
SPECIFICATION

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1. General

1.1 CONTRACT DOCUMENTS

1.1.1 Work will be performed under a Stipulated Price Contract: Standard Construction Document.

1.2 GENERAL CONDITIONS

1.2.1. The General Conditions of the Contract form an integral part of the Specifications.

1.2.2. The Owner and the Consultant shall have access to the Work at all times. The Contractor shall provide sufficient, safe and proper facilities at all times for the review of the Work by the Consultant and the inspection of the Work by authorized agencies.

1.2.3. If work is designated for tests, inspections or approvals in the Contract Documents, or by the Consultant's instructions. The Contractor shall arrange for and shall give the Consultant reasonable notification of the date and time of inspections.

1.2.4. The Contractor shall furnish promptly to the Consultant two copies of certificates and inspection reports relating to the Work.

1.3 SUPPLEMENTARY DEFINITIONS

1.3.1 Wherever in the Specification the word "Owner" is used in any form, it shall mean Toronto Community Housing.

1.3.2 In the Specification, reference such as "Shown on the Drawings", "Specified", "Scheduled", "Called for" and the like shall be deemed to include work required by any of the Contract Documents.

1.3.3 In the Specifications the expression Sub-Contractor is synonymous with Trade Contractor(s) if the context permits.

1.4 STANDARDS

1.4.1 Conform to latest date of issue of referenced standards in effect on date of submission of bids, except where a specific date or issue is specifically noted.

1.5 SAFETY MEASURES

1.5.1 Comply with the safety regulations of the Occupational Health and Safety Act and authorities having jurisdiction for the safety of the Work. Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the work.

1.5.2 Notify the Consultant and Owner immediately should an emergency arise on the site, including personal injuries and accidents. Provide complete details on extent of emergency, cause and the action being taken. This notification shall be by telephone or facsimile immediately after the occurrence.

1.6 FIRE SAFETY DURING CONSTRUCTION

- 1.6.1 Provide fire prevention and protection measures to existing building as required by all authorities having jurisdiction.
- 1.6.2 Maintain exits, including stairways and exterior doors to the outside. Provide acceptable alternative exits where an existing exit is blocked off due to construction activities.

1.7 PROTECTION OF WORK AND PROPERTY

- 1.9.1. The Contractor shall protect the Work and the Owner's property and property adjacent to the Place of the Work from damage which may arise as the result of the Contractor's operations under the Contract, and shall be responsible for such damage,
- 1.9.2. Should the Contractor in the performance of the Contract, damage the Work, the Owner's property or property adjacent to the Place of the Work, the Contractor shall be responsible for making good such damage at the Contractor's expense.

1.8 WARRANTY

- 1.10.1. Except for extended warranties as described in paragraph 6, the warranty period under the Contract is one year from the date of Substantial Performance of the Work.
- 1.10.2. The Contractor shall be responsible for the proper performance of the Work to the extent that the design and Contract Documents permit such performance.
- 1.10.3. The Owner, through the Consultant, shall promptly give the Contractor Notice in Writing of observed defects and deficiencies which occur during the one year warranty period.
- 1.10.4. Subject to paragraph 2, the Contractor shall correct promptly, at the Contractor's expense, defects or deficiencies in the Work which appear prior to and during the one year warranty period.
- 1.10.5. The Contractor shall correct or pay for damage resulting from corrections made under the requirements of paragraph 4.

1.9 SUMMARY OF WORK

- 1.11.1. Work under this Contract covers the renovation of the existing exterior stairs at West side of the building, leading to Jones Avenue, as indicated on the drawings and as outlined in the Bid Documents.
- 1.11.2. All renovation work shall include removal, disposal and reconstruction of all existing stairs and adjacent sidewalks.
- 1.11.3. The work relating to the stairs are adjacent to the West property line of the site. The contractor will be responsible for obtaining temporary sidewalk/street encroachment permit that may be required in order to carry out the ramp replacement work.
- 1.11.4. Base Price shall include for new exterior work as specified.

- 1.11.5. The "Contractor" as defined in the Contract, may be either a General Contractor or a Subcontractor, who Bid on the Project as a whole. In either case the Contractor's responsibilities and requirements shall be performed by the successful Bidder, as the Contractor.

1.10 WORK RESTRICTIONS

- 1.12.1 Contractor's Use Of Site
1. Use of site is limited to immediate areas of work. Areas designated for storage of material and equipment shall be at the discretion of the Owner.
 2. Do not unreasonably encumber site with materials or equipment. Move stored products or equipment which interfere with operations of Owner, or other contractors. Obtain and pay for use of off-site additional storage, or work areas as required by the Work.
 3. Exit facilities will remain clear and free for use by building occupants during this work.
 4. Storage of materials and equipment will be restricted. Contractor must bring to site only material being used for any given working day. All material and equipment to be removed at end of each day.
 5. Stockpiling of debris or materials on site is strictly prohibited. All debris is to be removed as it accumulates. Daily removal is a minimum requirement.
 6. Indoor storage will not be permitted.

1.11 HOURS OF WORK / ACCESS

- 1.11.1 Coordinate construction activities and use of premises with Owner's representatives. Notify 48 hours in advance of any activity that may disrupt normal operations.
- 1.11.2 Hours of work for this contract are generally confined to regular daily business hours of 8am to 5pm, Monday through Friday. Where required by necessity, portions of the Work may be required to be performed outside of regular daily business hours, or on weekends, at no additional cost to the Owner.
- 1.11.3 Construction Scheduling: Substantial Completion of the project to be August 19, 2022 and total completion by August 26, 2022.

1.12 APPLICATIONS FOR PAYMENT

- 1.15.1. Schedule Of Values
- .1 Submit Schedule of Values in spreadsheet form acceptable to the Consultant.
 - .2 List items of work as separate line items.
 - .3 The values of the Work shall be listed as to the aggregate percentage and dollar value completed, under the following major headings:
 - .1 Include Owner PO#,
 - .2 Initial contract amounts for each line item,
 - .3 Progress to Date,
 - .4 Percent Complete,
 - .5 Current Invoice,
 - .6 Previous Billings,

- .7 Contract Balance
- .4 Final totals shall identify:
 - .1 Total amount
 - .2 Holdback deducted
 - .3 Holdback released
 - .4 Amount invoiced to date
 - .5 Net amount
 - .6 HST
 - .7 Amount due this Certificate

1.13 PROJECT MANAGEMENT & COORDINATION

1.16.1. Project Coordination

- .1 The Contractor is responsible for the overall coordination of the Work. Coordinate the work of all subcontractors, and provide such assistance as is necessary, including but not limited to;
 - .1 Providing site dimensions and layout,
 - .2 Providing temporary facilities and controls,
 - .3 Scheduling subcontractors work to prevent conflicts,
 - .4 Maintaining health and safety measures for the duration of the construction activities.
- .2 The Contractor shall coordinate the work of all trades and construction activities in order to expeditiously perform the Work to meet the intended schedule of the Owner, while providing construction solutions that meet or exceed the intent of the Contract Documents, and all Warranty requirements.

1.16.2. Project Supervision

- .1 The Contractor shall provide and maintain full-time supervision on site. The supervisor shall be responsible for the overall day-to-day coordination on site between subtrades.
- .2 The supervisor shall coordinate the work of all subcontractors, and provide such assistance as is necessary.

1.16.3. Project Meetings

- .1 Schedule and administer regular project progress meetings throughout progress of work. Frequency and location of meetings as agreed by Owner, Consultants and Contractor at start-up meeting.
- .2 Distribute written notice of each meeting to Owner & Consultants four days in advance of meeting date.

1.16.4. Shop Drawings

- .1 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work.
- .2 Adjustments made on shop drawings by the Consultant are not intended to change the Contract Price. If adjustments affect the value of Work, state such in writing to the Consultant prior to proceeding with the Work.

- .3 Reproductions of Consultants' drawings are not acceptable for the purpose of creating Shop Drawings.

1.16.5. Product Data Sheets

- .1 Manufacturer's standard schematics, catalogue sheets, diagrams, schedules, performance charts, illustrations and other descriptive data are acceptable in lieu of shop drawings, where specified.
- .2 Submit product data sheets or brochures requested in specification Sections, and as the Consultant may reasonably request where shop drawings will not be prepared due to standardized manufacture of product.
- .3 Submit copies of all WHMIS Data Sheets.

1.14 TEMPORARY FACILITIES AND CONSTRUCTION CONTROLS

1.18.1. Provide temporary utilities, facilities and controls in order to execute the work expeditiously. Remove from site all such work after use.

1.18.2. Vehicular Access & Parking

- .1 Maintain adequate access to project sites. Do not block fire access routes, driveways, parking lots or other paved areas.

1.18.3. Construction Parking

- .1 Parking for construction vehicles will be limited to areas designated by the Owner.

1.18.4. Temporary Utilities

- .1 Temporary Electricity
 - .1 Connect to existing power supply in accordance with Canadian Electrical code.
- .2 Temporary Water Supply
 - .1 Utilize existing water supply in accordance with governing regulations and ordinances.

1.18.5. Construction Facilities

- .1 Temporary Telephone and Facsimile
 - .1 Provide and pay for temporary telephone for site contact.
 - .2 Cellular telephones are acceptable.
- .2 Equipment, Tools and Materials Storage
 - .1 Provide adequate enclosures for storage of materials, tools, and equipment which are subject to damage.
 - .2 Temporary enclosures required by subtrades as workshops shall be provided by those trades.
- .4 Washroom Facilities

.1 Provide temporary washrooms for construction personnel. Location to be determined on site with Owner

1.18.6. Construction Safety

- .1 Observe all construction safety measures as required by the General Conditions of the Contract, the Occupational Health and Safety Act and Regulations for Construction Projects, and by all authorities having jurisdiction, provided that in case of conflict or discrepancy, the more stringent requirements shall apply.
- .2 Provide applicable spare safety equipment such as helmets, safety glasses, and harnesses, and enforce their use by Consultants, the Owner, their representatives and any authorized visitors to the site.
- .3 Provide and maintain barriers, night lights, and appropriate warning signage as required for the protection of the public, and of public and private property; as required by the General Conditions of the Contract, the Occupational Health and Safety Act and Regulations for Construction Projects, and by all authorities having jurisdiction.

1.18.7. Workplace Hazardous Materials Information System

- .1 Comply with all requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets.
- .2 Include copies of all WHMIS data sheets in Operations and Maintenance Manuals.

1.18.8. Temporary Barriers & Enclosure

- .1 Site Signs and Notices
 - .1 Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project or earlier if directed by Consultant.

1.15 FIRE SAFETY

1.15.1 Fire Fighting Equipment

- .1 Provide and maintain in working order, ULC labelled, 9kg 4A 60BC type fire extinguishers, and locate in prominent positions to approval of authorities having jurisdiction.
- .2 Provide temporary requirements during relocation of standpipes and fire hose stations in accordance with TCHC Safety Standards and requirements of the City of Toronto Fire Department.

1.19.2 Fire Department Access

- .1 Construction activities must not obstruct access routes designated for fire department equipment.

- 1.19.3 Control of Combustible Materials
.1 The stockpiling of construction materials must be carefully controlled in accordance with the Ontario Fire Code. Occupational Health and Safety Act.

1.16 PRODUCT REQUIREMENTS

- 1.21.1 Product Options
.1 Provide products specified under individual specification sections. Where Specification lists two or more products, or two or more manufacturers of the same product, the Contractor may select one of the listed products or manufacturers. Confirm selection of products and manufacturers when requested by the Consultant.
.2 When only one product or manufacturer is listed in the specifications, it is intended that only that product or manufacturer is acceptable.

2. Products

2.1 WORKMANSHIP

- 2.1.1 Workmanship shall be best quality, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Consultant if required Work is such as to make it impractical to produce required results.
2.1.2 Do not employ any unfit person or anyone unskilled in their required duties.
2.1.3 Decisions as to quality or fitness of workmanship in cases of dispute rest solely with Consultant, whose decision is final.

2.2 WARRANTIES AND GUARANTEES

- 2.8.1. Warrant all products and labour forming part of the Work for the period of one year, unless otherwise specified herein.
2.8.2. Guarantee aspects of the Work for the specified periods of time where in excess of the Contract Warranty, as specified within their respective section
2.8.3. Warranties and Guarantees shall commence at Date of Substantial Performance of the Contract as certified by the Consultant.
2.8.4. Warranties and Guarantees shall be original copies, printed on company letterhead, or on a standard company warranty certificate, bearing the name of the company.
2.8.5. Warranties and Guarantees shall indicate:
.1 Name of the Principal (the Manufacturer/Subcontractor),
.2 Name of the Obligee (the Owner),
.3 Name and address of Project,
.4 Commencement date (Date of Substantial Performance),
.5 Duration of warranty or guarantee,

- .6 Clear statement of what is included, and what if any exclusions there are, and
- .7 Signature of Principal's representative having signing authority.

3. Execution

3.1 EXAMINATION REQUIREMENTS

3.1.1. Examination & Acceptance of Conditions

- .1 The Contractor shall examine all existing or pre-determined conditions, prior to commencing work in that area, and report to the Consultant all conditions unacceptable for work to proceed. Commencement of work shall imply acceptance of conditions as is.
- .2 Subcontractors shall examine all existing or pre-determined conditions affecting their portion of the Work, prior to commencing such work, and report to the Contractor all conditions unacceptable for work to proceed. Commencement of work shall imply acceptance of conditions as is.

3.1.2. Protection Of Work In Progress

- .1 Adequately protect Work completed or in progress. Work damaged or defaced due to failure in providing such protection is to be removed and replaced, or repaired, as directed by the Consultant, at no increase in Contract Price.

3.2 NOTICES, PERMITS AND FEES

- 3.2.1 Owner will make application and pay for Building Permits. Each Sub-contractor to pay for subsequent permits as may be required.
- 3.2.2 General Contractor to make applications and pay for street and sidewalk encroachment permits as may be required to perform the work.
- 3.2.3 Give all required notices and comply with all laws, ordinances, rules, regulations, codes and orders of authorities having jurisdiction.

3.3 CLEANING AND WASTE MANAGEMENT

- 3.2.1. Conduct cleaning and disposal operations to comply with local ordinances and environmental protection legislation.
- 3.2.2. Store volatile wastes in covered metal containers, and remove from premises at end of each working day.
- 3.2.3. Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- 3.2.4. Cleaning During Construction

- .1 Maintain the Work in tidy condition, free from accumulation of waste products and debris, other than that caused by the Owner or other Contractors.
- .2 Remove all waste material and debris from the work areas and remove from site at the end of each working day. Maintain work area separation.
- .3 Individual Subcontractors are responsible for the daily clean-up and removal of debris related to, or generated by, their own work. The overall responsibility for project cleanliness rests with the Contractor.

3.2.5. Final Cleaning Operations

- .1 Immediately following Date of Substantial Performance remove all surplus products, tools, construction machinery and equipment not required for the performance of remaining work, and thereafter remove any remaining materials, equipment, waste and debris.

3.4 PROJECT CLOSE-OUT PROCEDURES

3.3.1. Certificate of Substantial Performance

- .1 The Consultant shall notify the Contractor of approval of the application for Substantial Performance and issue a Certificate of Substantial Performance.
- .2 The Contractor shall publish a copy of the Certificate of Substantial Performance in a construction trade newspaper, and shall provide the Consultant with proof of the date of publication.

3.3.2. Commencement of Lien and Warranty Periods

- .1 The day following the date of publication of Certificate of Substantial Performance shall be the date of commencement of the Warranty Period, and of the 60 day Lien Period prior to release of basic holdback, unless required otherwise by lien statute of the Place of the Work.

END OF SECTION

1.1 GENERAL

1.1.1 Comply with GC 4.1 CASH ALLOWANCES.

1.1.2 Cash allowances are designated for additional work and services deemed to be necessary by Owner, from time to time, throughout the execution of the Work. Where a cash allowance refers to an item or category of work already included in Contract Documents, it shall be assumed to cover work or services in addition to that indicated, unless specifically indicated otherwise.

1.1.3 Unexpended portion of allowance to be credited to the Owner at completion of the Work.

1.2 AUTHORITIES

1.2.1 Expenditures from allowances included in the Contract must be authorized in writing by the Consultant.

1.2.2 Work covered by allowances shall be performed for such amounts and by such persons as directed by the Consultant.

1.3 CASH ALLOWANCE

1.3.1 Cash Allowance shall include applicable taxes (excluding H.S.T.).

Total Cash Allowance: \$8,000.00 (Eight Thousand Dollars)

- \$ 5,000.00 for Soil Inspection and Concrete Testing
- \$ 3,000.00 for Concrete Retaining Wall Repairs

END OF SECTION 01210

1. General

1.1 GENERAL REQUIREMENTS

1.1.1 Conform to requirements of Division 1.

1.2 SUBMITTALS

1.2.1 Demolition Sequence and Methods drawings: Where required by authorities having jurisdiction, submit for approval drawings, diagrams or details showing sequence of disassembly work. Submissions to bear stamp of qualified professional engineer registered in Province of the Work.

1.3 EXISTING FACILITIES

1.3.1 The existing school building will be in operation throughout the duration of construction. Do not interrupt existing services and facilities, except for authorized and scheduled interruption of services as approved by the Owner.

1.4 ITEMS OF WORK

1.4.1 Remedial work shall include but is not necessarily limited to the following items of work:

1. ARCHITECTURAL ITEMS

- a) The removal of existing concrete stairs.
- b) Removal of materials.
- c) Remove existing exterior, guardrails, curbs and paving as noted on drawings.

2. ELECTRICAL ITEMS

- a) Identify and maintain fully operational all services. These systems shall include but not necessarily be limited to the following:
 - i) Hydro services
 - ii) Fire alarm and life safety systems
 - iii) Telephone wiring
- b) The services referred to in a) above shall be marked with spray paint and left in place. Allow for making safe of all electrical and mechanical services.

3. MECHANICAL ITEMS

- a) Identify and make fully operational all services that are to remain. These systems shall include but not necessarily be limited to:
 - i) Water
 - ii) Sanitary sewers

2. Products

2.1 MATERIAL AND DEBRIS

- 2.1.1 Demolition materials and debris are the property of the Contractor except as otherwise indicated.
- 2.1.2 Salvage for reinstallation materials noted on drawings.

3. Execution

3.1 PROTECTION

- 3.1.1 Provide and maintain temporary barricades and guard rails to protect the general public, staff, and workmen.

3.2 DEMOLITION

- 3.2.1 Demolish parts of the Work as noted on drawings, existing materials, finishes, and construction as indicated, implied, and inferable as part of the Work and as necessary to accommodate the Work. Demolish in accordance with requirements of authorities having jurisdiction.
- 3.2.2 Arrange and pay for the disconnection, capping and for plugging of water, electric, telephone and other services as necessary to execute the Work. Post warning signs on electrical lines and equipment which must remain energized to serve other areas of the building during period of demolition.
- 3.2.3 At end of each workshift leave work and the structure in a safe condition so that no items being demolished are in danger of toppling, collapsing, or falling.
- 3.2.4 Minimize and control dust and dirt rising.
- 3.2.5 Protect building systems, services and equipment.

3.3 REMEDIAL WORK

- 3.3.1 Where existing concrete surfaces require levelling and patching execute work required with cementitious material compatible with new and existing work.

3.4 DISPOSAL

- 3.4.1 Remove all combustible materials, plastics, metal, glass, wood and other organic material from site.
- 3.4.2 Remove demolition materials and debris from the site and dispose of legally.
- 3.4.3 Do not place nor store material in streets or passageways.
- 3.4.4 Location of disposal bins to be coordinated with Building Custodian.

END OF SECTION 02220

1. General

1.1 RELATED WORK SPECIFIED ELSEWHERE

1.1.1 Backfill and Grading Section 02223

1.2 PROTECTION

1.2.1 Protect existing buildings, fencing, service poles, trees, wires, underground services and paving located on this and adjoining properties from damage. Make good damage resulting thereto, or replace any damaged materials to the approval of the Consultant and at no additional cost to the Owner. Make good any damage due to inadequate bracing, improper compaction of backfill at no cost to the Owner. Maintain carefully all bench marks, and other reference points. If disturbed or destroyed, replace at the cost of this Contractor as directed by a Registered Land Surveyor.

1.2.2 Provide protection and heating as necessary where the bearing surface is in danger of freezing before concrete is poured.

1.2.3 Do not load vehicles employed in the cartage of materials beyond rates limited, nor in such a manner as to cause spillage. Promptly remove spillage and tire tracking on public property. Alert drivers to the right of way of pedestrians and other vehicular traffic at exit from the site.

1.3 Products

Not used this Section

2. Execution

2.1 PREPARATION

2.1.1 Consult utilities to ascertain location of services. Promptly notify the Consultant if uncharted services are uncovered during excavation. Cap services to the approval of the utilities affected.

2.2 EXCAVATION

2.2.1 Do all excavation required for the Work excluding mechanical and electrical trades. Excavate around Site for extent of construction noted on Drawings for this Contract including.

2.2.2 Excavate to depth required for footings, slab on grade and underbed. Base of footings and foundation shall be not less than 1200 mm (4'0") below finished grade nor less than 450 mm (18") below original grade. (Refer to Structural Drawings.)

2.2.3 Excavations carried too low shall be filled with 25 Mpa (3000 psi) min. concrete at no additional expense to the Owner. Obtain prior approval from Consultant for lowering footings.

2.2.4 Trim bottom of excavations and obtain approval of the Consultant and authorities having jurisdiction before placing concrete or granular material.

2.2.5 Frozen ground shall not delay progress of work.

2.2.6 Should soil at depth shown provide to be unsatisfactory to the Consultant for placing of structural work thereon, (except for reasons specified in paragraph 3.2.5) then upon the Consultant's

written order, excavate to greater depth until a satisfactory bottom is reached.

- 2.2.7 Prior to placement of concrete obtain confirmation of load bearing capacities through on site review of a qualified soils Geotechnical Consultant appointed by Owner and paid through designated allowance.

2.3 PUMPING AND DRAINAGE

- 2.3.1 Keep excavation free from water until concrete is poured. Pump out and remove any free water and do not allow water to accumulate in the excavations.

- 2.3.2 If it should prove necessary during the progress of the work to interrupt or obstruct flow of artificial drains, provide for this in such a way that no damage shall result to the property of the Owner, or to the adjoining property.

END OF SECTION

1. General

1.1 RELATED WORK SPECIFIED ELSEWHERE

1.1.1 Excavation Section 02222

1.2 FIELD QUALITY CONTROL

1.2.1 Owner shall appoint an inspection and testing company to test proposed fill material, to inspect, test and approve compaction of fill, if deemed necessary.

1.2.2 Co-operate with the inspection company and give adequate notification of any changes in sources of supply, additional work shifts and any other proposed changes.

1.2.3 The cost of such inspection and testing shall be paid for from project allowances. The cost of retesting unacceptable compaction shall be borne by this Section

2. Products

2.1 MATERIALS

2.1.1 Fill material – approved granular, free draining material excavated from the Site or approved local excavated materials free from organic matter, rubbish and other deleterious materials and complying with the following requirements:

- .1 Granular “A” – OPSS Form 1010, clean, angular, crushed run, natural stone from approved source, free from shale, clay and friable materials and organic matter and graded.
- .2 Granular “B” – OPSS Form 1010, clean, natural river sand and gravel material, free from silt, clay, loam, friable or soluble materials and organic matter graded.
- .3 Granular “E” – existing soil from site free from organic and vegetable matter, topsoil and large clay lumps and boulders, under landscaped areas.

3. Execution

3.1 PREPARATION

3.1.1 Carefully examine Site including access to the Site.

3.1.2 Establish the extent and nature of the materials, which may be necessary to remove and the amount of fill to provide the required grades.

3.2 BACKFILLING

3.2.1 Do not place backfill until the sub-grade, footings, foundation walls and drainage tile have been inspected and approved. Do not backfill at ambient temperatures below 0 degrees C. without approval. Temporary backfilling not permitted. Be responsible for damage to buried services, due to backfilling.

3.2.2 Place fill material against both sides of walls. If it is not practical to carry out backfilling in this

manner, brace the walls adequately to prevent damage to the walls.

- 3.2.3 Where walls are to be backfilled on one side only, commence backfilling only when the structural members are in place or adequate bracing is provided for top and bottom of foundation walls.
- 3.2.4 Backfill service line trenches as required and noted in the mechanical and electrical specifications.
- 3.2.5 Fill locations:
- .1 Use Granular "A" fill to areas and depth requirements as noted on drawings or geotechnical layout.
 - .2 Use Granular "B" fill to areas and depth requirements as noted on drawings or geotechnical layout.
 - .4 Use Granular "E" fill where permitted by the Consultant.
 - .5 Properly roll, tamp or otherwise consolidate in place each layer of backfill. Maintain fill within 2% of its optimum moisture content. If fill is too dry, dampen it with water to obtain the water content required. If the fill is too wet, aerate it.
 - .6 Spread fill in layers not exceeding 150 mm (6") uncompacted depth. Carry out fill operations systematically. Prevent segregation of particle sizes.
 - .7 After backfilling and compaction is completed, scarify surface to a uniform depth sufficient to eliminate depressions and irregularities.

3.3 COMPACTION

- 3.3.1 Compact until the required density is achieved.
- 3.3.2 Fill hollows and depressions which develop under compaction with matching backfill material. If the base becomes rutted or displaced due to any cause, regrade the surface.
- 3.3.3 Compact backfill by means of vibratory type equipment capable of achieving the desired degree of compaction. Use manually operated vibratory tampers in the proximity of foundations and in areas not readily accessible to roller equipment.
- 3.3.4 Make good damage to the structure due to compaction and settlement of fill. Report damage to foundation promptly to the Consultant. Obtain approval of remedial procedures.
- 3.3.5 Compact Granular "A" fill to 98% Standard Proctor Density.
- 3.3.6 Compact Granular "B" fill to 100% Standard Proctor Density.
- 3.3.7 Compact granular "E" fill as directed by the Consultant.
- 3.3.8 Make good any damage caused by uncompacted backfill at no cost to the Owner.

END OF SECTION

1. General

1.1 GENERAL REQUIREMENTS

1.1.1 Conform to requirements of Division 1.

2. Products

2.1 GRANULAR BASE

2.1.1 OPSS 1010, Granular A, hard, durable, angular particles, free from clay lumps, cementation, organic material, frozen material and other deleterious materials.

2.2 REINFORCING

2.2.1 **Welded steel wire mesh:** CSA G30.5, flat galvanized sheets, 150mm x 150mm at 10/10 complete with plastic chairs.

2.2.2 **Bar reinforcing:** CSA G30.16, new deformed steel bars, epoxy coated.

2.3 CONCRETE AND ACCESSORIES

2.3.1 **Concrete mixes:** CAN/CSA-A23.1, and following requirements.

.1 Cement type: CAN/CSA-A5, Type 10.

.2 Aggregate: CAN/CSA A23.1.

.3 Compressive strength: Average 28 day modules of rupture to be minimum 32 MPa.

.4 Air content, immediately after discharge: 5-7%.

.5 Slump at point of discharge: 2" maximum

2.3.2 **Joint fillers:** Premoulded bituminous impregnated fiber board.

2.3.3 **Curing compound:** ASTM C309, acrylic emulsion, Florseal W.B. Clear by Sternson Ltd.

3. Execution

3.1 PREPARATION

3.1.1 Saw cut and remove existing paving including sidewalks and fill to receive work of this Section.

3.2 GENERAL INSTALLATION

3.2.1 Place granular base in layers not exceeding 4 inch in uncompacted thickness, compact layer before applying the next. Compact granular base to at least 98% Standard Proctor Density in accordance with ASTM D698, unless indicated otherwise.

3.2.2 Mix, place, cure, finish and protect concrete in accordance with CAN3-A23.1.

3.2.3 Ensure that reinforcement and inserts are not disturbed during concrete placement.

3.2.4 Finish concrete to required levels in wood float then broomed non-skid finish with smooth trowel borders and joints.

3.2.5 Apply curing compound in accordance with manufacturer's instructions.

3.3 SIDEWALKS, CURBS, PADS, AND RAMPS

3.3.1 Provide a 4" thick granular base beneath sidewalks.

3.3.2 Place wire mesh continuous at mid point of concrete thickness and overlap mesh sheets minimum of 2".

3.3.3 Provide 125mm thick sidewalks, unless indicated otherwise.

3.3.4 Provide 1-#15M bar reinforcing at step nosings.

3.3.5 Provide sawn, V-grooved control joints at 5 ft centres and/or as indicated. Cut joint to ¼" width to depth of one fourth slab thickness as soon as concrete can be sawn without dislodging aggregate particles.

3.4 PROTECTION

3.4.1 Keep traffic off newly paved areas until paving has properly cured.

END OF SECTION

1. General

1.1 GENERAL REQUIREMENTS

1.1.1 Conform to requirements of Division 1.

1.2 RELATED SECTIONS

1.2.1 Concrete

1.3 QUALITY ASSURANCE

1.3.1 Do steel welding work in accordance with CSA W59 unless specified otherwise, by qualified welders certified under CSA W47.1.

1.4 DESIGN REQUIREMENTS

1.4.1 Where required by authorities having jurisdiction, have work of this Section designed by a professional engineer licensed to design structures and registered in the Province of the Work.

1.4.2 Design metal railings and balustrades construction and connections to requirements of the building code and other authorities having jurisdiction. Maximum deflection of L/360 of clear span.

1.5 SUBMITTALS

1.5.1 Shop drawings: Submit the shop drawings in accordance with **Division 1** bearing stamp or seal and signature of the professional engineer responsible for the design of the work of this Section. Indicate the following:

- .1 materials, core thicknesses
- .2 connections, joints, supports, reinforcement details
- .3 system arrangement and component sizes
- .4 method of assembly and anchorage,
- .5 locations of exposed fasteners,
- .6 finishes and hardware
- .7 accessories

2. Products

2.1 MATERIALS

2.1.1 **Steel sections and plates:** CAN3-G40.21, Grade 300W.

2.1.2 **Steel pipe:** ASTM A53, schedule 40.

2.1.3 **Welding materials:** CSA W59.

2.1.4 **Bolts and anchor bolts:** ASTM A307.

2.1.5 **Steel tubing:** ASTM A53, Schedule 40.

2.1.6 **Shop coat primer:** CAN/CGSB-1.40-M.

2.1.7 **Galvanizing:** Hot Dip galvanize, after fabrication.

2.1.8 **Grout:** Non-shrink, non-metallic, flowable, 24h, [15 MPa|2100 psi], pull-out strength [7.9 MPa|1150 psi].

2.2 FABRICATION - GENERAL

2.2.1 Refer to drawings for items and details of work of this Section.

2.2.2 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured. Where possible, fit and shop assemble work, ready for erection.

2.2.3 Weld connections where possible, otherwise bolt connections. Countersink exposed fastenings, cut off bolts flush with nuts. Make exposed connections of same material, colour and finish as base material on which they occur.

2.2.4 Accurately form connections with exposed faces flush; mitres and joints tight.

2.2.5 Continuous weld joints for the full length of each joint. Grind or file exposed welds and steel sections smooth.

3. Execution

3.1 ERECTION

3.1.1 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

3.1.2 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.

3.1.3 Unless otherwise indicated, grout set work in concrete with non-shrink grout. Trowel surface smooth and flush with adjacent surfaces.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCE

1.1.1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.3 SCOPE OF WORK

1.3.1 Pedestrian waterproofing and traffic coating system on exterior poured concrete stairs, and as noted on drawings.

1.3.2 Work to be done in conjunction with work of related Sections and as directed by Owner or Consultant.

1.4 PRE-INSTALLATION MEETING

1.4.1 Conduct a pre-installation meeting in accordance with Division 1 and the following requirements:

1.4.1.1 Review methods and procedures related to the work of this section, including, but not limited to, the following:

1. Examine existing conditions and finishes for compliance with requirements, including access.
2. Verify waterproofing specialist personnel, equipment, and facilities needed to make progress and avoid delays.
3. Materials, material application, sequencing, tolerances, and required clearances.
4. Quality-control program.
5. Coordination with building occupants.
6. Review temporary protection requirements for wall cladding and roofing system during and after installation.
7. Forecasted weather conditions.

1.5 SUBMITTALS

1.5.1 Submit required submittals in accordance with General Conditions.

1.5.2 Product Data: For each type of product. Include construction details, material descriptions, chemical composition, physical properties, test data, and mixing, preparation, and application instructions.

1.6 REFERENCE STANDARDS

1.6.1 References, General: Versions of the following standards current as of the date of issue of the project apply to the Work of this Section.

1. ASTM International (ASTM): www.astm.org:
2. ASTM D 4258 - Standard Practice for Surface Cleaning Concrete for Coating.
3. ASTM D 4259 - Standard Practice for Abrading Concrete.

1.7 QUALITY ASSURANCE

1.7.1 Installer Qualifications: A manufacturer-approved firm with minimum five years' experience in installation of specified products in successful use on similar projects, employing workers trained by manufacturer, including a full-time on-site supervisor with a minimum of five years' experience installing similar work, and able to

-
- communicate verbally with Contractor and Consultant.
- 1.7.2 Manufacturer Qualifications: A qualified manufacturer with minimum five years experience in manufacture of traffic coating as one of its principal products.
- 1.7.3 Manufacturer's product submitted has been in satisfactory operation on five similar installations for at least five years.
- 1.8 PROJECT CONDITIONS
- 1.8.1 Weather limitations: Proceed with installation only when existing and forecasted weather conditions permit work to be installed according to manufacturer's written instructions and warranty requirements.
- 1.9 DELIVERY, STORAGE AND HANDLING
- 1.9.1 Deliver materials to *Project* site in original containers with seals unbroken and labelled with manufacturer's name, product brand name and type, date of manufacture, and directions for storage.
- 1.9.2 Protect materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.
- 1.9.3 Handle and store materials and place equipment in a manner to avoid permanent damage to building.
- 1.9.4 Handle materials carefully to preclude damage. Follow manufacturer's written recommendations.
- 1.9.5 Package materials and identify on attached labels the manufacturer, brand, contents, weight as applicable, and product and specification numbers
- 1.9.6 Store waterproofing materials off the ground, under cover, and in a dry location.
- 1.9.7 Comply with manufacturer's written instructions for minimum and maximum temperature requirements and other conditions for storage.
- 1.9.8 Store aggregates covered and in a dry location; maintain grading and other required characteristics and prevent contamination.
- 1.10 FIELD CONDITIONS
- 1.10.1 Environmental Limitations: Apply traffic coating within the range of ambient and substrate temperatures recommended by traffic coating manufacturer. Protect substrates from environmental conditions that affect coating performance. Do not apply traffic coating to a damp or wet substrate or during snow, rain, fog, or mist or when dew is present.
- 1.11 WARRANTY
- 1.11.1 Provide 2-year warranty for labour, materials, and workmanship, from date of substantial completion.
- 1.11.2 Provide manufacturer's standard warranty:
1. Manufacturer's standard form in which traffic coating manufacturer agrees to furnish traffic coating material to repair or replace those materials installed according to manufacturer's written instructions that exhibit material defects or otherwise fail to perform as specified under normal use within warranty period specified.

PART 2 – PRODUCTS

2.1 MATERIALS

2.1.1 Source Limitations: Provide pedestrian waterproofing and traffic coating system materials and accessory products from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

1. General: waterproofing and traffic coating system shall be capable of performing as a continuous watertight installation and as a moisture drainage plane transitioned to adjacent flashings and discharging water to the structure exterior. Traffic coating shall accommodate normal substrate movement and seal expansion and control joints, construction material transitions, opening transitions, penetrations, and perimeter conditions without resultant moisture deterioration.
2. Compatibility: Provide traffic coating system materials that are compatible with one another and with adjacent materials under conditions of service and application required, as demonstrated by traffic coating manufacturer based on testing and field experience.
3. VOC Content: 350 g/L maximum per 40 CFR 59, Subpart D (EPA Method 24) and complying with requirements of authorities having jurisdiction.

2.3 WATERPROOFING MEMBRANE AND TRAFFIC COATING SYSTEM

2.3.1. Acceptable product:

1. BASF Construction Chemicals – MasterSeal 1500MD system.
2. MAPEI – Mapefloor PU 400 LV and Finish 450 system
3. SIKA – Sikalastic system.
4. Tremco – Vulkem 350NF/351 system.
5. Approved equal.

2.3.2 Primer: Liquid primer recommended for substrate and conditions by traffic-coating manufacturer.

2.3.3 Base Coat: Aromatic Polyurethane.

2.3.4 Topcoat: Aliphatic Polyurethane with UV inhibitors.

2.3.5 Color: As selected by the Owner and Consultant from manufacturer's full range including contrasting colour for stair nosings.

2.3.6 Topcoat Aggregate: Manufacturer's standard aggregate for each use indicated of particle sizes, shape, and minimum hardness recommended in writing by traffic-coating manufacturer. Minimum equivalent 16–30 mesh rounded silica sand.

2.3.7 ACCESSORY MATERIALS

General: Accessory materials as described in manufacturer's written installation instructions, recommended to produce complete traffic coating system meeting performance requirements, and compatible with traffic coating material and adjacent materials.

2.3.8 Single-Component, Non-Sagging Polyurethane Joint Sealant: ASTM C 920, Type NS, Class 50.

1. Acceptable Product: as recommended by the membrane manufacturer.

PART 3 – EXECUTION

3.1 EXAMINATION

- 3.1.1 Surface Condition: Before applying traffic coating materials, examine substrate and conditions to ensure substrates are fully cured and free from high spots, depressions, loose and foreign particles and other deterrents to adhesion, and conditions comply with manufacturer's written recommendations.
- 3.1.2 Verify substrate surfaces are visibly dry, have cured for time period recommended by traffic coating manufacturer, and are free from release agents, curing agents, laitance, and other contaminants.
- 3.1.3 Test surfaces following cleaning and abrasion specified below.
1. Test for capillary moisture by method recommended in writing by traffic-coating manufacturer.
 2. Test for traffic coating adhesion per manufacturer's recommended method.
 3. Notify Consultant in writing of conditions detrimental to proper and timely completion of the work. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 COORDINATION

- 3.2.1 Coordinate work with related work and building operations for access, protection, noise and dust, and disposal of removals.
- 3.2.2 All building occupant belongings are to be removed from balcony slab, wall and railing surfaces, for the duration of the work.
- 3.2.3 The Owner and building operations are responsible for the removal, storage and re-instating of occupant belongings. Coordinate with building operations for clearing of balcony and garbage room areas for the work.
- 3.2.4 Provide barriers and signs at each work location to warn and prevent occupants from walking on wet coating. Remove barriers and signs when coating has cured and walkable without damage.

3.3 SURFACE PREPARATION

- 3.3.1 Surface Preparation: Clean, prepare, and treat substrates in accordance with ASTM C 1127 and membrane manufacturer's written instructions.
1. Remove contaminants, curing compounds, and film-forming coatings from substrates.
 2. Remove projections and excess materials and fill voids with manufacturer's recommended substrate patching material.
 3. Prepare surfaces to a uniform profile in accordance with ASTM D 4259 and meeting ICRI Surface Profile CSP 2 - 4. Concrete must be fully cured (28 days), structurally sound, clean and dry (ASTM D 4263). All concrete surfaces (new and old) must be shot blasted to remove previous coatings, laitance and all miscellaneous surface contamination and to provide profile for proper adhesion. Abrasive shot blasting must occur after concrete repair has taken place. Do not acid etch.
 4. Clean prepared surfaces in accordance with ASTM D 4258.
 5. Power wash existing surfaces to remove all loose existing coatings. Use bristle brush and scrapers to ensure complete removal of unbonded existing coatings.

- 3.3.3 Allow substrate surfaces to dry a minimum of 3 days and test moisture content as per manufacturer's written instructions.
- 3.4 **TERMINATIONS AND PENETRATIONS**
- 3.4.1 Detail Preparation: Prepare vertical and horizontal surfaces at horizontal to vertical transitions, terminations, joints, and penetrations through traffic coatings in accordance with ASTM C 1127 and manufacturer's written instructions, using accessory materials specified.
1. At terminations of traffic coating exposed to traffic, rout ¼ by ¼ inch (6 by 6 mm) keyway in concrete.
 2. Prepare non-moving shrinkage cracks, large cracks, construction joints, expansion joints, projections and protrusions, penetrations, drains, and changes in plane in accordance with manufacturer's written instructions and details.
 3. Prepare joints and cracks in substrate in accordance with ASTM C 1127 and ASTM D 4258 and manufacturer's written instructions.
- 3.4.2 Joint Sealant Installation: Comply with ASTM C 1193 and manufacturer's written instructions.
1. Allow joint sealants to cure adequately before coating with traffic coating.
 2. Provide joint sealant cants with backer rods at penetrations and at horizontal-to-vertical intersections. Tool sealant material to form 45 degree angle transition.
 3. Rout and fill cracks, and control joints with joint sealant and tool flush with surface.
 4. Feather edges of joint sealant applications.
 5. Allow joint sealant to cure.
 6. Apply detail coat of base coat over unfilled and filled cracks and joints, and feather terminating edges.
- 3.5 **PEDESTRIAN WATERPROOFING AND TRAFFIC COATING APPLICATION**
- 3.5.1 Primer: Prime metal surfaces, porous surfaces (when required), and preceding coats left uncoated for more than 24 hours or that have lost surface tack, with manufacturer's recommended primer. Allow to cure before proceeding.
- 3.5.2 Apply traffic coating according to ASTM C 1127 and manufacturer's written instructions. Use roller-applied or self-leveling formulations as recommended by manufacturer for project conditions.
1. Verify that wet film thickness of each coat complies with requirements every 100 sq. ft. (9 sq. m).
- 3.5.3 Apply number of coats of specified compositions for pedestrian waterproofing and traffic coating system at locations indicated on Drawings.
1. Base Coat: Single application of not less than 40 mil (1.02 mm) wet film thickness.
 2. Top Coat: Single application at not less than 25 to 30 mil (0.6 to 0.8 mm) wet film thickness.
 3. Aggregate: Uniformly broadcast aggregate on coats specified to receive aggregate. Embed aggregate according to manufacturer's written instructions by:

1. Aggregate to Refusal Method or
 2. Broadcast and Backroll Method.
- 3.5.4 Apply traffic coatings to prepared wall terminations and vertical surfaces to height of 4 inches (100mm); omit aggregate on vertical surfaces.
- 3.5.5 Apply traffic coating of contrasting colour, one & half inch width (40mm) at the nosing edge of each tread.
- 3.5.6 Cure traffic coatings. Prevent contamination and damage during application and curing stages.
- 3.5.7 Correction: Correct deficient applications not passing tests and inspections, make necessary repairs, and retest as required to demonstrate compliance with requirements.
- 3.6 **CLEANING AND PROTECTING**
- 3.6.1 Clean spills, stains, and overspray resulting application utilizing cleaning agents recommended by manufacturers of affected construction. Remove masking materials.
- 3.6.2 Protect traffic coating from damage from subsequent work. Protect traffic coating materials from exposure to UV light for period in excess of that acceptable to traffic coating manufacturer; replace overexposed materials and retest

END OF SECTION