4 Crushed stone or gravel shall consist of hard, durable, angular particles that are free from clay lumps, cementation, organic material, frozen material, and other deleterious materials.

.5 Filter fabric to be suitable for intended use, as confirmed by Consultant.

.6 Unshrinkable fill per OPSS 1359, consisting of a mixture of aggregates, cementing material and water, with or without chemical admixtures, that hardens into a material with higher strength than soil but less than 0.4 MPa compressive strength at 28 days, that can be removed with hand tools.

3.0 EXECUTION

3.1 Surface Preparation Prior to Installation of New Material

.1 Verify grade of items set in work area for conformance with required elevations before placing granular material. Prepare and compact subgrade prior to placing granular backfill material.

.2 Allow for Consultant review of subgrade before placing granular backfill material.

.3 Place granular backfill material only on clean unfrozen subgrade and backfill material that is free from snow and ice.

.4 Place granular backfill material to compacted thicknesses indicated in Contract Documents. Do not place frozen material.

.5 Place granular backfill in layers not exceeding 150 mm compacted thickness. Compact to density not less than 98% of maximum dry density (MDD) determined using standard proctor test.

.6 Finished base surface to be within 10 mm of specified grade but not uniformly high or low. Where grades are not specified on Drawings, confirm requirements with Consultant and ensure slopes to drain.

.7 Replace all damaged, deteriorated, and unsuitable sections of existing subgrade prior to placement of granular backfill material.

3.2 Compacting

.1 Compact subgrade and granular backfill in accordance with the Ontario Provincial Standard Specifications, using proper equipment to achieve specified density, and complying with OPSS 501.

.2 Compact subgrade and backfill material to a minimum of 98% of MDD as determined by the standard proctor test method.

.3 Density is to be measured using a nuclear density gauge.

.4 Finished surfaces to be to finished grades where indicated, or as directed by the Consultant, with slope to drains and catch basins.

.5 Finished surfaces to be uniform, smooth, even, dense, and free from shallow areas, protrusions, and surplus backfill. Correct any irregularities that vary more than 6 mm in 3,050 mm (1/4” in 10’-0”).

3.3 Inspection and Testing

.1 Testing to be conducted by a testing agency designated by Owner. Unless otherwise noted, the Owner will pay costs of inspection and testing described in this Section.

.2 Inform Consultant and testing agency 24 hours in advance of work to be performed under this Section.

.3 Testing may include site sampling and laboratory testing and/or in-situ compaction testing.

END OF SECTION