

Part 1 General

1.1 ACCESS AND EGRESS

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas, in accordance with relevant municipal, provincial and other regulations.

1.2 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with the Contract Administrator to facilitate work as stated.
- .2 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Where security is reduced by work provide temporary means to maintain security.
- .4 Ensure that Contractor personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .5 Keep within limits of work and avenues of ingress and egress.

1.3 WORKING HOURS

- .1 Working hours will be restricted to between 8:00 a.m. and 5:00 p.m. Monday through Friday.
- .2 No work permitted on Saturdays, Sundays and Statutory holidays.
- .3 Notwithstanding the above, all Work shall be completed in conformance with City of Winnipeg Neighbourhood Liveability By-Law No. 1/2008.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

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

1.2 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Submit shop drawings bearing stamp and signature of qualified professional engineer registered or licensed in Province of Manitoba, Canada.
- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .4 Allow 5 working days for Contract Administrator's review of each submission.
- .5 Adjustments made on shop drawings by the Contract Administrator are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to the Contract Administrator prior to proceeding with Work.
- .6 Make changes in shop drawings as the Contract Administrator may require, consistent with Contract Documents. When resubmitting, notify the Contract Administrator in writing of revisions other than those requested.

- .7 After the Contract Administrator's review, distribute copies.
- .8 Submit electronic copy in PDF format of shop drawings for each requirement requested in specification Sections and as the Contract Administrator may reasonably request.
- .9 Submit electronic copy in PDF format of product data sheets or brochures for requirements requested in specification Sections and as requested by the Contract Administrator where shop drawings will not be prepared due to standardized manufacture of product.
- .10 Delete information not applicable to project.
- .11 Supplement standard information to provide details applicable to project.
- .12 If upon review by the Contract Administrator, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

1.3 SAMPLES

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

1.4 MOCK-UPS

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

1.5 CERTIFICATES AND TRANSCRIPTS

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

- Part 2** **Products**
- 2.1** **NOT USED**
- .1 Not Used.

- Part 3** **Execution**
- 3.1** **NOT USED**
- .1 Not Used.

END OF SECTION

Part 1 General

1.1 INSPECTION

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

1.2 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies will be engaged for purpose of inspecting and/or testing portions of Work.
 - .1 Cost of such services will be paid by the Contractor as a Unit Price component in accordance with B10.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by the Contract Administrator at no cost to The City. Pay costs for retesting and reinspection.

1.3 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to Work.
- .2 Co-operate to provide reasonable facilities for such access.

1.4 PROCEDURES

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

1.5 REJECTED WORK

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

1.6 REPORTS

- .1 Submit copies of inspection and test reports to The City and the Contract Administrator.
- .2 Provide copies to subcontractor of work being inspected or tested manufacturer or fabricator of material being inspected or tested.
- .3 Provide copies of concrete test results to Concrete Supplier.

1.7 TESTS AND MIX DESIGNS

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

1.8 MOCK-UPS

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

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 INSTALLATION AND REMOVAL

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

1.2 WATER SUPPLY

- .1 The City will make available, for the extent that it is available, a supply of potable water for construction use at no charge to the Contractor
- .2 Arrange for connection with appropriate utility company and pay costs for installation, maintenance and removal.
- .3 The Contractor shall provide all necessary hoses, lines, connections, and other ancillary hardware which may be required.
- .4 The services are to be returned to their original condition at the temporary locations, or left in an altered condition only as approved by The City.

1.3 TEMPORARY HEATING AND VENTILATION

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

- .6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.
- .7 Control humidity levels in construction areas to accommodate specified products.
- .5 Permanent heating system of building, may be used for heating. Be responsible for damage to heating system if use is permitted.
- .6 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
 - .1 Conform with applicable codes and standards.
 - .2 Enforce safe practices.
 - .3 Prevent abuse of services.
 - .4 Prevent damage to finishes.
 - .5 Vent direct-fired combustion units to outside.
- .7 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.4 TEMPORARY POWER AND LIGHT

- .1 The City will make available, for the extent that it is available temporary power during construction for temporary lighting and operating of power tools.
- .2 Connect to existing power supply in accordance with Canadian Electrical Code and provide meters and switching.
- .3 Arrange for connection with appropriate utility company. Pay costs for installation, maintenance and removal.
- .4 Temporary power for equipment requiring in excess of that available on-site is responsibility of the Contractor.
- .5 Provide and maintain temporary lighting throughout project.

1.5 TEMPORARY COMMUNICATION FACILITIES

- .1 Provide and pay for cellular telephone for site superintendent and use of the Contract Administrator

1.6 FIRE PROTECTION

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

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CSA-A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA O121-08, Douglas Fir Plywood.

1.2 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop Drawings:
 - .1 Submit shop drawings bearing the seal of professional engineer registered in the Province of Manitoba.

1.3 SCAFFOLDING

- .1 Design and erect scaffolding in accordance with Manitoba Regulation 217/2006 and CAN/CSA S269.2.
 - .1 Where Manitoba Regulation 217/2006 requires scaffolds to be designed by a professional engineer. Submit shop drawings bearing the seal of professional engineer registered in the Province of Manitoba.

1.4 SITE STORAGE/LOADING

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

1.5 CONSTRUCTION PARKING

- .1 Parking will be permitted on site provided it does not interfere with normal operations, access buy tenants or the public, or disrupt performance of Work.

1.6 EQUIPMENT, TOOL AND MATERIALS STORAGE

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

1.7 SANITARY FACILITIES

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
- .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.8 POLLUTION CONTROL

- .1 The use of gas or diesel powered equipment within interior areas is strictly prohibited.
- .2 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures and/or other control methods. If necessary, arrange for shutdown of air handling units which have air intakes in the vicinity of the work. Dust can trigger fire alarm smoke detectors and can plug ducts and filters. Dust and suspended particles can damage air-cooled mechanical and electrical equipment. If necessary, arrange for shutdown of this equipment. Contractor shall be responsible for all damages. Prior to start of work, identify locations of air intakes and air-cooled mechanical and electrical equipment within and adjacent to the area of work.
- .3 Control noxious and hazardous gases. Prevent hazardous accumulations. Control emission from equipment and plant to local authority's emission requirements.
- .4 On exterior, cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.9 CLEAN-UP

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

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 INSTALLATION AND REMOVAL

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

1.2 HOARDING

- .1 The Contractor must barricade off the area under construction to prevent the general public from improper access to the construction area. Suitable barricades and protection systems include:
 - .1 Lock and barricade existing doors to work areas. Post warning signage on doors.
 - .2 Erect barricades within work areas around open through slab repairs with materials design to withstand guard loading.
- .2 Repair surface coatings and finishes which are damaged by temporary hoardings and barricades.
- .3 Provide adequate signage, fencing, etc. to inform the public of the work being undertaken.
- .4 Erect and maintain pedestrian walkways including roof and side covers, complete with signs and electrical lighting as required by law.

1.3 DUST TIGHT SCREENS

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

1.4 FIRE ROUTES

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

1.5 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

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

1.6 PROTECTION OF BUILDING FINISHES

- .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- .2 Provide necessary screens, covers, and hoardings.
- .3 Be responsible for damage incurred due to lack of or improper protection.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Within text of each specifications section, reference may be made to reference standards. Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .2 Conform to latest date of issue of referenced standards in effect on date of submission of Tenders, except where specific date or issue is specifically noted.
- .3 If there is question as to whether products or systems are in conformance with applicable standards, the Contract Administrator reserves right to have such products or systems tested to prove or disprove conformance.
- .4 The Cost for such testing will be borne by the Contractor or Supplier.

1.2 QUALITY

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

1.3 AVAILABILITY

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

1.4 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense and to satisfaction of the Contract Administrator.
- .9 Touch-up damaged factory finished surfaces to the Contract Administrator's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.5 TRANSPORTATION

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

1.6 MANUFACTURER'S INSTRUCTIONS

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

1.7 QUALITY OF WORK

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify the Contract Administrator if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. The reserves right to require dismissal from site, workers deemed incompetent or careless.

- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with the Contract Administrator, whose decision is final.

1.8 CO-ORDINATION

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

1.9 REMEDIAL WORK

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

1.10 PROTECTION OF WORK IN PROGRESS

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

1.11 EXISTING UTILITIES

- .1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and/or building occupants.
- .2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 PROJECT CLEANLINESS

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

1.2 HIGH LEVEL CLEANING

- .1 At completion of Work, complete a high level cleaning of the Pool Area.
- .2 Clean ductwork and mechanical equipment in areas affected by construction work.
- .3 Provide scaffolding if required to complete high-level cleaning. Remove scaffolding upon completion of cleaning.
- .4 Maintain ceiling tiles and ceiling tracking in place.
- .5 Clean by wet wipe and vacuum accessible horizontal surfaces and ledges including but not limited to:
 - .1 Structural steel members not covered by the suspended ceiling system. Including but not limited to:
 - .1 Exposed steel beam flanges.
 - .2 Truss chords.
 - .3 Bridging members.
 - .2 Ceiling tracking accessible without removing ceiling system.
 - .3 Mechanical and electrical fixtures.
 - .4 Furnishings.

1.3 FINAL CLEANING

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris other than that caused by The City or other Contractors.
- .5 Remove waste materials from site at regularly scheduled times. Do not burn waste materials on site.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Remove stains, spots, marks and dirt from existing surfaces, fixtures, and finishes within the work area or affected by the affected by the Work.
- .8 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .9 Remove dirt and other disfiguration from exterior surfaces.
- .10 Sweep and power wash clean all work areas.

1.4 FLOOR DRAIN CLEANING

- .1 Prior to commencement of Work, remove debris from drain and pits. Mechanically clean drain lines.
- .2 Following completion of Work, remove construction debris from drain and pits. Mechanically clean drain lines.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 General Conditions C12.
- .2 Supplemental Conditions Part D.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Conduct the following in addition to requirements outlined in General Conditions C12 and Supplemental Conditions Part D.
- .2 Acceptance of Work Procedures:
 - .1 Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify the Contract Administrator in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
 - .2 Request Contract Administrator's inspection.
 - .2 Contract Administrator's Inspection:
 - .1 The Contract Administrator and Contractor to inspect Work and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.
 - .3 Completion Tasks: submit written certificates that tasks have been performed as follows:
 - .1 Work: completed and inspected for compliance with Contract Documents.
 - .2 Defects: corrected and deficiencies completed.
 - .3 Work: complete and ready for final inspection.
 - .4 Final Inspection:
 - .1 When completion tasks are done, request final inspection of Work by The City, The Contract Administrator, and Contractor.
 - .2 When Work incomplete according to The City and the Contract Administrator, complete outstanding items and request re-inspection.
 - .5 Declaration of Substantial Performance: when the Contract Administrator considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.
 - .6 Commencement of Lien and Warranty Periods: date of The City's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.
 - .7 Final Payment:
 - .1 When the Contract Administrator considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.
 - .2 Refer to General Conditions C12: when Work deemed incomplete by the Contract Administrator, complete outstanding items and request re-inspection.

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

1.3 FINAL CLEANING

- .1 Clean in accordance with Section 01 74 11 – Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Operation and maintenance data.
- .2 As-built drawings, samples, and specifications.
- .3 Product data, materials and finishes, and related information.
- .4 Record documents.
- .5 Final site survey.
- .6 Equipment and systems.
- .7 Spare parts, special tools and maintenance materials.
- .8 Warranties and bonds.

1.2 SUBMISSION

- .1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.
- .2 Copy will be returned after final inspection, with Contract Administrator's comments.
- .3 Revise content of documents as required prior to final submittal.
- .4 Two weeks prior to Substantial Performance of the Work, submit to the Contract Administrator, four final copies of operating and maintenance manuals in English.
- .5 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.
- .6 If requested, furnish evidence as to type, source and quality of products provided.
- .7 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
- .8 Pay costs of transportation.

1.3 OPERATION AND MAINTENANCE MANUAL FORMAT

- .1 Organize data in the form of an instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
- .3 When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder on spine.
- .4 Cover: Identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

- .5 Arrange content by systems, under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: Manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

1.4 CONTENTS - EACH VOLUME

- .1 Table of Contents: provide title of project;
 - .1 date of submission;
 - .2 names, addresses, and telephone numbers of The City, Contract Administrator and Contractor with name of responsible parties; and
 - .3 schedule of products and systems, indexed to content of volume.
- .2 For each product or system, list names, addresses and telephone numbers of Subcontractors and Suppliers, including local source of supplies and replacement parts.
- .3 Product Data: mark each sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

1.5 AS-BUILT DOCUMENTS AND SAMPLES

- .1 In addition to requirements in General Conditions, maintain at the site for the Contract Administrator one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to the Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
- .2 Store as-built documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.
- .3 Label as-built documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "AS-BUILT DOCUMENTS" in neat, large, printed letters.
- .4 Maintain as-built documents in clean, dry and legible condition. Do not use as-built documents for construction purposes.

- .5 Keep as-built documents and samples available for inspection by the Contract Administrator.

1.6 RECORDING ACTUAL SITE CONDITIONS

- .1 Record information on set of black line opaque drawings, and in a copy of the Project Manual, provided by the Contract Administrator.
- .2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:
 - .1 Field changes of dimension and detail.
 - .2 Changes made by change orders.
 - .3 Details not on original Contract Drawings.
 - .4 References to related shop drawings and modifications.
- .5 Specifications: legibly mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.
- .6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

1.7 RECORD DOCUMENTS

- .1 Prior to Substantial Performance of the Work, electronically transfer the marked up information from the as-built documents to a master set of drawing and specification files provided by the Contract Administrator, as follows:
 - .1 Drawings: AutoCAD Release 2017.
 - .2 Specifications: Adobe Acrobat 2019.
- .2 Mark revised documents as "RECORD DOCUMENTS". Include all revisions.
- .3 Employ a competent computer draftsman to indicate changes on the electronic set of record drawings. Provide updated record drawings in AutoCAD Release 2017.
- .4 Employ a competent specification writer to indicate changes to the electronic set of record specifications. Provide updated record specifications in Adobe Acrobat 2019.
- .5 Submit completed record documents to the Contract Administrator on a CD-ROM.

1.8 MATERIALS AND FINISHES

- .1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.
- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

- .3 Moisture-protection and Weather-exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .4 Building Envelope: include copies of drawings of building envelope components, illustrating the interface with similar or dissimilar items to provide an effective air, vapour and thermal barrier between indoor and outdoor environments. Include an outline of requirements for regular inspections and for regular maintenance to ensure that on-going performance of the building envelope will meet the initial building envelope criteria.
- .5 Additional Requirements: as specified in individual specifications sections.

1.9 SPARE PARTS

- .1 Provide spare parts, in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in Work.
- .3 Deliver to the Place of the Work; place and store.
- .4 Receive and catalogue all items. Submit inventory listing to the Contract Administrator. Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered Products and submit prior to final payment.

1.10 MAINTENANCE MATERIALS

- .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in Work.
- .3 Deliver to the Place of the Work; place and store.
- .4 Receive and catalogue all items. Submit inventory listing to the Contract Administrator. Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered Products and submit prior to final payment.

1.11 SPECIAL TOOLS

- .1 Provide special tools, in quantities specified in individual specification section.
- .2 Provide items with tags identifying their associated function and equipment.
- .3 Deliver to the Place of the Work; place and store.
- .4 Receive and catalogue all items. Submit inventory listing to the Contract Administrator. Include approved listings in Maintenance Manual.

1.12 STORAGE, HANDLING AND PROTECTION

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.

- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store paints and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged Products at own expense and to satisfaction of the Contract Administrator.

1.13 WARRANTIES AND BONDS

- .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
- .2 List Subcontractor, Supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- .3 Obtain warranties and bonds, executed in duplicate by Subcontractors, Suppliers, and manufacturers, within ten days after completion of the applicable item of work.
- .4 Except for items put into use with The City's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.
- .5 Verify that documents are in proper form, contain full information, and are notarized.
- .6 Co-execute submittals when required.
- .7 Retain warranties and bonds until time specified for submittal.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 The top surface of slabs exhibiting extensive spalling and delamination are to be repaired by mechanical removal of the deteriorated concrete and infilling with a rapid-setting mortar.
- .2 Where spalling and delamination extend throughout the depth of the slab, complete through slab concrete repair. Locations to be identified by the Contract Administrator.
- .3 All spalling and/or delaminated concrete must be removed down to sound concrete in accordance with Section 03 91 10 – Surface Preparation for Concrete Substrate Repairs.

1.2 RELATED SECTIONS

- .1 Section 03 91 10 – Surface Preparation for Concrete Substrate Repairs.

1.3 REFERENCES

- .1 American Concrete Institute (ACI)
 - .1 ACI 546-04, Concrete Repair Guide.
 - .2 ACI RAP-7, Spall Repair of Horizontal Concrete Surfaces.
- .2 Canadian Standards Association (CSA)
 - .1 CSA-A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
- .3 American Society for Testing and Materials (ASTM)
 - .1 ASTM C39 / C39M – 18, Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
 - .2 ASTM C109 / C109M - 16a, Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens).
 - .3 ASTM C191 - 18a, Standard Test Methods for Time of Setting of Hydraulic Cement by Vicat Needle.
 - .4 ASTM C309-11, Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 - .5 ASTM C496 / C496M – 17, Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens
 - .6 ASTM C666 / C666M – 15, Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing.
 - .7 ASTM C672 / C672M – 12, Standard Test Method for Scaling Resistance of Concrete Surfaces Exposed to Deicing Chemicals.
 - .8 ASTM C928/C928M-13, Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repairs.
 - .9 ASTM C1202 – 19, Standard Test Method for Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration.

1.5 PRE-INSTALLATION MEETING

- .1 In accordance with Section 01 31 19 – Project Meetings.
- .2 Convene pre-installation meeting one week prior to beginning work of this Section and on-site installation of mock-up. Agenda for meeting to include:
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Review installation details.
 - .4 Co-ordinate with other subtrades.
 - .5 Review manufacturer's installation instructions and warranty requirements.
 - .6 Review compatibility of materials.
 - .7 Review testing requirements.

1.6 QUALITY ASSURANCE

- .1 Field Mock-up:
 - .1 Install field mock-up at Project site or pre-selected area of building or location approved by the Contract Administrator. Install material in accordance with this Section.
 - .2 Field mock-up will be standard for judging workmanship on remainder of Project.
 - .3 Manufacturer's representative or designated representative will review technical aspects; surface preparation, repair, and workmanship.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Comply with Section 01 61 00.
- .2 Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- .3 Store tightly sealed materials off ground and away from moisture, direct sunlight, extreme heat, and freezing temperatures.
- .4 Keep materials in manufacturer's original, unopened containers and packaging until installation.
- .5 Protect materials during storage, handling, and application to prevent contamination or damage.

1.8 PROJECT CONDITIONS

- .1 Environmental Requirements:
 - .1 Ensure that substrate surface and ambient air temperature are minimum of 4°C and rising at application time and remain above 4°C for at least 24 hours after application. Ensure that frost or frozen surfaces are thawed and dry.
 - .2 Ensure that substrate surface and ambient air temperature are below of 32°C and remain below 32°C for at least 8 hours after application.
 - .3 Do not apply material if snow, rain, fog, and mist are anticipated within 12 hours after application. Allow surfaces to attain temperature and conditions specified before proceeding with application.

Part 2 Products

2.1 MATERIALS

- .1 Rapid Setting Repair Mortar: One-component, shrinkage-compensated, cement-based mortar with extended working time for repairing horizontal concrete surfaces.
 - .1 Provide mortar material complying with the following requirements:
 - .1 Compliance: ASTM C928.
 - .2 Compressive Strength, ASTM C109, 2-inch (51-mm) cubes:
 - .1 3 Hours: 3,000 psi (21 MPa).
 - .2 1 Day: 6,000 psi (41 MPa).
 - .3 28 Days: 8,000 psi (55 MPa).
 - .3 Compressive Strength, ASTM C39, 3-inch by 6-inch (76-mm by 152-mm) cylinders:
 - .1 28 Days: 7,400 psi (51 MPa).
 - .4 Set Time, ASTM C191, 72 degrees F (22 degrees C):
 - .1 Initial: 50 minutes.
 - .2 Final: 80 minutes.
 - .5 Splitting Tensile Strength, ASTM C496:
 - .1 1 Day: 400 psi (3 MPa).
 - .2 28 Days: 450 psi (3 MPa).
 - .6 Freeze-Thaw Resistance, ASTM C666, Procedure A, at 300 cycles:
 - .1 100 percent relative dynamic modulus.
 - .7 Scaling Resistance, ASTM C672, at 25 cycles:
 - .1 Zero rating; no scaling.
 - .8 Length Change, ASTM C928:
 - .1 Drying Shrinkage: Minus 0.05 percent.
 - .2 Wetting Expansion: Plus 0.03 percent.
 - .9 Rapid Chloride Permeability, ASTM C1202:
 - .1 Less than 300 Coulombs.
 - .10 Coefficient of Thermal Expansion, CRD C39:
 - .1 6.8×10^{-6} in/in/degree F (12.6×10^{-6} cm/cm/degree C).
 - .2 Acceptable Product:
 - .1 MasterEmaco T 1061 formerly (10-61 Rapid Mortar) by BASF Building Systems.
 - .2 Substitutions will be considered in accordance with General Conditions.

2.2 ACCESSORIES

- .1 Aggregate Extension: extend mortar material with washed, graded, 3/8 inch (10 mm), low-absorption, saturated surface-dry aggregate at mortar manufacturers recommended rates.
 - .1 For repair areas 2 – 4" (50 – 100 mm) in depth, the minimum recommended addition is 15 – 25 lbs (6.8 – 11.4 kg) of 3/8" (10 mm) washed, graded, rounded, SSD, low-absorption, high-density aggregate per 50 lb (22.7 kg) bag.
 - .2 For areas greater than 4" (100 mm) in depth, the minimum recommended addition is 25 – 50 lbs (11.4 – 22.7 kg) of 3/8" (10 mm) washed, graded, rounded, SSD, low-absorption, high-density aggregate per 50 lb bag.
 - .3 The maximum aggregate extension is 50 lbs (22.7 kg) of pea gravel per bag.

- .2 Evaporation retardant:
 - .1 Acceptable Product:
 - .1 MasterKure ER 50 formerly (Confilm) by BASF Building Systems at a minimum application rate of 4.9 m²/L.
 - .2 Substitutions will be considered in accordance with B7.
- .3 Cure and sealing compound: to ASTM C309, Type 1.
 - .1 Acceptable product(s):
 - .1 Florseal WB by Sika Canada Inc. at a minimum application rate of 4.9 m²/L.
 - .2 MasterKure CC 160 WB formerly (Kure-N-Seal WB) by BASF Building Systems at a minimum application rate of 4.9 m²/L.
 - .3 Substitutions will be considered in accordance with B7.

Part 3 Execution

3.1 PREPARATION

- .1 Protection: Protect adjacent Work areas and finish surfaces from damage during repair mortar application.
- .2 Surface Preparation:
 - .1 Complete concrete substrate repairs to 03 91 10 – Surface Preparation for Concrete Substrate Repairs.
- .3 The repair area must be thoroughly cleaned and well soaked prior to infilling. The surface should be thoroughly wetted for a period of not less than two (2) hours. The repair areas shall be kept continuously wet until just before infilling. Any standing water must be removed prior to grouting.
- .4 Maintain the substrate in a saturated, surface-dry (SSD) condition with no surface water, and concrete that is turning from dark to light.
- .5 Obtain the Contract Administrator's approval before placing concrete. Provide 24 hours notice prior to placing of concrete.
- .6 Through slab repair forming (if applicable):
 - .1 Design and install formwork and shoring to accommodate the mass and pressure of the repair material.
 - .2 Securely anchor formwork to substrate. Anchors to be sized and space to prevent deflection of the forms placement and curing.
 - .3 Construct forms to fit tightly against existing concrete surfaces. Seal around edge of formwork with sealant to prevent leakage during grouting.
 - Anchors:
 - .1 Completely removable.
 - .2 Patch anchor holes with grout mixed to dry pack consistency. Completely fill all anchor holes.

- .4 A minimum of 30 mm concrete cover over the primary reinforcing steel will be required, thus, an adjustment of the formwork such as a notch may be required to ensure sufficient cover.
- .5 Provide drainage outlets in formwork for presoaking and, if beneath a soffit, provide air venting. Provide suitable access points to pour mixed repair mortar into place.
- .6 Use form-release agent to facilitate removal of forms from cast material.
- .7 Within two (2) hours immediately prior to placement of repair material, test formwork to determine watertightness. Completely fill formwork with clean water and let stand for not less than 15 minutes. Any areas of leakage are to be sealed prior to placement of repair material. Re-test as required.

3.2 INFILLING PROCEDURES

- .1 Obtain the Contract Administrator's approval before placing repair material. Provide minimum 24 hours notice.
- .2 Maintain the substrate in a saturated surface-dry (SSD) condition with no surface water, and concrete that is turning from dark to light.
- .3 Mixing of rapid-setting mortar horizontal extended mortar:
 - .1 Mix materials in accordance with manufacturer's instructions.
 - .2 Ensure repair mortar is thoroughly mixed.
 - .3 Do not use free-fall mixers.
 - .4 Never mix partial bags.
- .4 Bonding Slurry Application:
 - .1 Apply the bonding slurry consisting of neat rapid-setting mortar to a saturated surface dry (SSD) substrate with no standing water and dry to the touch. A SSD substrate typically exhibits a colour change of dark grey to light grey. Remove standing water by vacuuming.
 - .2 Scrub plastic slurry into substrate with stiff bristled broom or brush to produce a uniform thickness of 1/8" over entire area.
 - .3 Place repair material while the bonding slurry is still plastic. Do not apply more slurry than can be covered with concrete before it dries. Do not retemper. If the bond slurry dries prior to placement of the concrete, removal of the dried slurry will be required. The concrete substrate will then be cleaned and prepared in accordance with the requirements described in the previous sections.
- .5 Immediately place repair material, into the prepared patch area from one side to the other. Work the repair material firmly into the bottom and sides of the patch, and underneath reinforcing steel, to assure good bond.
- .6 Ensure that rate of placing is sufficient to complete proposed placing, finishing and curing operations within scheduled time. Limit batch sizes as required if placing procedures are slower than anticipated.
- .7 Continuously consolidate and finish to matching elevations, ensuring patch thickness and required elevations are maintained.
- .8 Ensure reinforcement, floor drains, inserts, etc. are not disturbed during concrete placement.

3.3 FINISHING

- .1 Following consolidation and screeding, the surface shall be immediately bull-floated to close and smooth the surface.
- .2 Apply evaporation retardant at manufacturers recommended coverage rate immediately following final finishing. Do not apply evaporation retardant during any finishing operation nor should it be worked into the surface.
- .3 Protect freshly placed concrete from exposure to dust, debris and precipitation.

3.4 CURING

- .1 Concrete repairs to be cured for a minimum of 3 days at 10°C.
- .2 Immediately after final finishing, apply evaporation retardant to prevent drying shrinkage until the concrete has enough strength to support the placement of the wet burlap.
- .3 Burlap to be thoroughly presoaked by immersing it in water for a period of at least 24 hours immediately prior to placement.
- .4 Commence wet curing as soon as the surface will support the weight of the wetted burlap without deformation. Burlap to be applied in one layer with strips overlapping at least 3" and be securely held in place without marring the concrete surface.
- .5 Wet curing with burlap and water must be maintained throughout entire curing period.
- .6 Workers shall not be allowed on the overlay for 12 hours after placement. Do not place load upon new concrete until curing period is over.

3.5 FIELD QUALITY CONTROL

- .1 Inspection and testing of concrete and concrete materials will be carried out by a Testing Laboratory designated by the Contract Administrator in accordance with CSA-A23.1 and Section 01 45 00 - Quality Control and as described herein.
- .2 The Contractor will pay for costs of tests.
- .3 Inspection or testing by the Contract Administrator will not augment or replace Contractor quality control nor relieve contractual responsibility.
- .4 Direct pull-out tensile tests to determine bond strength will be completed throughout the course of the work but not less than the following:
 - .1 Not less than two (2) bond test will be provided.
 - .2 The Contract Administrator reserves the right to take additional bond tests if concrete or bonding system is suspect.
 - .3 Infilling of the core hole will be the responsibility of the General Contractor. Unless otherwise directed by the Contract Administrator, repair in accordance with this Section.
- .5 Testing agency to submit copies of concrete test reports directly to The City and the Contract Administrator.

3.6 DEFECTIVE CONCRETE

- .1 Defective concrete: bond strengths below minimum specified value, cracking, spalling, scaling and concrete not conforming to required lines, details, dimensions, tolerances, finishes or specified requirements.
- .2 Repair or replacement of defective concrete will be determined by the Contract Administrator, based on the specifications and the above guidelines.
- .3 Do not patch, fill, touch up, repair or replace exposed concrete except upon express direction of the Contract Administrator for each individual use.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Ceramic Tile, backing and installation at locations indicated on Drawing A1.

1.2 REFERENCES

- .1 American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)
 - .1 ANSI A108.1-99, Specification for the Installation of Ceramic Tile (ANSI A108.1A-C, 108.4-.13, A118.1-.10, ANSI A136.1).
 - .2 CTI A118.3- 92, Specification for Chemical Resistant, Water Cleanable Tile Setting and Grouting Epoxy and Water Cleanable Tile Setting Epoxy Adhesive (included in ANSI A108.1).
 - .3 CTI A118.4- 92, Specification for Latex Cement Mortar (ANSI A108.1).
 - .4 CTI A118.5- 92, Specification for Chemical Resistant Furan Resin Mortars and Grouts for Tile Installation (included in ANSI A108.1).
 - .5 CTI A118.6-92, Specification for Ceramic Tile Grouts (ANSI A108.1).American Society for Testing and Materials International (ASTM).
 - .6 ASTM C144-04, Specification for Aggregate for Masonry Mortar.
 - .7 ASTM C207- 06, Specification for Hydrated Lime for Masonry Purposes.
 - .8 ASTM C847- 06, Specification for Metal Lath.
 - .9 ASTM C979- 05, Specification for Pigments for Integrally Coloured Concrete.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-51.34-M86 (R1988), Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
 - .2 CGSB 71-GP-22M-78, Adhesive, Organic, for Installation of Ceramic Wall Tile.
 - .3 CAN/CGSB-75.1-M88, Tile, Ceramic.
 - .4 CAN/CGSB-25.20-95, Surface Sealer for Floors.
- .3 Canadian Standards Association (CSA International)
 - .1 CSA A123.3-05, Asphalt Saturated Organic Roofing Felt.
 - .2 CAN/CSA-A3000-03(R2006), Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).South Coast Air Quality Management District (SCAQMD), California State
 - .3 SCAQMD Rule 1168-05, Adhesives and Sealants Applications.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide product data in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Include manufacturer's information on:
 - .1 Ceramic tile, marked to show each type, size, and shape required.
 - .2 Chemical resistant mortar and grout (Epoxy and Furan).
 - .3 Cementitious backer unit.
 - .4 Dry-set cement mortar and grout.
 - .5 Divider strip.
 - .6 Elastomeric membrane and bond coat.

- .7 Reinforcing tape.
 - .8 Levelling compound.
 - .9 Latex cement mortar and grout.
 - .10 Commercial cement grout.
 - .11 Organic adhesive.
 - .12 Slip resistant tile.
 - .13 Waterproofing isolation membrane.
 - .14 Fasteners.
- .3 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.
- .1 Base tile: submit 300 x 300 mm sample panels of each colour, texture, size, and pattern of tile.
 - .2 Floor tile: submit 300 x 300 mm sample panels of each colour, texture, size, and pattern of tile.
 - .3 Trim shapes, bullnose cap and cove including bullnose cap and base pieces at internal and external corners of vertical surfaces, each type, colour, and size.
 - .4 Adhere tile samples to 11 mm thick plywood and grout joints to represent project installation.

1.4 QUALITY ASSURANCE

- .1 Quality Assurance Submittals:
- .1 Manufacturer's Instructions: manufacturer's installation instructions.
 - .2 Manufacturer's Field Reports: manufacturer's field reports specified.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Packing, shipping, handling and unloading:
- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

1.6 AMBIENT CONDITIONS

- .1 Maintain air temperature and structural base temperature at ceramic tile installation area above 12 degrees C for 48 hours before, during, and after installation.
- .2 Do not install tiles at temperatures less than 12 degrees C or above 38 degrees C.
- .3 Do not apply epoxy mortar and grouts at temperatures below 15 degrees C or above 25 degrees C.

1.7 MAINTENANCE

- .1 Extra Materials:
- .1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals. Provide minimum 2% of each type and colour of tile required for project for maintenance use. Store where directed.
 - .2 Maintenance material same production run as installed material.

Part 2 Products

2.1 FLOOR TILE

- .1 Ceramic tile (CT-1): Acceptable Product: "Keystone Series", by Daltile or an approved equal in accordance with B7. Code D200 (Group 1), 1" (23mm) hexagon size and pattern, slip resistant surface, colour as selected by Contract Administrator.
- .2 Trims and Profiles: Include all required trims and profiles such as cove base, nosing, inside corner, outside corner cove base corner, universal trims, etc. to match adjacent flooring material.
- .3 Locations: Refer to Drawing A1.

2.2 TRIM SHAPES

- .1 Conform to applicable requirements of adjoining floor and wall tile.
- .2 Use slip resistant trim shapes for horizontal surfaces of showers, overflow ledges, recessed steps, shower curbs and drying area curbs.
- .3 Use trim shapes sizes conforming to size of adjoining field wall tile, including existing spaces, unless specified otherwise.
- .4 Internal and External Corners: provide trim shapes as follows where indicated.
 - .1 Bullnose shapes for external corners including edges.
 - .2 Coved shapes for internal corners.

2.3 EPOXY CRACK SEALER

- .1 Acceptable Product: Sikadur 52 SLV epoxy grout sealer by Sika, or n approved equal in accordance with B7.
- .2 At locations of cracks requiring repair identified by the contract Administrator:
 - .1 Sawcut with 1/8" blade along length of crack identified.
 - .2 Clean crack with vacuum.
 - .3 Infill crack with epoxy crack filler.
 - .4 Top crack repair with silica sand to saturation.
 - .5 Remove loose sand.

2.4 MORTAR BED AND ADHESIVE MATERIALS

- .1 Acceptable Product: Topcem Premix mixed with Planicrete AC by Mapei, or an approved equal in accordance with B7.
- .2 Accelerated-cure mortar bed.
- .3 Application thickness:
 - .1 As required to achieve finished tile thickness to match existing tile finish (if applicable).
 - .2 ¼" to 4": Standard mix.
 - .3 Extended mix up to 4": Add up to 20 percent by weight of washed, clean, nonreactive saturated surface dry 0.375" pea gravel.
 - .4 Concrete repairs to be completed in accordance with applicable concrete repair specifications.

2.5 BONDING AGENT AND TILE SETTING MORTAR

- .1 Acceptable Product: Ultraflex 3 by Mapei, or an approved equal in accordance with B7.
- .2 Single component, polymer-modified premium thin-set mortar, complying with ANSI A118.4.

2.6 GROUT MATERIALS

- .1 Acceptable Product: Ultracolor Plus FA, a fine-aggregate, fast-setting, polymer-modified, colour-resistant, non-shrinking, efflorescence-free grout by Mapei, or an approved equal in accordance with B7.
- .2 Colour shall be selected by Contract Administrator.

2.7 JOINT SEALANT – JOINT BACKING

- .1 Acceptable Product: Mapesil T by Mapei, or an approved equal in accordance with B7.
- .2 Joint Backing (ASTM D1056): round, closed cell polyethylene foam rod, oversized 30 to 50 percent larger than joint width.
- .3 Teflon tape bond breaker tape for control joints.

2.8 WATERPROOFING MEMBRANE

- .1 Acceptable Product: Aquadefense, a fast-setting, flexible, thin, load bearing, premium latex based waterproofing and crack isolation membrane by Mapei, or an approved equal in accordance with B7.
 - .1 In compliance with ANSI A118.10 and ANSI A118.12.
 - .2 Reinforcing fabric: Flexible, alkali-resistant, nonwoven polyester fabric.
 - .3 Mix and apply waterproofing membrane material in accordance with Manufacturer's directions and application rates.

2.9 ACCESSORIES

- .1 Cement Board: DensShield Tile Backer by Georgia Pacific, or an approved equal in accordance with B7.
- .2 Tile Closure: Extruded, anodized clear aluminum.

2.10 SCHEDULE

- .1 Specialty Change Room and Shower Floors:
 - .1 Ceramic Tile – Grout joints with grout materials.
 - .2 Tile setting mortar.
 - .3 Waterproofing membrane.
 - .4 Mortar bed – Floors and wall base.
 - .5 Bonding agent.
 - .6 Existing concrete substrate.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 DEMOLITION

- .1 Demolish existing flooring materials and finishes as shown on Drawing A1 to accommodate new ceramic tile floor installation.

3.3 WALL TILE

- .1 Install in accordance with TTMAC and manufacturer's written instructions.

3.4 FLOOR TILE

- .1 Install in accordance with TTMAC and manufacturer's written instructions.

3.5 FIELD QUALITY CONTROL

- .1 Manufacturer's Field Services:
 - .1 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.6 CLEANING

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.

END OF SECTION

Part 1 General

1.1 Section Includes

- .1 Floor Drains

1.3 References

- .1 ASTM E A112.21.1 - Floor Drains.
- .2 CSA B125.3 – Plumbing Fittings

1.4 Submittals for Review

- .1 Section 01 33 00: Submittal Procedures.
- .2 Product Data: Provide component sizes, rough-in requirements, service sizes, and finishes.
- .3 Shop Drawings: Indicate dimensions, weights, and placement of openings and holes.

1.5 Closeout Submittals

- .1 Section 01 78 00: Closeout Submittals.
- .2 Operation Data: Indicate frequency of treatment required for interceptors.
- .3 Maintenance Data: Include installation instructions, spare parts lists, exploded assembly views.
- .4 Record Documentation: Record actual locations of equipment, cleanouts, backflow preventers, water hammer arrestors, trap seal primers.

1.6 Quality Assurance

- .1 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three (3) years documented experience.

1.7 Regulatory Requirements

- .1 Perform Work to the latest version of the Manitoba Plumbing Code and local Municipal requirements.
- .2 All components installed in domestic water system to be lead free.

1.8 Delivery, Storage, And Protection

- .1 Section 01 52 00: Construction Facilities.
- .2 Accept specialties on site in original factory packaging. Inspect for damage.

Part 2 Products

2.1 Floor Drains

- .1 Manufacturers:
 - .1 Watts.
 - .2 Zurn.
 - .3 Mifab
 - .4 Jay R. Smith
 - .5 Substitutions in accordance with B7.
- .2 Floor Drains
 - .1 ANSI A112.21.1,
 - .2 Epoxy coated cast iron two piece body with double drainage flange,
 - .3 Weep holes,
 - .4 ½" trap primer connection port,
 - .5 Refer to floor drain schedule below,
 - .6 Funnels shall be supplied in lieu of strainer as noted in schedule below,
 - .7 Tile Floor
 - .1 Reversible clamping collar,
 - .2 Primary and secondary weep holes,
 - .3 Adjustable 5" (127mm) square strainer
 - .8 Tile Channel
 - .1 Reversible clamping collar,
 - .2 Primary and secondary weep holes,
 - .3 Adjustable 5" (127mm) Angle strainer

Floor Drain Schedule

Tag	Body Material	Inlet Strainer	Vandal Proof	Sediment Bucket	Trap Seal Primer
FD-1	Epoxy coated Cast Iron	Square, Nickel Bronze	Yes	No	No
FD-2	Epoxy coated Cast Iron	Angle, Nickel Bronze,	Yes	No	No

Part 3 Execution

3.1 Installation

- .1 Install to manufacturer instructions.

END OF SECTION