



art engineering inc.

115-1350 Fisher Street • North Bay • Ontario • P1B 2H1 • Canada
(705) 737-2500 • Fax: (613) 836-1226 • Toll Free 1 (844) 8 ART ENG
www.artengineering.ca

Specification (Issued for Tender)

RETAINING WALL REPLACEMENT 101-225 HOLDITCH ST., STURGEON FALLS, ON MUNICIPAL TENDER # 2026-032

August 04, 2026

Prepared for:
Municipality of West Nipissing

Prepared by:
ART Engineering Inc.

Consultant

Art Engineering Inc.
115-1350 Fisher Street
North Bay, ON, P1B 2H1



Derick Battrick, P. Eng.

END OF SECTION

Part 1 General

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END OF SECTION

Part 1 General

DRAWING NO.	DESCRIPTION	REVISION NO.
S00	GENERAL NOTES	
S01	SITE LOCATION PLAN & SITE KEY PLAN	
S02	RETAINING WALL REMOVALS	
S03	RECONSTRUCTION PLAN, SECTION, AND DETAILS	
S04	MISC. RECONSTRUCTION DETAILS	
S05	FENCE SECTIONS AND DETAILS	
S06	ARCH. WALL REMOVAL & CURB CONSTRUCTION DETAILS (PROVISIONAL)	
S07	RIPRAP VEGETATION MITIGATION PLAN, PROPOSED METHODS AND PROCEDURES (PROVISIONAL)	

END OF SECTION

Part 1 General

1.1 PROJECT INFORMATION

- .1 Owner: Municipality of West Nipissing**
- .2 Project: Retaining Wall Replacement**
- .3 Consultant: ART Engineering Inc.**
- .4 The Owner invites Bids for construction of the work, which in general terms, will consist of :**
 - .1 Structural:**
 - .1 Supply and installation of protection systems, such as site signage, barriers, and pedestrian traffic control.
 - .2 Confirm existing utilities within the construction site to remain and be protected throughout construction.
 - .3 Implement protection systems for existing exterior utilities in the area (generator, propane tank, etc.).
 - .4 Remove existing 5 tier block wall gravity retaining wall system.
 - .5 Prepare sub-grade and have approved by geotechnical engineer prior to placing granular base / engineered fill.
 - .6 Place geotextile over approved subbase.
 - .7 Construct retaining wall granular base complete with rigid insulation frost protection and drainage tile.
 - .8 Construct new cast-in-place reinforced concrete footings.
 - .9 Supply and install new 2 tier pre-cast concrete gravity block retaining walls.
 - .10 Backfill retaining wall and finish with topsoil and seed.
 - .11 Install new top mounted chain link fence guard along top tier block wall.
 - .12 Remove and replace paved parking lot in front of new retaining wall.
 - .13 Provisional: Implement vegetation mitigation plan for cleaning of existing Riprap area.
 - .14 Provisional: Remove existing architectural wall and replace with concrete curb.
 - .15 Restoration of site and reinstatement of disturbed areas to match existing conditions or better.

The successful Bidder will be required to enter into a CCDC 2 Stipulated Price Contract.

Sealed electronic bids shall be submitted through the MERX electronic tendering system and received no later than **2:00 p.m. local time on August 20, 2026.**

1.1 PRE-TENDER MEETING

- .1 A non-mandatory bidders meeting is scheduled as follows:

Location: 101-255 Holditch St. Sturgeon Falls, ON

Date: August 11, 2026

Time: 1 P.M. local time.

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 GENERAL

- .1 Bidders are advised that the Municipality functions through its Policy No. 2006-332 “validity of Tenders” and by its By-law No. 2016-89 (including the most current amendments), “By-law to Establish Purchasing Policies and Procedures for the Municipality of West Nipissing” (Purchasing By-law)

1.2 INVITATION

- .1 Bid Call
 - .1 Ensure offers are signed under seal, executed, and dated. Sealed electronic bids shall be submitted through the MERX electronic tendering system and received no later than **2:00 p.m. local time on August 20, 2026.**
 - .2 It is the respondent’s responsibility to ensure submission are received by the Municipality by the submission deadline. The Municipality assumes no obligation for issues cause by electronic or telecommunication issues affecting the delivery of the submission, even if originating from the Municipality’s IT systems. Respondents are encouraged to submit their Bid early and to call the Municipality contact after submitting Bids to confirm the Municipality’s receipt of the Bid submission.
 - .3 Offers submitted after above time may be returned to Bidder unopened.
 - .4 Offers will be opened privately immediately after time for receipt of Bids.
 - .5 Amendments to submitted offer will be permitted if received in writing prior to Bid closing and if endorsed by same party or parties who signed and sealed offer.

1.3 INTENT

- .1 Intent of this Bid call is to obtain an offer to perform Work to complete Structural Works located at 101-225 Holditch St., Sturgeon Falls, ON for Stipulated Price contract, in accordance with Contract Documents.
- .2 Perform Work within time stated in Section 01 11 00 Summary of Work.
- .3 Initiate Work within 2 weeks of receipt of notice of contract award stated in Section 01 11 00 - Summary of Work.

1.4 CONTRACT DOCUMENTS IDENTIFICATION

- .1 This contract is prepared on the basis of a CCDC2 Stipulated Price Contract. The Lump Sum price covers all works as described on the Contract Drawings and in these Specifications. For the work with no specific Unit Price item the Contractor shall be responsible for determining quantities to be supplied and removed to fully complete the work. No claims for adjusting the compensation for such work shall be considered unless the scope of work is significantly altered due to changed conditions or significantly decreased or increased as directed by the Consultant.
- .2 Contract Documents are identified as:

- .1 Retaining Wall Replacement – 101-225 Holditch St., Sturgeon Falls, ON – drawings and specifications as prepared by Art Engineering Inc. located at 115-1350 Fisher Street, North Bay, ON, P1B 2H1

1.5 CONTRACT/BID DOCUMENTS

- .1 Agreement Form.
- .2 Definitions:
 - .1 Contract Document: defined in CCDC 2 Edition.
 - .2 Bid Document: Contract Documents supplemented with Instructions to Bidders, Bid Form, and Bid Supplementary Forms identified.
 - .3 Bid, Offer, or Bidding: act of submitting an offer under seal.
 - .4 Bid Price: monetary sum identified in Bid Form as an offer to perform Work.
- .3 Availability
 - .1 Electronic versions of Bid Documents can be provided upon request.
 - .2 Bid Documents are made available only for purpose of obtaining offers for this project. Their use does not confer licence or grant for other purposes.
 - .3 Electronic copy of soils investigation report is available upon request.
- .4 Examination
 - .1 Electronic Bid Documents are available for viewing via MERX bidding system.
 - .2 Upon receipt of Bid Documents verify that documents are complete.
 - .3 Immediately notify Consultant upon finding discrepancies or omissions in Bid Documents.
- .5 Queries/Addenda
 - .1 Direct all questions and requests for clarification to Derick Battrick P. Eng., by email at derick@artengineering.ca and cc Drake Berger P. Eng. at drake@artengineering.ca.
 - .2 Addenda may be issued during the Bidding Period. Addenda issued through MERX will form part of the Contract Documents. Include all associated costs in the Bid Price.
 - .3 Responses to bidder inquiries are only binding when issued by written Addendum through MERX.
 - .4 Requests for clarification shall be submitted to Derick Battrick P. Eng., by email at derick@artengineering.ca and cc Drake Berger P. Eng. at drake@artengineering.ca no later than **4:00:00 P.M. local time August 13, 2026**. Responses requiring clarification of the Contract Documents will be issued by Addendum through MERX to all registered bidders not later than **4:00:00 P.M. local time August 14, 2026**.
- .6 Alternative Materials and Procedures
 - .1 If, for any reason, the Bidder should propose to use different materials, equipment, or methods which, in the Bidder's opinion, would improve the operation of the installation specified, the Bidder shall:
 - .1 Base it's Bid on the exact requirements of the Bid Documents;

- .2 Request for equals to the material, equipment, or methods of fabrication specified, should be submitted in writing to the Contract Administrator three (3) days prior to Bid Closing Time.
- .3 These requests are to contain pertinent data such as specifications, construction and operational characteristics, cost savings, etc. in order to assist the Contract Administrator in their decision.
- .4 Approvals for equals will be in the form of addenda; the Contract Administrator is not obligated to review and approve equals prior to the Bid Closing Time.
- .5 The Owner reserves the right, in its sole discretion, to accept or reject any or all substitutions and alternatives.

1.6 SITE ASSESSMENTS

- .1 Non-mandatory Bidders Meeting
 - .1 Refer to invitation to bid Section 01 11 16 – Part 1.1 Bidders Meeting.
 - .2 General Contractor and major subtrade are invited.
 - .3 Representative of Consultant will be in attendance.
 - .4 Information discussed at the bidders meeting is non-binding and shall not modify the Contract Documents. Questions shall be submitted electronically to the Consultant for formal response via Addenda only.

1.7 QUALIFICATIONS

- .1 Prequalification:
 - .1 Not Used.
- .2 Subcontractors:
 - .1 Owner reserves right to reject proposed subcontractor for reasonable cause.

1.8 BID SUBMISSION

- .1 Bid Depository
 - .1 Not Used.
- .2 Bid Ineligibility
 - .1 Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, or irregularities of any kind, may be declared informal at Owner's discretion.
 - .2 Bids with Bid Forms and enclosures which are improperly prepared may be declared informal at Owner's discretion.
 - .3 Bids that fail to include security deposit, bonding or insurance requirements may be declared informal at Owner's discretion.
- .3 Submissions
 - .1 Bidders are solely responsible for delivery of their Bids in manner and time prescribed.

- .2 Submit electronic copy of executed offer on Bid Forms provided, signed and with corporate seal together with required security in sealed opaque envelope, clearly identified with Bidder's name, project name and Owner's name on outside.
- .3 Improperly completed information, irregularities in Bid Bond, may be cause not to declare Bid informal.

1.9 BID ENCLOSURES/REQUIREMENTS

- .1 Agreement to Bond:
 - .1 Submit with Bid Form and Bid Bond, Agreement to Bond, stating that surety providing Bid Bond is willing to supply Performance Bond specified.
 - .2 Include cost of bonds in Bid Price.
- .2 Performance Assurance
 - .1 Accepted Bidder must provide Performance Bond as here-in:
 - .1 Performance Bond: 50% of the Bid Price;
 - .2 Labour & Material Payment Bond: 50% of the Bid Price
 - .2 Include cost of bonds in Bid Price.
- .3 Insurance:
 - .1 Provide signed "Undertaking of Insurance" on standard form provided by insurance company stating intention to provide insurance to Bidder in accordance with insurance requirements of Contract Documents.
 - .2 Provide Insurance in accordance with CCDC 2 GC 11.1 – Insurance and CCDC 41 – CCDC Insurance Requirements.
- .4 Bid Form Requirements:
 - .1 State in Bid Form, time required to complete Work. Completion date in Agreement must be completion time added to commencement date.
 - .2 Bidder, in submitting an offer, accepts time period stated in Contract documents for performing Work. Completion date in Agreement is completion time added to commencement date.
 - .3 Bidder, in submitting an offer, agrees to complete Work by date indicated in Contract Documents.
- .5 Bid Signing
 - .1 Bid Form to be signed under seal by Bidder.
 - .2 Sole Proprietorship: signature of sole proprietor in presence of witness who shall also sign. Insert words "Sole Proprietor" under signature. Affix seal.
 - .3 Partnership: signature of all partners in presence of witness who shall also sign. Insert word 'Partner' under each signature. Affix seal to each signature.

- .4 Limited Company: signature of duly authorized signing officer(s) in normal signatures. Insert officer's capacity in which signing officer acts, under each signature. Affix corporate seal. If Bid is signed by officials other than President and Secretary of company, or President-Secretary-Treasurer of company, copy of by-law resolution of Board of Directors authorizing them to do so must also be submitted with Bid in Bid envelope.
- .5 Incorporated Company: signature of duly authorized signing officer(s) in normal signatures. Insert officer's capacity in which signing officer acts, under each signature. Affix corporate seal. If Bid is signed by officials other than President and Secretary of company, or President-Secretary-Treasurer of company, copy of by-law resolution of Board of Directors authorizing them to do so must also be submitted with Bid in Bid envelope.
- .6 Joint Venture: each party of joint venture must execute Bid under respective seals in manner appropriate to such party as described above, similar to requirements of Partnership.
- .6 Work Schedule:
 - .1 Bidder shall submit within five (5) working days of contract award a preliminary construction schedule, in Gantt chart format, identifying the major work activities, their anticipated durations, and the proposed sequence of construction. The schedule shall demonstrate the Bidder's planned approach to completing the Work and achieving Substantial Performance of the Work no later than **November 13, 2026**.
- .7 Appendices to Bid Form:
 - .1 Appendix A - Contract Documents: include complete listing of documents and information issued by which Bid price was derived.
 - .2 Appendix B - Subcontractors: include names of Subcontractors and portions of Work Bidder will perform.
 - .3 Appendix C - Unit Prices: include listing of unit prices specifically requested in Bid Documents.
- .8 Supplementary Bid Information:
 - .1 Not Used.

1.10 OFFER ACCEPTANCE/ REJECTION

- .1 Duration of Offer:
 - .1 Bids to remain open to acceptance, and irrevocable for 60 days after Bid closing date.
- .2 Acceptance of Offer:
 - .1 Owner reserves right to accept or reject any or all offers.
 - .2 After acceptance by Owner, Consultant will issue to successful Bidder, written Bid acceptance.
 - .3 After Bid has been accepted, unsuccessful Bids will be returned to respective Bidders with submitted Bid securities and other requested enclosures.

Part 2
2.1 **Products**
 NOT USED

.1 Not Used.

Part 3
3.1 **Execution**
 NOT USED

.1 Not Used.

END OF SECTION

We, the undersigned, having examined the Bid Documents for the above-named project/contract,

PROJECT: Retaining Wall Replacement at 101-225 Holditch St., Sturgeon Falls, Ontario

FROM (BIDDER)

Company Name

Address

City/Town, Province and Postal Code

hereinafter called the "Tenderer".

TO (CONSULTANT)

ART Engineering Inc.
115-1350 Fisher St.

including Addendum Number(s) North Bay, ON, P1B 2H1, and having visited the Place of the Work, hereby offer to perform the Work in accordance with the Bid Documents, for the stipulated price of: \$ _____ in Canadian dollars, excluding Value Added Taxes (VAT/HST).
amount in figures

We, the undersigned, declare that:

- .1 If notified of award of Contract, to immediately commence Work assembling all necessary labour forces and equipment on the site and will continue the work with the utmost diligence until completion. Complete Work of construction on the Project, attaining Substantial Performance of the Work till **August 20, 2026**, inclusive of mobilization time from date of receiving notice of award.
- .2 We have carefully examined the site of the proposed Work and existing conditions; the requirements of the construction sequencing; and have satisfied ourselves that the Subcontractors, material suppliers and equipment suppliers on which this Bid is based are capable of executing the Work in accordance with the Contract Documents.
- .3 All bid form supplements called for by the Bid Documents form an integral part of this bid.
- .4 This Bid is made without any connection, collusion, knowledge, comparison of figures or arrangement with any person or persons submitting a Bid for this same Contract.
- .5 In the Contract Lump Sum price, all costs associated with the project specified in these documents, shown or indicated on the drawings, or necessary to complete the work shall be included. Where a specified Unit Price is not provided the cost of all work shall be included in the Contract Lump Sum.
- .6 Bid price breakdown and unit rates:

- .1 The Bidder shall complete the following Bid Price Breakdown table, including all requested unit rates.
- .2 The total of the Bid Price Breakdown shall equal the Bid Price (lump sum).
- .3 The Bid Price Breakdown is provided for the purposes of bid evaluation and, if the Bidder is awarded the Contract, for use in valuing Changes in the Work in accordance with GC 6.1 of the Contract.
- .4 Notwithstanding the inclusion of quantities and unit rates, the Contract is a stipulated price contract, and the Contract Price shall not be subject to adjustment based on variations in quantities from those indicated in this table.
- .5 Unit rates shall be based only where applicable to Changes in the Work as agreed or determined in accordance with the Contract.
- .6 The Bid Price (lump sum) shall govern in all cases.

Bid Price Breakdown:

Item No.	Description of Work	Unit	Total
1.	General Items: Mobilization/ Demobilization, Site Safety, Site Supervision, Project Schedule, Construction Costs, Survey Costs, Temporary Facilities, Clean-Up, Utility Identification and Protection, Etc.	LS	
2.	Temporary Protection and Hoarding	LS	
3.	All Earth Excavation including Removal and Disposal of Existing 5 – Tier Gravity Retaining Wall (for Retaining Wall related Works only)	LS	
4.	Decommissioning and Removal of Existing Monitoring Well; shall be decommissioned by a Licensed Well Contractor Prior to Removing Well Casing	LS	
5.	Prepare Subgrade and have Approved by Geotechnical Engineer Prior to Placing Granular Base / Engineered Fill	LS	
6.	Geotextile Throughout Contract	LS	
7.	Granular 'A' Base / Pad Below New 2-Tier Gravity Retaining Wall	LS	
8.	Granular 'B' Throughout Contract (Backfill and Below Granular 'A' Pad as Required by Geotechnical Engineer, for New Retaining Wall	LS	

9.	Rigid Insulation below New Retaining Walls	LS	
10.	Supply and Install New 2-Tier Gravity Block Wall with Proprietary Pre-cast Concrete Blocks	LS	
11.	Supply and Install New Chain Link Fence, including Concrete Pier Foundations and Anchorage	LS	
12.	Supply and Install New 100mm Ø Perforated Drainage Tile c/w Clear Stone and Geotextile behind Retaining Walls, including Solid Drainage Pipe Extensions, Rodent Guard, and Connection to Existing Catch Basin	LS	
13.	Pavement Removal, for Retaining Wall Replacement, including Trenching for Drainage Pipe	LS	
14.	Pavement Reconstruction, including Pavement Base Repairs for Retaining Wall Replacement, and Trenching for Drainage Pipe. (40 mm HL3, 60 mm HL8, PGAC 58-22)	LS	
15.	Sodding Throughout Contract include slope stakes as required	LS	
16.	Restore and Reinstall Disturbed Areas (Site Cleaning / Restoration)	LS	
17.	Cash Allowance: Material Inspection and Testing (Refer to Specification 01 21 00)	LS	\$10,000.00
18.	Contingency Allowance (Refer to Specification 01 21 00)	LS	\$20,000.00
19.	PROVISIONAL: Implement Rip-Rap Vegetation Growth Mitigation Plan	LS	
20.	PROVISIONAL: Replacement of Existing Architectural Wall with New Concrete Curb	LS	

- .7 This tender is irrevocable from the official closing time and is unconditionally open for acceptance for 60 days after the official closing time, and that if notified of award of the Contract and before starting the Work we will:

- .1 Execute a Contract with The Owner on the specified Form of Agreement.
- .2 Furnish to The Owner, in care of the Consultant, copies of insurance policies as required by the General Conditions of the Contract.
- .3 Furnish to The Owner evidence that all Workplace Safety and Insurance Board dues, in accordance with the laws of the Province of Ontario, have been paid.

**Note that items noted as “Provisional” shall not be included in the stipulated bid price.
“Provisional” items shall not commence unless written direction to proceed has been provided to the Contractor from the Consultant in the form of a Change Order.**

Signed and Submitted by:

Legal Name of Company

Name of Authorized Signing Officer

Title of Authorized Signing Officer

Signature of Authorized Signing Officer

Name of Witness

Signature of Witness

Corporate Seal Affixed Hereto:

Dated this _____ day of _____, 20_____

If the tender is submitted by or on the behalf of a corporation, it must be signed in the name of such corporation by the duly authorized officers and the seal of the corporation must be affixed. If the tender is submitted by or on behalf of an individual or a partnership, signatures must be witnessed.

END OF SECTION

The following is a list of products or materials which we propose to use in order to complete the work as specified in the Contract Documents:

Element	Manufacturer	Product
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____
6. _____	_____	_____
7. _____	_____	_____
8. _____	_____	_____
9. _____	_____	_____
10. _____	_____	_____
11. _____	_____	_____
12. _____	_____	_____
13. _____	_____	_____
14. _____	_____	_____
15. _____	_____	_____

END OF SECTION

PROJECT: Retaining Wall Replacement
101-225 Holditch St., Sturgeon Falls, ON

FROM (BIDDER)

Company Name

We, the above-named bidder, propose to use for the above-named project/contract, the Subcontractors named below:

Item of Work	Name of Subcontractor
[]	
[]	
[]	
[]	
[]	
[]	
[]	
[]	
[]	
[]	

END OF SECTION

Part 1 General

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work of this Contract comprises retaining wall replacement and miscellaneous site improvements, located at 101-225 Holditch Street, Sturgeon Falls, Ontario; and further identified as Retaining Wall Replacement and in general terms, the scope of work will consist of:
 - .1 Supply and installation of protection systems, such as site signage, barriers, and pedestrian traffic control.
 - .2 Confirm existing utilities within the construction site to remain and be protected throughout construction.
 - .3 Implement protection systems for existing exterior utilities in the area (generator, propane tank, etc.).
 - .4 Remove existing 5 tier block wall gravity retaining wall system.
 - .5 Prepare sub-grade and have approved by geotechnical engineer prior to placing granular base / engineered fill.
 - .6 Place geotextile over approved subbase.
 - .7 Construct retaining wall granular base complete with rigid insulation frost protection and drainage tile.
 - .8 Construct new cast-in-place reinforced concrete footings.
 - .9 Supply and install new 2 tier pre-cast concrete gravity block retaining walls.
 - .10 Backfill retaining wall and finish with topsoil and seed.
 - .11 Install new top mounted chain link fence guard along top tier block wall.
 - .12 Remove and replace paved parking lot in front of new retaining wall.
 - .13 Provisional: Implement vegetation mitigation plan for cleaning of existing Riprap area.
 - .14 Provisional: Remove existing architectural wall and replace with concrete curb.
 - .15 Restoration of site and reinstatement of disturbed areas to match existing conditions or better.

1.2 CONTRACT METHOD

- .1 Construct Work under CCDC 2 stipulated price contract.

1.3 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures
- .2 Submit Project construction progress schedule in accordance with 01 32 16.19 - Construction Progress Schedule - Bar (GANTT) Chart.
- .3 Submit site-specific and Work Plan Health and Safety Plan in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.4 WORK BY OTHERS

- .1 Co-operate with other Contractors in carrying out their respective works and carry out instructions from Consultant.
- .2 Co-ordinate work with other contractors. If any part of work under this Contract depends for its proper execution or result upon work of another contractor, report promptly to Consultant, in writing, any defects which may interfere with proper execution of Work.

1.5 FUTURE WORK

- .1 Not used.

1.6 WORK SEQUENCE

- .1 Construct Work in stages to accommodate Owner's intermittent use of premises during construction.
- .2 Co-ordinate Progress Schedule.
- .3 Construct Work in stages to provide temporary access by owner, consultant, and Public Works.
- .4 Maintain fire access/control.
- .5 Protect workers and public safety.

1.7 CONTRACTOR USE OF PREMISES

- .1 Unrestricted use of site until Substantial Performance.
- .2 Limit use of premises for Work, storage, and access, to allow:
 - .1 Work by contractors and sub-trades.
 - .2 Consultant access.
- .3 Co-ordinate use of premises under direction of Consultant.
- .4 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .5 Refer to Section 01 52 00 - Construction Facilities and Section 01 56 00 - Temporary Barriers and Enclosures, for temporary facilities, access roads and parking areas, traffic regulations, and utilities.
- .6 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .7 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Consultant.
- .8 Ensure that operations conditions of exiting work at completion are still the same, equal to or better than that which existed before new work started.

1.8 OWNER OCCUPANCY

- .1 Adjacent Owner-occupied facilities will remain in operation during the construction period.
- .2 Construction area will be closed to public access. Access to the work area will be limited to Contractor personnel, subcontractors, Consultant, and Owner Representatives.
- .3 Co-operate with Owner in scheduling operations to minimize disruption to adjacent building operations and occupant activities.

1.9 PARTIAL OWNER OCCUPANCY

- .1 Not Used.

1.10 PRE-ORDERED PRODUCTS OR PRE-BID WORK

- .1 Verify with Consultant if they have placed orders with suppliers for specific products or work, to expedite Work and for other purposes in Owner's interests.
- .2 Take responsibility for purchasing, handling, and installing of pre-ordered products same as for other Contractor-furnished products.
- .4 Sign a written agreement with designated supplier to require them to perform their work as provided in the Contract Document terms and conditions.

1.11 PRE-PURCHASED EQUIPMENT

- .1 Not Used.

1.12 OWNER FURNISHED ITEMS

- .1 Not Used.

1.13 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

- .1 Execute work with least possible interference or disturbance to building operations occupants, public and normal use of premises. Arrange with Consultant to facilitate execution of work.

1.14 EXISTING SERVICES

- .1 Notify, Consultant and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Consultant 48 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to adjacent facility tenant operations.
- .3 Provide alternative routes for personnel as required at the direction of the Consultant.
- .4 Establish location and extent of service lines in area of work before starting Work. Notify Consultant of findings.
- .5 Submit schedule for approval by Consultant for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.

- .6 Provide temporary services when directed by Consultant to maintain critical building and tenant services.
- .7 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.
- .8 Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.
- .9 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .10 Record locations of maintained, re-routed and abandoned service lines.
- .11 Construct barriers, as required, in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.15 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy of each document as follows:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed Shop Drawings.
 - .5 List of Outstanding Shop Drawings.
 - .6 Change Orders.
 - .7 Other Modifications to Contract.
 - .8 Field Test Reports.
 - .9 Copy of Approved Work Schedule.
 - .10 Health and Safety Plan and Other Safety Related Documents.
 - .11 Other documents as specified.

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 ACCESS AND EGRESS

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps or ladders, independent of finished surfaces and 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 Consultant 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 Contractor to provide and maintain their own temporary sanitary facilities for use by Contractor's personnel. Keep facilities clean.
- .5 Closures: protect work temporarily until permanent enclosures are completed.

1.3 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

- .1 Execute work with least possible interference or disturbance to adjacent building operations, occupants, public and normal use of premises. Arrange with Consultant to facilitate execution of work.

1.4 EXISTING SERVICES

- .1 Notify, Consultant and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Consultant 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.
- .3 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.5 SPECIAL REQUIREMENTS

- .1 Submit schedule in accordance with Section 01 32 16.19 - Construction Progress Schedule - Bar (GANTT) Chart.
- .2 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .3 Keep within limits of work and avenues of ingress and egress.
- .4 Deliver materials outside of peak traffic hours 17:00 to 07:00 and 13:00 to 15:00 unless otherwise approved by Consultant.

1.6 SECURITY

- .1 Where security has been reduced by Work of Contract, provide temporary means to maintain security.

1.7 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions. Smoking is not permitted.

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 CASH ALLOWANCES

- .1 Refer to CCDC 2 .
- .2 Include in Contract Price specified Material and Testing cash allowance of \$10,000.00.
- .3 Cash allowances, unless otherwise specified, cover net cost to Contractor, subcontractor of services, products, construction machinery and equipment, freight, handling, unloading, storage installation and other authorized expenses incurred in performing Work.
- .4 Contract Price, and not cash allowance, includes Contractor's overhead and profit in connection with such cash allowance.
- .5 Contract Price will be adjusted by written order to provide for excess or deficit to each cash allowance.
- .6 Where costs under a cash allowance exceed amount of allowance, Contractor will be compensated for excess incurred and substantiated plus allowance for overhead and profit as set out in Contract Documents.
- .7 Include progress payments on accounts of work authorized under cash allowances in Consultant's monthly certificate for payment.

Prepare schedule jointly with Consultant and Contractor to show when items called for under cash allowances must be authorized by Consultant for ordering purposes so that progress of Work will not be delayed.

1.2 CONTINGENCY ALLOWANCE

- .1 Refer to CCDC 2.
- .2 Include in Contract Price contingency allowance of \$ 50,000.00.
- .3 Do not include in Contract Price, additional contingency allowances for products, installation, overhead or profit.
- .4 Expenditures under contingency allowance will be authorized in accordance with procedures provided in CCDC 2, GC 6.1 - Changes CCDC 2, 6.2 Change Order and CCDC 2, 6.3 Change Directive.

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 APPLICATIONS FOR PROGRESS PAYMENT

- .1 Refer to CCDC 2.
- .2 Make applications for payment on account monthly as Work progresses.
- .3 Date applications for payment last day of agreed monthly payment period and ensure amount claimed is for value, proportionate to amount of Contract, of Work performed and Products delivered to Place of Work at that date.
- .4 Submit to Consultant, at least 7 days before first application for payment. Schedule of values for parts of Work, aggregating total amount of Contract Price, to facilitate evaluation of applications for payment.

1.2 SCHEDULE OF VALUES

- .1 Refer to CCDC 2.
- .2 Provide schedule of values supported by evidence as Consultant may reasonably direct and when accepted by Consultant, be used as basis for applications for payment.
- .3 Include statement based on schedule of values with each application for payment.
- .4 Support claims for products delivered to Place of Work but not yet incorporated into Work by such evidence as Consultant may reasonably require to establish value and delivery of products.

1.3 PREPARING SCHEDULE OF UNIT PRICE TABLE ITEMS

- .1 Submit separate schedule of unit price items of Work requested in Bid form.
- .2 Make form of submittal parallel to Schedule of Values, with each line item identified same as line item in Schedule of Values. Include in unit prices only:
 - .1 Cost of material.
 - .2 Delivery and unloading at site.
 - .3 Sales taxes.
 - .4 Installation, overhead and profit.
- .3 Ensure unit prices multiplied by quantities given equal material cost of that item in Schedule of Values.

1.4 PROGRESS PAYMENT

- .1 Refer to CCDC 2.
- .2 Consultant will issue to Owner, no later than 7 days after receipt of an application for payment, certificate for payment in amount applied for or in such other amount as Consultant determines to be due. If Consultant amends application, Consultant will give notification in writing giving reasons for amendment.

1.5 SUBSTANTIAL PERFORMANCE OF WORK

- .1 Refer to CCDC 2.
- .2 Prepare and submit to Consultant comprehensive list of items to be completed or corrected and apply for a review by Consultant to establish Substantial Performance of Work or substantial performance of designated portion of Work when Work is substantially performed if permitted by lien legislation applicable to Place of Work designated portion which Owner agrees to accept separately is substantially performed. Failure to include items on list does not alter responsibility to complete Contract.
- .3 No later than 7 days after receipt of list and application, Consultant will review Work to verify validity of application, and no later than 7 days after completing review, will notify Contractor if Work or designated portion of Work is substantially performed.
- .4 Consultant: state date of Substantial Performance of Work or designated portion of Work in certificate.
- .5 Immediately following issuance of certificate of Substantial Performance of Work, in consultation with Consultant, establish reasonable date for finishing Work.

1.6 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF WORK

- .1 Refer to CCDC 2.
- .2 After issuance of certificate of Substantial Performance of Work:
 - .1 Submit application for payment of holdback amount.
 - .2 Submit sworn statement that accounts for labour, subcontracts, products, construction machinery and equipment, and other indebtedness which may have been incurred in Substantial Performance of Work and for which Owner might in be held responsible have been paid in full, except for amounts properly retained as holdback or as identified amount in dispute.
- .3 After receipt of application for payment and sworn statement, Consultant will issue certificate for payment of holdback amount.
- .4 Where holdback amount has not been placed in a separate holdback account, Owner will, 10 days prior to expiry of holdback period stipulated in lien legislation applicable to Place of Work, place holdback amount in bank account in joint names of Owner and Contractor.
- .5 Amount authorized by certificate for payment of holdback amount is due and payable on day following expiration of holdback period stipulated in lien legislation applicable to Place of Work. Where lien legislation does not exist or apply, holdback amount is due and payable in accordance with other legislation, industry practice, or provisions which may be agreed to between parties. Owner may retain out of holdback amount sums required by law to satisfy liens against Work or, if permitted by lien legislation applicable to Place of Work, other third party monetary claims against Contractor which are enforceable against Owner.

1.7 PROGRESSIVE RELEASE OF HOLDBACK

- .1 Refer to CCDC 2.

- .2 Where legislation permits, if Consultant has certified that Work of subcontractor or supplier has been performed prior to Substantial Performance of Work, Owner will pay holdback amount retained for such subcontract Work, or products supplied by such supplier, on day following expiration of holdback period for such Work stipulated in lien legislation applicable to Place of Work.
- .3 In addition to provisions of preceding paragraph, and certificate wording, ensure that such subcontract Work or products is protected pending issuance of final certificate for payment and be responsible for correction of defects or Work not performed regardless of whether or not such was apparent when such certificates were issued.

1.8 FINAL PAYMENT

- .1 Refer to CCDC 2, GC 5.7.
- .2 Submit application for final payment when Work is completed.
- .3 Consultant will, no later than 10 days after receipt of application for final payment, review Work to verify validity of application. Consultant will give notification that application is valid or give reasons why it is not valid, no later than 7 days after reviewing Work.
- .4 Consultant will issue final certificate for payment when application for final payment is found valid.

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 APPOINTMENT AND PAYMENT

- .1 Contractor shall retain and coordinate the services of an independent testing laboratory to perform inspection and testing required by the Contract Documents. The Owner will pay the testing laboratory directly for services, except as follows:
 - .1 Inspection and testing required by laws, ordinances, rules, regulations, or orders of public authorities.
 - .2 Inspection and testing performed exclusively for Contractor's convenience.
 - .3 Testing, adjustment, and balancing of conveying systems, mechanical and electrical equipment and systems.
 - .4 Mill tests and certificates of compliance.
 - .5 Tests specified to be carried out by Contractor under supervision of Consultant.
- .2 Where tests or inspections by the designated testing laboratory reveal that the Work does not conform to the Contract Documents, the Contractor shall be responsible for all costs associated with additional testing or inspections required by the Consultant to verify the acceptability of the corrected Work.
- .3 Contractor shall coordinate all required inspection and testing with the testing laboratory and provide the Consultant with copies of all laboratory test reports, inspection reports, certificates, and other required documentation promptly upon receipt. The Consultant will review the submitted documentation for compliance with the Contract Documents.

1.2 CONTRACTOR'S DESIGN -BUILDER'S RESPONSIBILITIES

- .1 Not Used.

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 Schedule and administer project meetings throughout the progress of the work at the call of the Consultant.
- .2 Prepare agenda for meetings.
- .3 Distribute written notice of each meeting four working days in advance of meeting date to Consultant.
- .4 Provide physical space and make arrangements for meetings.
- .5 Preside at meetings.
- .6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.
- .7 Reproduce and distribute copies of minutes within three working days after meetings and transmit to meeting participants and, affected parties not in attendance, and Consultant.
- .8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.2 PRECONSTRUCTION MEETING

- .1 Within 14 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities, including Moore Propane for temporary relocation of generator and propane tank.
- .2 Senior representatives of Consultant, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.
- .3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.
- .4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
- .5 Agenda to include:
 - .1 Appointment of official representative of participants in the Work.
 - .2 Schedule of Work: in accordance with Section 01 32 16.19 - Construction Progress Schedule - Bar (GANTT) Chart.
 - .3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
 - .5 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
 - .6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
 - .7 Owner provided products.

- .8 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .9 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.
- .10 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
- .11 Monthly progress claims, administrative procedures, photographs, hold backs.
- .12 Appointment of inspection and testing agencies or firms.
- .13 Insurances, transcript of policies.

1.3 PROGRESS MEETINGS

- .1 During course of Work and 2 weeks prior to project completion, schedule progress meetings biweekly.
- .2 Contractor, major Subcontractors involved in Work and Consultant and Owner are to be in attendance.
- .3 Notify parties minimum 4 working days prior to meetings.
- .4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 3 working days after meeting.
- .5 Agenda to include the following:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Field observations, problems, conflicts.
 - .4 Problems which impede construction schedule.
 - .5 Review of off-site fabrication delivery schedules.
 - .6 Corrective measures and procedures to regain projected schedule.
 - .7 Revision to construction schedule.
 - .8 Progress schedule, during succeeding work period.
 - .9 Review submittal schedules: expedite as required.
 - .10 Maintenance of quality standards.
 - .11 Review proposed changes for affect on construction schedule and on completion date.
 - .12 Other business.

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 REQUIREMENTS**

- .1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
- .2 Plan to complete Work in accordance with prescribed milestones and time frame.
- .3 Limit activity durations to maximum of approximately 7 working days, to allow for progress reporting.
- .4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Consultant within 5 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
- .3 Submit Project Schedule to Consultant within 5 working days of receipt of acceptance of Master Plan.

1.3 PROJECT MILESTONES

- .1 Project milestones form interim targets for Project Schedule.
 - .1 Excavation completed within 15 working days of Award of Contract date.
 - .2 Foundation completed within 25 working days of Award of Contract date.
 - .3 Retaining Wall completed within 45 working days of Award of Contract date.
 - .4 Asphalt paving completed within 50 working days of Award of Contract date.
 - .5 Interim Certificate (Substantial Completion) within 55 working days of Award of Contract date.

1.4 MASTER PLAN

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 Consultant will review and return revised schedules within 5 working days.
- .3 Revise impractical schedule and resubmit within 5 working days.
- .4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.5 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule derived from Master Plan.
- .2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
 - .1 Award.

- .2 Shop Drawings, Samples.
- .3 Permits.
- .4 Mobilization.
- .5 Excavation.
- .6 Subbase Approval.
- .7 Base Placement and Backfill.
- .8 Block Wall Installation.
- .9 Pavement Removal.
- .10 Placement of New Pavement.
- .11 Site Restoration, including topsoil and seed.
- .12 Provisional: Architectural Wall Removal & Curb Installation
- .13 Provisional: Rip-Rap Vegetation Mitigation Plan.

1.6 PROJECT SCHEDULE REPORTING

- .1 Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.
- .2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.7 PROJECT MEETINGS

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.
- .2 Weather related delays with their remedial measures will be discussed and negotiated.

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 Consultant 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 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to Consultant. 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.
- .6 Notify Consultant, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent Work are co-ordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant review.
- .10 Keep one reviewed copy of each submission on site.

1.2 SHOP DRAWINGS AND PRODUCT DATA

- .1 Refer to CCDC 2 GC 3.11.
- .2 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.
- .3 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
- .4 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.
- .5 Allow 3 working days for Consultant's review of each submission.

- .6 Adjustments made on shop drawings by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.
- .7 Make changes in shop drawings as Consultant may require, consistent with Contract Documents. When resubmitting, notify Consultant in writing of revisions other than those requested.
- .8 Accompany submissions with transmittal letter, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
- .9 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
- .10 After Consultant's review, distribute copies.
- .11 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Consultant may reasonably request.
- .12 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Consultant where shop drawings will not be prepared due to standardized manufacture of product.

- .13 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Consultant.
 - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
 - .2 Testing must have been within 3 years of date of contract award for project.
- .14 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Consultant.
 - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - .2 Certificates must be dated after award of project contract complete with project name.
- .15 Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Consultant.
 - .1 Pre-printed material describing installation of product, system or material, including special notices and Safety Data Sheets concerning impedances, hazards and safety precautions.
- .16 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Consultant.
- .17 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .18 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Consultant.
- .19 Delete information not applicable to project.
- .20 Supplement standard information to provide details applicable to project.
- .21 If upon review by Consultant, 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.
- .22 The review of shop drawings by the Consultant is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that the Consultant approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
 - .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

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 Consultant's business address.
- .3 Notify Consultant 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 Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.
- .6 Make changes in samples which Consultant 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 01 45 00 - Quality Control.

1.5 PHOTOGRAPHIC DOCUMENTATION

- .1 Submit electronic copy of colour digital photography in jpg format, standard resolution biweekly with progress statement and as directed by Consultant.
- .2 Project identification: name and number of project and date of exposure indicated.
- .3 Number of viewpoints: 2 locations.
 - .1 Viewpoints and their location as determined by Consultant.
- .4 Frequency of photographic documentation: biweekly, as directed by Consultant.
 - .1 Upon completion of: excavation, sub-base preparation, block wall granular base pads, and as directed by Consultant.

1.6 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 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation.
- .3 Submit electronic copies of Contractor's authorized representative's work site health and safety inspection reports to Consultant and authority having jurisdiction, as required by governing authorities.
- .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Submit WHMIS Safety Data Sheets (SDS) in accordance with Section 01 33 00 Submittal Procedures.
- .7 Consultant will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 3 working days after receipt of plan. Revise plan as appropriate and resubmit plan to Consultant within 3 working days after receipt of comments from Consultant.
- .8 Consultant's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .9 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

1.2 FILING OF NOTICE

- .1 File Notice of Project with Provincial authorities prior to beginning of Work.
- .2 Contractor shall provide and maintain proper site separation, barricading, signage, and site identification measures as required to ensure safe segregation of work areas and maintain operational continuity throughout the duration of the Project.

1.3 SAFETY ASSESSMENT

- .1 Perform site specific safety hazard assessment related to project.

1.4 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Consultant prior to commencement of Work.

1.5 REGULATORY REQUIREMENTS

- .1 Do Work in accordance with Section 01 41 00 - Regulatory Requirements.

1.6 PROJECT/SITE CONDITIONS

- .1 Existing Generator and Propane Tank
 - .1 An existing standby generator, propane storage tank, and transformer are located adjacent to the retaining wall replacement work area.
 - .2 Existing generator service shall remain operational throughout construction unless otherwise approved by the Owner.

Maintain temporary protection measures, including concrete barriers and any temporary support systems shown on the Contract Drawings, present on site, or required for safe operation of the temporary installation.

1.7 GENERAL REQUIREMENTS

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Consultant may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.8 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Contractor will be responsible and assume the role Constructor as described in the Ontario Occupational Health and Safety Act and Regulations for Construction Projects.
- .3 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.9 COMPLIANCE REQUIREMENTS

- .1 Comply with Ontario Occupational Health and Safety Act, R.S.O. 1990, c. 0.1 and Ontario Regulations for Construction Projects, O. Reg. 213/91.
- .2 Comply with Occupational Health and Safety Regulations, 1996.
- .3 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.10 UNFORSEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Consultant verbally and in writing.

- .2 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, advise Health and Safety co-ordinator and follow procedures in accordance with Acts and Regulations of Province having jurisdiction and advise Consultant verbally and in writing.

1.11 HEALTH AND SAFETY CO-ORDINATOR

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
 - .1 Have site-related working experience specific to activities anticipated on site.
 - .2 Have working knowledge of occupational safety and health regulations.
 - .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
 - .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
 - .5 Be on site during execution of Work and report directly to and be under direction of the site supervisor.

1.12 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Consultant.

1.13 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Consultant.
- .2 Provide Consultant with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Consultant may stop Work if non-compliance of health and safety regulations is not corrected.

1.14 BLASTING

- .1 Blasting or other use of explosives is not permitted.

1.15 POWDER ACTUATED DEVICES

- .1 Use powder actuated devices only after receipt of written permission from Consultant.

1.16 WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

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 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit Environmental Protection Plan (EPP) for review and approval by Consultant before delivering materials to site or commencing construction activities.
- .3 EPP shall include comprehensive overview of known or potential environmental issues to be addressed on site during construction.
- .4 Address topics at level of detail commensurate with environmental issue and required construction tasks.
- .5 Include in Environmental Protection Plan (EPP):
 - .1 Name of person responsible for ensuring adherence to EPP.
 - .2 Name and qualifications of person responsible for manifesting hazardous waste to be removed from site.
 - .3 Submit drawings indicating locations of proposed temporary excavations, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.
 - .4 Submit a Spill Control Plan (SCP) including procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.

1.2 FIRES

- .1 Fires and burning of rubbish on site is not permitted.

1.3 DRAINAGE

- .1 Provide temporary drainage and pumping as required to keep excavations on site free of standing water.
 - .1 Obtain Consultant approval before pumping standing water, which is free of suspended materials, into waterways, sewer or drainage systems.
 - .2 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with the site-specific SPPP in compliance with the requirements of authorities having jurisdiction.

1.4 SITE CLEARING AND PLANT PROTECTION

- .1 Protect trees and plants on site and adjacent properties in accordance with the Canadian Landscape Standard -First Edition, Section 03 - Site Preparation and Protection of Existing Site Elements.
- .2 Protect trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of two (2) m minimum. Ensure that control measures used for protection are in compliance with Municipal laws and regulations.

- .3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage.
 - .1 Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .4 Minimize stripping of topsoil and vegetation.
- .5 Restrict tree removal to areas designated by Consultant. Obtain permits before trees removal in accordance with the requirements of the authorities having jurisdiction.

1.5 WORK ADJACENT TO WATERWAYS

- .1 Not Used.

1.6 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this Contract in accordance with site-specific EPP.
- .2 Control emissions from equipment and plant in accordance with local authorities' emission requirements. Check with local authorities for any environmental compliance requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.
 - .1 Provide temporary enclosures where directed by Consultant.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary access roads/pathways.

1.7 NOTIFICATION

- .1 Consultant will notify Contractor in writing of observed noncompliance with Federal, Provincial environmental laws and regulations or Municipal environmental bylaws, permits, and other elements of site-specific plans, such as EP, SPPP, SCP, SWDP, APCP, CPP, WMP, and PTP as applicable.
- .2 Contractor after receipt of such notice, shall inform Consultant of proposed corrective action and take such action to obtain the approval of Consultant.
 - .1 Take action only after receipt of written approval by Consultant.
- .3 Consultant will issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Bury rubbish and waste materials on site is nor permitted unless approved in writing by Consultant.
- .3 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.
- .4 Proceed with final cleaning upon completion and removal of surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

END OF SECTION

Part 1 General

1.1 REFERENCES TO REGULATORY REQUIREMENTS

- .1 Department of Justice Canada (Jus)
 - .1 SOR/2018-196 Prohibition of Asbestos and Products Containing Asbestos Regulations.
- .2 Perform Work in accordance with 2024 Ontario Building Code (OBC) including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .3 Specific design and performance requirements listed in specifications or indicated on Drawings may exceed minimum requirements established by referenced Building Code; these requirements will govern over the minimum requirements listed in Building Code
 - .1 Meet or exceed requirements of:
 - .1 Contract documents.
 - .2 Specified standards, codes and referenced documents.

1.2 HAZARDOUS MATERIAL DISCOVERY

- .1 Asbestos: demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work. Notify Consultant.
- .2 PCB: Polychlorinated Biphenyl: stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work. Notify Consultant.
- .3 Mould: stop work immediately when material resembling mould is encountered during demolition work. Notify Consultant.

1.3 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions and municipal by-laws.

1.4 QUALITY ASSURANCE

- .1 Regulatory Requirements: Except as otherwise specified, Constructor shall apply for, obtain, and pay fees associated with, permits, licenses, certificates, and approvals required by regulatory requirements and Contract Documents, based on General Conditions of Contract and the following:
 - .1 Regulatory requirements and fees in force on date of Bid submission, and
 - .2 A change in regulatory requirements or fees scheduled to become effective after date of tender submission and of which public notice has been given before date of tender submission

Part 2 Products

2.1 EASEMENTS AND NOTICES

- .1 Owner will obtain permanent easements and rights of servitude that may be required for performance of Work.
- .2 Constructor shall give notices required by regulatory requirements.

2.2 PERMITS

- .1 Development Permit: Owner has applied for, obtained, and paid for development permit.
- .2 Building Permit:
 - .1 Constructor shall apply for, obtain and pay for building permit on behalf of Owner, and other permits required for Work and its various parts.
 - .2 Constructor will require that specific Subcontractor's obtain and pay for permits required by authorities having jurisdiction, where their Work is affected by Work requiring permits.
 - .3 Constructor shall display building permit and other permits in a conspicuous location at Place of Work.

2.3 UTILITY LOCATES AND UTILITY COORDINATION

- .1 Contractor shall obtain and maintain all utility locates required for the Work in accordance with applicable legislation and utility owner requirements, including Ontario One Call requirements.
- .2 Prior to commencing excavation, drilling, demolition, grading, or other subsurface work, Contractor shall verify the location of all known underground and overhead utilities affecting the Work.
- .3 Where utility information provided is incomplete or unavailable through public locate services, Contractor shall obtain private utility locates as required to safely perform the Work.
- .4 Contractor shall coordinate with utility owners and authorities having jurisdiction for:
 - .1 Utility clearances;
 - .2 Shutdowns;
 - .3 Relocations;
 - .4 Temporary disconnections;
 - .5 Service protection measures; and
 - .6 Approvals required for execution of the Work.
- .5 Contractor shall provide minimum notice periods required by utility owners and shall schedule Work to accommodate utility owner attendance where required.
- .6 Contractor shall immediately notify Consultant and Owner upon discovery of concealed, uncharted, or conflicting utilities.

- .7 Costs associated with utility locates and routine utility coordination necessary for execution of the Work shall be included in the Contract Price unless otherwise specified.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 INSPECTION

- .1 Refer to CCDC 2, GC 2.3.
- .2 Allow Consultant 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.
- .3 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Consultant instructions, or law of Place of Work.
- .4 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.
- .5 Consultant 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. If such Work is found in accordance with Contract Documents, Consultant will pay cost of examination and replacement.

1.2 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies will be engaged by the Contractor for purpose of inspecting and/or testing portions of Work. Cost of such services shall be paid from the allowance included in the Contract Sum and specified in Section 01 21 00 - Allowances.
- .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 Consultant at no cost to Consultant. Pay costs for retesting and reinspection.

1.3 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
- .2 Co-operate to provide reasonable facilities for such access.

1.4 PROCEDURES

- .1 Notify appropriate agency and Consultant 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 Refer to CCDC, GC 2.4.
- .2 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 Consultant as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .3 Make good other Contractor's work damaged by such removals or replacements promptly.
- .4 If in opinion of Consultant it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner 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 Consultant.

1.6 REPORTS

- .1 Submit electronic copies of inspection and test reports to Consultant.
- .2 Provide copies to subcontractor of work being inspected or tested and/or manufacturer or fabricator of material being inspected or tested.

1.7 CERTIFICATES

- .1 Submit certifications for Application Specialists to demonstrate compliance to the requirements of ANSI/NACE No.13.

1.8 QUALIFICATIONS

- .1 Ensure that industrial coating persons, who perform concrete and steel surfaces preparation and coating applications, are certified by a recognized Applicator Certification Agency, in accordance with NACE 13 /SSPC ACS-I, Applicator Certification Standard (ACS).
- .2 Maintain a current and valid ACS certification during project period.
 - .1 Application specialists who perform surface preparation and coating application work on this project must have a current ACS.
- .3 Notify Consultant of any change in application specialist certification status.
 - .1 Any delays to the completion of the Project due to invalid certifications will not be considered, and liquidated damages shall not be waived for any non-performance by Contractor.

1.9 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 Consultant and may be authorized as recoverable.

1.10 MILL TESTS

- .1 Submit mill test certificates as requested and as required of specification Sections.

1.11 EQUIPMENT AND SYSTEMS

- .1 Coordinate temporary disconnection, relocation, reconnection, operation, and final reinstatement of the existing generator and propane tank as required to maintain continuous service throughout construction.
- .2 Perform all temporary and permanent electrical and mechanical connections in accordance with applicable codes, manufacturer's recommendations, and authority having jurisdiction requirements.
- .3 Prior to placing the temporarily relocated generator and propane tank into service, perform operational testing to verify proper function, safety systems, and service continuity.
- .4 Upon completion of retaining wall construction, reinstall the generator and propane tank in its original location and restore all systems, supports, connections, and associated components to fully operational condition.
- .5 Maintain spill prevention and environmental protection measures during generator relocation, fueling, operation, and reinstatement activities.
- .6 Perform final commissioning and operational testing following reinstatement to confirm the generator and propane tank and associated systems operate as intended. Submit test results and verification documentation to the Consultant.

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 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.2 INSTALLATION AND REMOVAL

- .1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.
- .2 Identify areas which have to be gravelled to prevent tracking of mud.
- .3 Indicate use of supplemental or other staging area.
- .4 Provide construction facilities in order to execute work expeditiously.
- .5 Remove from site all such work after use.

1.3 SCAFFOLDING

- .1 Scaffolding in accordance with CAN/CSA-S269.2.
- .2 Provide and maintain scaffolding, ramps, ladders, platforms, temporary stairs, and all other construction facilities and equipment required to facilitate construction.
- .3 Provide protection systems as required by the Consultant.

1.4 HOISTING

- .1 Provide, operate and maintain hoists and cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.
- .2 Hoists and cranes to be operated by qualified operator.
- .3 Provide protection systems as required by the Consultant.

1.5 ELEVATORS

- .1 Not Used.

1.6 SITE STORAGE/LOADING

- .1 Refer to CCDC 2, GC 3.12.
- .2 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .3 Do not load or permit to load any part of Work with weight or force that will endanger Work.

1.7 CONSTRUCTION PARKING

- .1 Parking will not be permitted on site.
- .2 Provide and maintain adequate access to project site.
- .3 Clean runways and taxi areas where used by Contractor's equipment.
- .4 Seek road occupancy permits as required to facilitate construction.

1.8 SECURITY

- .1 Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays.

1.9 OFFICES

- .1 Not Used.

1.10 EQUIPMENT, TOOL AND MATERIALS STORAGE

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

1.11 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.
- .3 When permanent water and drain connections are completed, provide temporary water closets and urinals complete with temporary enclosures, inside building. Permanent facilities may be used on approval of Consultant.

1.12 CONSTRUCTION SIGNAGE

- .1 Provide and erect project sign, within three weeks of signing Contract, in a location designated by Consultant.
- .2 Contractor shall provide construction signage in accordance with MTOs Book 7.
- .3 No other signs or advertisements, other than warning signs, are permitted on site.

1.13 PROTECTION AND MAINTENANCE OF TRAFFIC

- .1 Provide access and temporary relocated roads as necessary to maintain traffic.
- .2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Consultant.

- .3 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs
- .4 Protect travelling public from damage to person and property.
- .5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
- .6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
- .7 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
- .8 Dust control: adequate to ensure safe operation at all times.
- .9 Provide snow removal during period of Work.

1.14 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 Provide temporary protection around existing propane tank, generator, and transformer as required to protect and maintain operations during construction and as required by authority having jurisdiction and propane supplier.
- .3 Remove from site all such work after use.

1.2 HOARDING

- .1 Erect temporary site enclosures as required using 38 x 89 mm construction grade lumber framing at 600 mm centres and 1200 x 2400 x 13 mm exterior grade fir plywood to CSA O121 or a 6ft high Metal Panel 'Fast-Fence' complete with all hardware and weighted feet as required.
- .2 Apply plywood panels vertically flush and butt jointed.
- .3 Provide one lockable truck entrance gate and at least one pedestrian door as directed and conforming to applicable traffic restrictions on adjacent streets. Equip gates with locks and keys.
- .4 Erect and maintain pedestrian walkways including roof and side covers, complete with signs and electrical lighting as required by law.
- .5 Paint public side of site enclosure in selected colours with one coat primer to CAN/CGSB 1.189 and one coat exterior paint to CGSB 1.59. Maintain public side of enclosure in clean condition.
- .6 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

1.3 GUARD RAILS AND BARRICADES

- .1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, and open edges of floors and roofs.
- .2 Provide as required by governing authorities.

1.4 WEATHER ENCLOSURES

- .1 Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.
- .2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.
- .3 Design enclosures to withstand wind pressure and snow loading as required.

1.5 DUST TIGHT SCREENS

- .1 Not Used.

1.6 ACCESS TO SITE

- .1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.

1.7 PUBLIC TRAFFIC FLOW

- .1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect public.

1.8 FIRE ROUTES

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

1.9 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.

1.10 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 Confirm with Consultant locations and installation schedule 3 days prior to installation.
- .4 Be responsible for damage incurred due to lack of or improper protection.

1.11 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

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 QUALITY

- .1 Refer to CCDC 2.
- .2 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.
- .3 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.
- .4 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.
- .5 Should disputes arise as to quality or fitness of products, decision rests strictly with Consultant based upon requirements of Contract Documents.
- .6 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .7 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.

1.2 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 Consultant 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 Consultant at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Consultant reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.3 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 and 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 Consultant.
- .9 Touch-up damaged factory finished surfaces to Consultant's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.4 TRANSPORTATION

- .1 Pay costs of transportation of products required in performance of Work.
- .2 Transportation cost of products supplied by Owner will be paid for by Consultant. Unload, handle and store such products.

1.5 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 Consultant in writing, of conflicts between specifications and manufacturer's instructions, so that the Consultant will establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes the Consultant to require removal and re-installation at no increase in Contract Price or Contract Time.

1.6 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 Consultant if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Consultant 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 Consultant, whose decision is final.

1.7 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.

1.8 CONCEALMENT

- .1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- .2 Before installation inform Consultant if there is interference. Install as directed by Consultant.

1.9 REMEDIAL WORK

- .1 Refer to CCDC 2.
- .2 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.
- .3 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 LOCATION OF FIXTURES

- .1 Not Used.

1.11 FASTENINGS

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.12 FASTENINGS - EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Bolts may not project more than one diameter beyond nuts.
- .3 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.13 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 Consultant.

1.14 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 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 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit written request in advance of cutting or alteration which affects:
 - .1 Structural integrity of elements of project.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of operational elements.
 - .4 Visual qualities of sight-exposed elements.
 - .5 Work of Owner or separate contractor.
- .3 Include in request:
 - .1 Identification of project.
 - .2 Location and description of affected Work.
 - .3 Statement on necessity for cutting or alteration.
 - .4 Description of proposed Work, and products to be used.
 - .5 Alternatives to cutting and patching.
 - .6 Effect on Work of Owner or separate contractor.
 - .7 Written permission of affected separate contractor.
 - .8 Date and time work will be executed.

1.2 MATERIALS

- .1 Required for original installation.
- .2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

1.3 PREPARATION

- .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering, inspect conditions affecting performance of Work.
- .3 Beginning of cutting or patching means acceptance of existing conditions.
- .4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.4 EXECUTION

- .1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.
- .2 Fit several parts together, to integrate with other Work.

- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .7 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- .8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- .9 Restore work with new products in accordance with requirements of Contract Documents.
- .10 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .11 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.
- .12 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

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, including that caused by Owner or other Contractors.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site, unless approved by Consultant.
- .3 Clear snow and ice from access to building, bank/pile snow in designated areas only.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Provide on-site containers for collection of waste materials and debris.
- .6 Provide and use marked separate bins for recycling. Refer to Section 01 74 19 - Waste Management and Disposal.
- .7 Dispose of waste materials and debris off site.
- .8 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .9 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .10 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .11 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .12 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 FINAL CLEANING

- .1 Refer to CCDC 2, GC 3.14.
- .2 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .3 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .4 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .5 Remove waste products and debris including that caused by Owner or other Contractors.
- .6 Remove waste materials from site at regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site, unless approved Consultant.

- .7 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .8 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.
- .9 Clean lighting reflectors, lenses, and other lighting surfaces.
- .10 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .11 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .12 Remove dirt and other disfiguration from exterior surfaces.
- .13 Sweep and wash clean paved areas.
- .14 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.
- .15 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.
- .16 Remove snow and ice from access to building.

1.3 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.

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 REQUIREMENTS

- .1 Coordination: Coordinate waste management requirements with all Divisions of the Work for the project, and ensure that requirements of the Construction Waste Management Plan are followed.
- .2 Preconstruction Meeting: Arrange a pre-construction meeting in accordance with Section 01 31 19 - Project Meetings before starting any Work of the Contract attended by the Owner, Contractor, affected Subcontractor 's and Consultant to discuss the Contractor 's Construction Waste Management Plan and to develop mutual understanding of the requirements for a consistent policy towards waste reduction and recycling.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide required information in accordance with Section 01 33 00 - Submittal Procedures.

1.3 PROJECT CLOSEOUT SUBMISSIONS

- .1 Record Documentation: Submit as constructed information in accordance with Section 01 78 00 - Closeout Submittals .

1.4 QUALITY ASSURANCE

- .1 Comply with applicable federal, provincial, and municipal regulations governing waste management and disposal.
- .2 Ensure all waste hauling and disposal is performed by appropriately licensed carriers and delivered to approved facilities and incorporate into CWM Plan.
- .3 Approved facilities include waste management companies and recycling/disposal facilities that a Licensed and in good standing with applicable authorities, and capable of providing weight tickets or equivalent documentation, and incorporate into CWM Plan.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Storage Requirements: Implement a recycling/reuse program that includes separate collection of waste materials as appropriate to the project waste and the available recycling and reuse programs in the project area.
- .2 Handling Requirements: Clean materials that are contaminated before placing in collection containers and ensure that waste destined for landfill does not get mixed in with recycled materials:
 - .1 Deliver materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to recycling process.
 - .2 Arrange for collection by or delivery to the appropriate recycling or reuse facility.
- .3 Hazardous Waste and Hazardous Materials: Handle in accordance with applicable regulations.

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 REQUIREMENTS

- .1 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 Consultant in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
 - .2 Request Consultant's inspection.
 - .2 Consultant's Inspection:
 - .1 Consultant and Contractor to inspect Work and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.
 - .3 Completion Tasks: submit written certificates in English that tasks have been performed as follows:
 - .1 Work: completed and inspected for compliance with Contract Documents.
 - .2 Defects: corrected and deficiencies completed.
 - .3 Certificates required by Utility companies: submitted.
 - .4 Work: complete and ready for final inspection.
 - .4 Final Inspection:
 - .1 When completion tasks are done, request final inspection of Work by Consultant, and Contractor.
 - .2 When Work incomplete according to Owner and Consultant, complete outstanding items and request re-inspection.
 - .5 Declaration of Substantial Performance: when Consultant 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 Owner'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 Consultant considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.
 - .2 Refer to CCDC 2: when Work deemed incomplete Consultant, 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.

1.2 FINAL CLEANING

- .1 Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.

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 REQUIREMENTS

- .1 Pre-warranty Meeting:
 - .1 Convene meeting one week prior to contract completion with contractor's representative and Consultant, in accordance with Section 01 31 19 - Project Meetings to:
 - .1 Verify Project requirements.
 - .2 Review installation instructions and warranty requirements.
 - .2 Consultant to establish communication procedures for:
 - .1 Notifying construction warranty defects.
 - .2 Determine priorities for type of defects.
 - .3 Determine reasonable response time.
 - .3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.
 - .4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Two weeks prior to Substantial Performance of the Work, submit to the Consultant, two final copies of operating and maintenance manuals in English.
- .3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.
- .4 Provide evidence, if requested, for type, source and quality of products supplied.

1.3 FORMAT

- .1 Organize data as 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.
 - .1 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.

- .1 Bind in with text; fold larger drawings to size of text pages.
- .9 Provide 1:1 scaled CAD files in dwg format on USB.

1.4 CONTENTS - PROJECT RECORD DOCUMENTS

- .1 Table of Contents for Each Volume: provide title of project;
 - .1 Date of submission; names.
 - .2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.
 - .3 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
 - .1 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 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.
 - .1 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 Maintain, in addition to requirements in General Conditions, at site for Consultant and Owner one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction.
 - .1 Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.
 - .1 Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition.
 - .1 Do not use record documents for construction purposes.

- .5 Keep record documents and samples available for inspection by Consultant.

1.6 MATERIALS AND FINISHES

- .1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.
 - .1 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 Additional requirements: as specified in individual specifications sections.

1.7 DELIVERY, STORAGE AND HANDLING

- .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 for review by Consultant.

1.8 WARRANTIES AND BONDS

- .1 Develop warranty management plan containing information relevant to warranties required by the Contract Documents.
- .2 Submit warranty management plan to Consultant prior to Substantial Performance of the Work as required.
- .3 Warranty management plan to include required actions and documents to assure that Consultant receives warranties to which it is entitled.
- .4 Submit manufacturer's standard warranties for proprietary retaining wall components and associated materials supplied as part of the Work.
- .5 Provide list of warranted items indicating:
 - .1 Name of item.
 - .2 Model and serial numbers, where applicable.
 - .3 Location where installed.
 - .4 Name and telephone number of manufacturer or supplier.
 - .5 Warranty terms and duration.
 - .6 Commencement date and expiry date of warranty period.
 - .7 Cross-reference to warranty certificates.

- .8 Summary of maintenance requirements necessary to maintain warranty coverage.
- .9 Contact information for warranty service.
- .6 Contractor shall respond promptly to oral or written notification of required warranty repair work
- .7 Written verification of corrective action taken shall follow oral instructions.
- .8 Failure to respond within reasonable time may result in Owner or Consultant taking corrective action in accordance with Contract provisions.

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 REQUIREMENTS

- .1 Coordination: Coordinate with Owner for the material ownership as follows:
 - .1 Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.
 - .2 Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered during demolition to remain Owner's property:
 - .1 Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.
 - .2 Coordinate with Owner, who will establish special procedures for removal and salvage operations.
- .2 Pre-Demolition Coordination:
 - .1 Prior to commencing demolition work, review demolition activities, sequencing, existing site conditions, coordination with adjacent work, waste management requirements, and project-specific requirements during the Contract start-up meeting specified in Section 01 31 19 – Project Meetings. No separate pre-demolition meeting is required.
- .3 Scheduling:
 - .1 Employ necessary means to meet project time lines without compromising specified minimum rates of material diversion.
 - .1 In event of unforeseen delay notify Consultant in writing.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Action Submittals: Provide the following submittals before starting any work of this Section:
 - .1 Shop Drawings: Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Ontario as follows:
 - .1 Submit for review and approval demolition drawings, diagrams or details showing sequence of demolition work and supporting structures and underpinning.
 - .2 Schedule of Demolition Activities: Coordinate with Section 01 32 16.19 Construction Schedule (Gantt), and indicate the following:
 - .1 Detailed sequence of demolition and removal work, with starting and ending dates for each activity
 - .2 Interruption of utility services
 - .3 Decommissioning of existing monitoring well by Licensed Well Contractor
 - .4 Coordination for shutoff, capping, and continuation of utility services
 - .5 Locations of temporary partitions and means of egress

1.3 QUALITY ASSURANCE

- .1 Regulatory Requirements: Ensure Work is performed in compliance with CEPA, CEAA, TDGA, and applicable Provincial and Municipal regulations.
 - .1 Comply with hauling and disposal regulations of Authority Having Jurisdiction.
 - .2 Standards: Comply with ANSI A10.6 and NFPA 241
- .2 Regulatory Requirements: Perform work of this Section in accordance with the following:
 - .1 Provincial Workers' Compensation Boards/Commissions.
 - .2 Provincial Occupational Health and Safety Standards and Programs.

1.4 SITE CONDITIONS

- .1 Environmental protection:
 - .1 Ensure Work is done in accordance with Section 01 35 43 - Environmental Procedures.
 - .2 Ensure Work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
 - .3 Fires and burning of waste or materials is not permitted on site.
 - .4 Do not bury rubbish waste materials.
 - .5 Do not dispose of waste or volatile materials including but not limited to: mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers.
 - .6 Ensure proper disposal procedures are maintained throughout project.
- .2 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers, or onto adjacent properties.
- .3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with authorities having jurisdiction and as directed by the Consultant.
- .4 Protect trees, plants and foliage on site and adjacent properties where indicated.
- .5 Prevent extraneous materials from contaminating air beyond application area, by providing temporary enclosures during demolition work.
- .6 Cover or wet down dry materials and waste to prevent blowing dust and debris. Control dust on all temporary roads.
- .7 Owner will occupy another building immediately adjacent to demolition area.
- .8 Conduct structure demolition so Owner's operations will not be disrupted:
 - .1 Provide not less than 72 hours' notice to Owner of activities that will affect operations.
 - .2 Maintain access to existing walkways, exits, and other adjacent occupied or used facilities:
 - .1 Do not close or obstruct walkways, exits, or other occupied or used facilities without written permission from Consultant.

- .9 Consultant assumes no responsibility for buildings and structures being demolished:
 - .1 Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
 - .2 Remove, protect and store salvaged items as directed by Consultant before structure demolition.
 - .3 Salvage items as identified by Consultant.
 - .4 Deliver to Owner as directed.

1.5 EXISTING CONDITIONS

- .1 Existing Conditions: Condition of materials identified as being salvaged or demolished are based on their observed condition at time of site examination before tendering.
 - .1 Existing Hazardous Substances: It is not expected that hazardous substances will be encountered in the Work:
- .2 Discovery of Hazardous Substances: Immediately notify Consultant if materials suspected of containing hazardous substances are encountered and perform the following activities:
 - .1 Hazardous substances will be as defined in the Hazardous Products Act.
 - .2 Stop work in the area of the suspected hazardous substances.
 - .3 Take preventative measures to limit users' and workers' exposure, provide barriers and other safety devices and do not disturb.
 - .4 Hazardous substances will be removed by Contractor under a separate contract or as a change to the Work.
 - .5 Proceed only after written instructions have been received from Consultant.

Part 2 Products

2.1 EQUIPMENT

- .1 Equipment and heavy machinery:
 - .1 On-road vehicles to: CEPA-SOR/2003-2, On-Road Vehicle and Engine Emission Regulations and CEPA-SOR/2006-268, Regulations Amending the On-Road Vehicle and Engine Emission Regulations.
 - .2 Off-road vehicles to: EPA CFR 86.098-10 and EPA CFR 86.098-11.
 - .3 Leave machinery running only while in use, except where extreme temperatures prohibit shutting machinery down.

2.2 TEMPORARY SUPPORT STRUCTURES

- .1 Design temporary support structures required for demolition work and underpinning and other foundation supports necessary for the project using a qualified professional engineer registered or licensed in Province of the Work.

2.3 SOIL MATERIALS

- .1 Satisfactory Soils: Provide soil in accordance with Section 31 00 00.01 EARTHWORK - SHORT FORM.

Part 3 Execution

3.1 EXAMINATION

- .1 Survey existing conditions and correlate with requirements indicated to determine extent of structure demolition required.
- .2 Review Project Record Documents of existing construction provided by the Consultant.
- .3 Consultant does not guaranty that existing conditions are the same as those indicated in Project Record Documents.
- .4 Inventory and record the condition of items being removed and salvaged.
- .5 When unanticipated mechanical, electrical, or structural elements are encountered, investigate and measure the nature and extent of the element.
- .6 Promptly submit a written report to Consultant.
- .7 Engage a professional engineer to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during structure demolition operations.
- .8 Verify that Hazardous Substances have been remediated, if encountered, before proceeding with structure demolition operations.

3.2 PREPARATION

- .1 Temporary Erosion and Sedimentation Control:
 - .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to: requirements of authorities having jurisdiction.
 - .2 Inspect, repair, and maintain erosion and sedimentation control measures during demolition.
 - .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal after completion of demolition work.
- .2 Protection of in-place conditions:
 - .1 Work in accordance with Section 01 35 43 - Environmental Procedures.
 - .2 Prevent movement, settlement or damage of adjacent structures, services, walks, paving, trees, landscaping, and adjacent grades.
 - .1 Provide bracing, shoring, and underpinning as required.
 - .2 Repair damage caused by demolition as directed by Consultant.

- .3 Support affected structures and, if safety of structure being demolished or adjacent structures or services appears to be endangered, take preventative measures, stop Work and immediately notify Consultant.
- .4 Prevent debris from blocking surface drainage system, elevators, mechanical and electrical systems which must remain in operation.
- .3 Surface Preparation:
 - .1 Disconnect and re-route electrical and telephone service lines entering retaining wall to be demolished.
 - .2 Do not disrupt active or energized utilities to remain undisturbed.

3.3 DEMOLITION

- .1 Protect demolition work in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
- .2 Blasting operations not permitted during demolition.
- .3 Remove contaminated or dangerous materials as defined by authorities having jurisdiction, relating to environmental protection, from site and dispose of in safe manner to minimize danger at site or during disposal.
- .4 Prior to start of Work remove contaminated or hazardous materials as directed by Consultant from site and dispose of at designated disposal facilities in safe manner and in accordance with TDGA and other applicable requirements. Refer Existing Conditions in PART 1.
- .5 Retain a Licensed Well Contractor to decommission the existing monitoring well shown on the contract drawings. Remove Well casing following decommissioning by Licensed Well Contractor.
- .6 Demolish existing structures as identified on contract drawings.
- .7 Remove existing equipment, services, and obstacles where required for refinishing or making good of existing surfaces, and replace as work progresses.
- .8 At end of each day's work, leave Work in safe and stable condition.
- .9 Demolish to minimize dusting. Keep materials wetted as directed by Consultant.
- .10 Remove and dispose of demolished materials except where noted otherwise and in accordance with authorities having jurisdiction.

3.4 SITE RESTORATION

- .1 Below Grade Areas: Rough grade below grade areas ready for further excavation or new construction.
- .2 Below Grade Areas: Completely fill below grade areas and voids resulting from structure demolition operations with satisfactory soil materials according to backfill requirements in Section 31 00 00.01 - Earthwork.
- .3 Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes.
- .4 Provide a smooth transition between adjacent existing grades and new grades.

3.5 REPAIRS

- .1 General: Promptly repair damage to adjacent construction caused by structure demolition operations.
- .2 Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
- .3 Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

3.6 CLEANING

- .1 Waste Management: separate waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
- .2 Divert excess materials from landfill to site approved by Consultant.
- .3 Designate appropriate security resources / measures to prevent vandalism, damage and theft.
- .4 Locate stockpiled materials convenient for use in new construction. Eliminate double handling wherever possible.
- .5 Stockpile materials designated for alternate disposal in location which facilitates removal from site and examination by potential end markets, and which does not impede disassembly, processing, or hauling procedures.
 - .1 Label stockpiles, indicating material type and quantity.
- .6 Separate from general waste stream each of following materials. Stockpile materials in neat and orderly fashion in location and as directed by Consultant for alternate disposal. Stockpile materials in accordance with applicable fire and safety regulations.
- .7 Supply separate, clearly marked disposal bins for categories of waste material. Do not remove bins from site until inspected and approved by Consultant. Please notify Consultant prior to removal of bins from site.
- .8 Remove stockpiled material as directed Consultant, when it interferes with operations of project construction.
- .9 Remove stockpiles of like materials by alternate disposal option once collection of materials is complete.
- .10 Dispose of materials not designated for alternate disposal in accordance with applicable regulations.
 - .1 Disposal facilities must be those approved of and listed in Waste Reduction Workplan.
 - .2 Written authorization from Consultant is required to deviate from disposal facilities listed in Waste Reduction Workplan.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for proprietary materials used in formwork liners and coatings and include product characteristics, performance criteria, physical size, finish, and limitations.
 - .2 Submit electronic copies of WHMIS SDS in accordance with Section 01 35 29.06 - Health and Safety Requirements and 01 35 43 - Environmental Procedures.
- .3 Submit shop drawings for formwork.
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Ontario, Canada.
 - .2 Prepare Shop Drawings in accordance with CSA S269.1 for formwork.
 - .3 Indicate formwork design data: permissible rate of concrete placement, and temperature of concrete, in forms.
 - .4 Indicate sequence of erection and removal of formwork/falsework as directed by Consultant.
 - .5 When slip forming and/or flying forms are used, submit details of equipment and procedures for review by Consultant.
 - .6 Indicate method and schedule of construction, shoring, stripping and re-shoring procedures, materials, arrangement of joints, special architectural exposed finishes, ties, liners, and locations of temporary embedded parts.
 - .7 Indicate sequence of erection and removal of formwork.

1.2 QUALITY ASSURANCE

- .1 Quality Assurance: in accordance with Section 01 45 00 - Quality Control.
- .2 Retain a professional engineer registered or licensed in the Province of Ontario, Canada, with experience in formwork design of comparable complexity and scope, to perform following services as part of Work of this Section:
 - .1 Design of formwork:
 - .2 Review, stamp, and sign fabrication and erection Shop Drawings, design calculations and amendments.
 - .3 Conduct on-site inspections and prepare and submit inspection reports verifying this part of Work is in accordance with Contract Documents and reviewed Shop Drawings. Perform inspections a minimum of once per month.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store, and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect formwork from damages.
 - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove as specified in Construction Waste Management Plan in accordance with Section 01 74 19 - Waste Management and Disposal

Part 2 Products

2.1 MATERIALS

- .1 Formwork materials:
 - .1 For concrete without special architectural features, use wood and wood product formwork materials to CSA O121, CAN/CSA O86, CSA O437, CSA O153.
 - .2 Rigid insulation board: Styrofoam Highload 40 (Dupont Styrofoam Brand Highload 40 XPS Insulation) or approved equivalent.
- .2 Form ties:
 - .1 For concrete not designated 'Architectural': removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes minimum 25 mm diameter in concrete surface.
- .3 Form liner:
 - .1 Plywood: Douglas Fir to CSA O121, Canadian Softwood Plywood to CSA O151, Poplar to CSA O153.
- .4 Form release agent: Proprietary, non-volatile material not to stain concrete or impair subsequent application of finishes or coatings to surface of concrete, derived from agricultural sources, non-petroleum containing, non-toxic, biodegradable, low VOC.

Part 3 Execution

3.1 FABRICATION AND ERECTION

- .1 Verify lines, levels, and centres before proceeding with formwork/falsework and ensure dimensions agree with drawings.
- .2 Obtain Consultant's approval for use of earth forms framing openings not indicated on drawings.
- .3 Hand trim sides and bottoms and remove loose earth from earth forms before placing concrete.
- .4 Do not place shores and mud sills on frozen ground.
- .5 Provide site drainage to prevent washout of soil supporting mud sills and shores.

- .6 Fabricate and erect formwork in accordance with CAN/CSA S269.1 to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CSA A23.1/A23.2.
- .7 Align form joints and make watertight.
 - .1 Keep form joints to minimum.
- .8 Use 25 mm chamfer strips on external corners and 25 mm fillets at interior corners, joints, unless specified otherwise.
- .9 Form chases, slots, openings, drips, recesses, expansion and control joints as indicated.
- .10 Build in anchors, sleeves, and other inserts required to accommodate Work specified in other sections.
 - .1 Ensure that anchors and inserts will not protrude beyond surfaces designated to receive applied finishes, including painting.
- .11 Line forms for following surfaces:
 - .1 Exposed faces of retaining wall footings: do not stagger joints of form lining material and align joints to obtain uniform pattern.
 - .2 Secure lining taut to formwork to prevent folds.
 - .3 Pull down lining over edges of formwork panels.
 - .4 Ensure lining is new and not reused material.
 - .5 Ensure lining is dry and free of oil when concrete is poured.
 - .6 Application of form release agents on formwork surface is prohibited where drainage lining is used.
 - .7 If concrete surfaces require cleaning after form removal, use only pressurized water stream so as not to alter concrete's smooth finish.
 - .8 Cost of textile lining is included in price of concrete for corresponding portion of Work.
- .12 Clean formwork in accordance with CSA A23.1/A23.2, before placing concrete.

3.2 REMOVAL AND RESHORING

- .1 Leave formwork in place for following minimum periods of time after placing concrete.
 - .1 2 days for cast-in-place footings.
- .2 Remove formwork when concrete has reached 70 % of its 28 day design strength or minimum period noted above, whichever comes later, and replace immediately with adequate reshoring.
- .3 Provide necessary reshoring of members where early removal of forms may be required or where members may be subjected to additional loads during construction as required.
- .4 Re-use formwork and falsework subject to requirements of CSA A23.1/A23.2.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.

- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: Dispose of waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for proprietary materials used in Cast-In-Place Concrete and additives and include product characteristics, performance criteria, physical size, finish, and limitations.
 - .2 Submit electronic copies of WHMIS Safety Data Sheet (SDS) in accordance with Section 01 35 29.06 - Health and Safety Requirements and 01 35 43 - Environmental Procedures.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Ontario Canada.
 - .1 Prepare reinforcement drawings in accordance with RSIC Manual of Standard Practice.
 - .2 Indicate placing of reinforcement and:
 - .3 Detail lap lengths and bar development lengths to CAN/CSA A23.3, unless otherwise indicated.
 - .4 Indicate position and size of openings in slabs and walls. Coordinate with trades requiring openings.
- .4 Quality Assurance Submittals:
 - .1 Submit in accordance with Section 01 45 00 - Quality Control.
 - .2 Mill Test Report: upon request, submit to Consultant certified copy of mill test report of reinforcing steel, minimum 1 week prior to beginning reinforcing work .
 - .3 Upon request submit in writing to Consultant proposed source of reinforcement material.

1.2 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.
- .4 Handle, transport, store and install reinforcing steel bars to prevent damage to bars. Prevent bar-to-bar abrasion and excessive sagging. Do not drop or drag bars. Store on suitable non-metallic supports.

- .5 Develop Construction Waste Management Plan related to Work of this Section.

Part 2 Products

2.1 MATERIALS

- .1 Substitute different size bars only if permitted in writing by Consultant.
- .2 Reinforcing steel: billet steel, grade 400, deformed bars to CSA G30.18, unless indicated otherwise.
- .3 Reinforcing steel: weldable low alloy steel deformed bars to CSA G30.18.
- .4 Cold-drawn annealed steel wire ties: to ASTM A1064/A1064M.
- .5 Deformed steel wire for concrete reinforcement: to ASTM A1064/A1064M.
- .6 Chairs, bolsters, bar supports, spacers: to CSA A23.1/A23.2.
- .7 Tie wire: 1.5 mm diameter annealed wire.
- .8 Mechanical splices: subject to approval of Consultant.

2.2 FABRICATION

- .1 Fabricate reinforcing steel in accordance with CSA A23.1/A23.2 and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada.
- .2 Obtain Consultant's written approval for locations of reinforcement splices other than those shown on placing drawings.
- .3 Upon approval of Consultant, weld reinforcement in accordance with CSA W186 .
- .4 Ship bundles of bar reinforcement, clearly identified in accordance with bar bending details and lists.

2.3 SOURCE QUALITY CONTROL

- .1 Upon request, provide Consultant with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis, minimum 1 week prior to beginning reinforcing work .
- .2 Upon request inform Consultant of proposed source of supplied material.

Part 3 Execution

3.1 PREPARATION

3.2 SITE BENDING

- .1 Do not site bend or site weld reinforcement except where indicated or authorized by Consultant.
- .2 When site bending authorized, bend without heat, applying slow and steady pressure.
- .3 Replace bars, which develop cracks or splits.

3.3 PLACING REINFORCEMENT

- .1 Cutting or puncturing vapour retarder is not permitted; repair damage and reseal vapour retarder before placing concrete.
- .2 Place reinforcing steel as indicated on placing drawings and in accordance with CSA A23.1/A23.2.
- .3 Prior to placing concrete, obtain Consultant's approval of reinforcing material and placement.
- .4 Maintain cover to reinforcement during concrete pour.

3.4 SITE QUALITY CONTROL

- .1 Inspection and testing of reinforcing and reinforcing materials carried out by testing laboratory designated by Contractor for review to CSA A23.1/A23.2.
 - .1 Ensure testing laboratory certified to CSA A283.
- .2 Ensure test results distributed for discussion at pre-pouring concrete meeting between testing laboratory and Consultant.
- .3 Inspection or testing by Consultant not to augment or replace Contractor quality control nor relieve Contractor of contractual responsibility.

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: dispose of waste materials in accordance with Section 01 74 19 - Waste Management.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for proprietary materials used in Cast-In-Place Concrete and additives and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit electronic copies of WHMIS SDS in accordance with Section 01 35 29.06 - Health and Safety Requirements and 01 35 43 - Environmental Procedures.
- .3 Site Quality Control Submittals:
 - .1 Provide testing results and reports for review by Consultant and do not proceed without written approval when deviations from mix design or parameters found.
 - .2 Concrete pours: provide accurate records of poured concrete items indicating date and location of pour, quality, air temperature and test samples taken as described in PART 3 - SITE QUALITY CONTROL.
 - .3 Concrete hauling time: provide for review by Consultant deviations exceeding maximum allowable time of 120 minutes for concrete delivered to site of Work and discharged after batching.

1.2 QUALITY ASSURANCE

- .1 Quality Assurance: in accordance with Section 01 45 00 - Quality Control.
- .2 Provide Consultant, minimum 2. weeks prior to starting concrete work, with valid and recognized certificate from plant delivering concrete.
 - .1 Provide test data and certification by qualified independent inspection and testing laboratory that materials and mix designs used in concrete mixture meet specified requirements.
- .3 At least 2 weeks prior to beginning Work, inform Consultant of source of fly ash.
 - .1 Changing source of fly ash without written approval of Consultant is prohibited.
- .4 Minimum 2 weeks prior to starting concrete work, provide proposed quality control procedures for review by Consultant on following items:
 - .1 Falsework erection.
 - .2 Hot weather concrete.
 - .3 Cold weather concrete.
 - .4 Curing.
 - .5 Finishes.
 - .6 Formwork removal.
 - .7 Joints.

- .5 Quality Control Plan: provide written report to Consultant verifying compliance that concrete in place meets performance requirements of concrete as established in PART 2 - PRODUCTS.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Delivery and Acceptance Requirements:
- .2 Concrete hauling time: deliver to site of Work and discharged within 120 minutes maximum after batching.
 - .1 Modifying maximum time limit without receipt of prior written agreement from Consultant, laboratory representative and concrete producer as described in CSA A23.1/A23.2 is prohibited.
 - .2 Deviations submitted for review by Consultant.
 - .3 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2 .
- .3 Packaging Waste Management: dispose of waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.

1.4 SITE CONDITIONS

- .1 Placing concrete during rain or weather events that could damage concrete is prohibited.
- .2 Protect newly placed concrete from rain or weather events in accordance with CSA A23.1/A23.2.
- .3 Cold weather protection:
 - .1 Maintain protection equipment, in readiness on Site.
 - .2 Use such equipment when ambient temperature below 5°C, or when temperature may fall below 5°C before concrete cured.
 - .3 Placing concrete upon or against surface at temperature below 5°C is prohibited.
- .4 Hot weather protection:
 - .1 Protect concrete from direct sunlight when ambient temperature above 27°C.
 - .2 Prevent forms of getting too hot before concrete placed. Apply accepted methods of cooling not to affect concrete adversely.
- .5 Protect concrete from drying.

Part 2 Products

2.1 DESIGN CRITERIA

- .1 32 MPa C-1 Concrete (footings and curbs): to CSA A23.1/A23.2, and as described in MIXES of PART 2 - PRODUCTS.

2.2 MATERIALS

- .1 Portland Cement:
 - .1 Type 1 for standard (28 day) strength concrete.

- .2 Upon written request, contractor may use Type 3 for high early strength concrete (7 day concrete) upon review and approval by the Consultant.
- .2 Supplementary cementitious materials:
 - .1 Fly ash: Type C or F may be used up to 25% by mass of total cementitious materials to CSA A3001.
- .3 Water: to CSA A23.1.
- .4 Aggregates: to CSA A23.1/A23.2.
- .5 Admixtures:
 - .1 Air entraining admixture: to ASTM C260.
 - .2 Chemical admixture: to ASTM C494 and ASTM C1017. Consultant to approve accelerating or set retarding admixtures during cold and hot weather placing.
- .6 Shrinkage compensating grout: premixed compound consisting of non-metallic aggregate, Portland cement, water reducing and plasticizing agents to CSA A23.1/A23.2.
 - .1 Compressive strength: 32 MPa at 28 days.
- .7 Curing compound: to CSA A23.1/A23.2 and ASTM C309.
- .8 Pre-moulded joint fillers:
 - .1 Bituminous impregnated fibre board: to ASTM D1751 .
 - .2 Sponge rubber: to ASTM D1752, Type I, flexible grade.
- .9 Weep hole tubes: plastic.
- .10 Concrete Bonding Agents: Epoxy to ASTM C881/C881M, Type V and Latex to ASTM C1059/C1059M.

2.3 MIXES

- .1 Mix 1, 32MPa C-1 Concrete: Performance Method for specifying concrete: to meet Consultant performance criteria to CSA A23.1/A23.2.
 - .1 Concrete supplier to meet performance criteria as established below and provide verification of compliance as in Quality Control Plan.
 - .2 Provide concrete mix to meet following hard state requirements (Footings & Curbs):
 - .1 Durability and class of exposure: C-1.
 - .2 Compressive strength at 28 days age: 32 MPa minimum.
 - .3 Coarse aggregate size 19 mm maximum.

Part 3 Execution

3.1 PREPARATION

- .1 Obtain Consultant's written approval before placing concrete.
 - .1 Provide 48 hours minimum notice prior to placing of concrete.
- .2 Place concrete reinforcing in accordance with Section 03 20 00 - Concrete Reinforcing.
- .3 During concreting operations:

- .1 Development of cold joints not allowed.
- .2 Ensure concrete delivery and handling facilitate placing with minimum of re-handling, and without damage to existing structure or Work.
- .4 Pumping of concrete permitted only after approval of equipment and mix.
- .5 Disturbing reinforcement and inserts during concrete placement is prohibited.
- .6 Before placing of concrete obtain Consultant's approval of proposed method for protection of concrete during placing and curing in adverse weather.
- .7 Protect previous Work from staining.
- .8 Clean and remove stains prior to application for concrete finishes.
- .9 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, workability, air content, temperature and test samples taken.
- .10 Do not place load upon new concrete until authorized by Consultant.

3.2 INSTALLATION/APPLICATION

- .1 Do cast-in-place concrete work in accordance with CSA A23.1/A23.2.
- .2 Sleeves and inserts:
 - .1 Do not permit penetrations, sleeves, ducts, pipes or other openings to pass through joists, beams, column capitals or columns, except where indicated or approved by Consultant.
 - .2 Where approved by Consultant, set sleeves, ties, pipe hangers and other inserts and openings as indicated or specified elsewhere.
 - .3 Sleeves and openings greater than 100 x 100 mm not indicated shall be reviewed by Consultant for approval.
 - .4 Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain written approval of modifications from Consultant before placing concrete.
 - .5 Confirm locations and sizes of sleeves and openings shown on drawings.
 - .6 Set special inserts for strength testing as indicated and as required by non-destructive method of testing concrete.
- .3 Finishing and curing:
 - .1 Finish concrete to CSA A23.1/A23.2
 - .2 Cure concrete in accordance with CSA A23.1/23.2. If required, use curing compounds compatible with applied finish on concrete surfaces. Applied finish on concrete. Provide written declaration of compatibility of compounds used.
 - .3 Provide float finish to exposed concrete unless otherwise indicated.
 - .4 Rub exposed sharp edges of concrete with carborundum to produce 3 mm minimum radius edges unless otherwise indicated.
- .4 Joint fillers:
 - .1 Provide filler for each joint in single piece for depth and width required for joint, unless otherwise authorized by Consultant.
 - .2 When more than one piece required for joint, fasten abutting ends and hold securely to shape by stapling or other positive fastening.

- .3 Locate and form construction & expansion joints as indicated.
- .4 Install joint filler.
- .5 Use 12 mm thick joint filler to separate new footings from existing vertical surfaces and extend joint filler from bottom of slab to finished slab surface unless indicated otherwise.

3.3 SITE QUALITY CONTROL

- .1 Site tests: conduct tests as follows in accordance with Section 01 45 00 - Quality Control and submit report as described in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS.
 - .1 Concrete pours.
 - .2 Slump.
 - .3 Air content.
 - .4 Compressive strength at 7 and 28 days.
 - .5 Air and concrete temperature.
- .2 Inspection and testing of concrete and concrete materials carried out by testing laboratory designated by Contractor for review to CSA A23.1/A23.2 .
 - .1 Ensure testing laboratory certified to CSA A283.
- .3 Ensure test results are distributed for discussion at pre-pouring concrete meeting between testing laboratory and Consultant.
- .4 Contractor shall take additional test cylinders during cold weather concreting. Cure cylinders on job site under same conditions as concrete which they represent.
- .5 Non-Destructive Methods for Testing Concrete: to CSA A23.1/A23.2 .
- .6 Inspection or testing by Consultant not to augment or replace Contractor quality control nor relieve Contractor of contractual responsibility.

3.4 CLEANING

- .1 Clean in accordance with Section 01 74 00 - Cleaning.
- .2 Waste Management: dispose of waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Divert unused concrete materials from landfill to local facility after receipt of written approval from Consultant.
 - .2 Provide appropriate area on job site where concrete trucks and be safely washed.
 - .3 Divert unused admixtures and additive materials (pigments, fibres) from landfill to official hazardous material collections site as approved Consultant.
 - .4 Disposal of unused admixtures and additive materials, concrete, concrete washwater, or cleaning materials and residues into sewer systems, into lakes, streams, onto ground or in other location to pose health or environmental hazard is prohibited.
 - .5 Prevent admixtures and additive materials from entering drinking water supplies or streams.
 - .6 Using appropriate safety precautions, collect liquid or solidify liquid with inert, noncombustible material and remove for disposal.

- .7 Dispose of waste in accordance with applicable local, Provincial/Territorial and National regulations.

END OF SECTION

Part 1 General

1.1 MEASUREMENT PROCEDURES

- .1 Measure precast elements in units supplied, delivered, stored and erected.
- .2 Precast elements measured as individual units, to include cost, supply, delivery, storage and erection.

1.2 DESIGN REQUIREMENTS

- .1 Not Used.

1.3 PERFORMANCE REQUIREMENTS

- .1 Tolerance of precast elements to CAN/CSA-A23.4.
- .2 Length of precast elements not to vary from design length by plus or minus 5 mm.
- .3 Cross sectional dimensions of precast elements not to vary from design dimensions by plus or minus 5 mm.
- .4 Deviations from straight lines maximum 5 mm in 1.5 m.
- .5 Precast elements not to vary by plus or minus 5 mm from true overall cross sectional shape as measured by difference in diagonal dimensions.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for proprietary materials used in Precast Structural Concrete and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Not Used.
- .4 Samples:
 - .1 Not Used.
- .5 Quality Assurance Submittals:
 - .1 Submit in accordance with Section 01 45 00 - Quality Control and as described in PART 2 - SOURCE QUALITY CONTROL.
 - .2 Provide quality management plan to ensure verification of concrete quality to specified performance.
 - .3 Submit concrete supplier's certification.

1.5 QUALITY ASSURANCE

- .1 Quality Control Plan: submit written report, to Consultant verifying concrete provided meets performance requirements of concrete as established in PART 2 - PRODUCTS.
- .2 Precast concrete manufacturer shall be certified under the Canadian Precast/Prestressed Concrete Institute (CPCI) Canadian Precast Concrete Quality Assurance (CPCQA) Certification Program for Commercial Precast and Prestressed Concrete Products (Structural), Category C, prior to bid closing.
- .3 Only precast elements fabricated under CPCQA plant certification program to be acceptable, and plant certification is to be maintained for the duration of fabrication, erection, and until warranty expires.

1.6 QUALIFICATIONS

- .1 Precast concrete manufacturer certified in accordance with CSA's certification procedures for precast concrete plants prior to submitting Bid and to verify as part of Bid that plant has current certification in appropriate category Structural.
- .2 Welding companies certified to CSA W47.1.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Store and manage hazardous materials in accordance with Manufacturers instructions and recommendations.
- .2 Deliver, handle and store precast/ units according to manufacturer's instructions.
- .3 Protect unit corners from contacting earth to prevent from staining.

1.8 WARRANTY

- .1 Warrant precast element not to spall or show visible evidence of corrosion of embedded steel and cracking, except for normal hairline shrinkage cracks, in accordance with General Conditions (GC) - CCDC GC 12.3, but for 5 years.
- .2 Warrants precast elements not to spall or show visible evidence of cracking, except for normal hairline shrinkage cracks, in accordance with subsection GC 32.1 of General Conditions "C", but warranty period extended to 60 months.

Part 2 Products

2.1 MATERIALS

- .1 Precast concrete unit concrete compressive strength: 32MPa. Minimum to Exposure Class C-1.
- .2 Cement to CAN/CSA-A3001, Type GU.
- .3 Hydraulic cement: type GU to CAN/CSA-A3001.
- .4 Water: to CSA 23.1/A23.2.

- .5 Reinforcing steel: to CSA 30.18.
- .6 Hardware and miscellaneous materials: to CSA A23.1/A23.2.
- .7 Forms: to CAN/CSA-A23.4.
- .8 Anchors and supports: to CAN/CSA-G40.20/G40.21 galvanized after fabrication.
- .9 Galvanizing: hot dipped galvanizing with minimum zinc coating of 610 g/m^2 to CAN/CSA-G164 and ASTM A 123/123M, Coating Grade 85
- .10 Zinc-rich primer: to MPI#18.

2.2 MIXES

- .1 Concrete:
 - .1 Alternative 1 - Performance Method for specifying concrete: to meet Consultant performance criteria in accordance with CSA A23.1/A23.2.
 - .1 Concrete compressive strength: 32MPa Minimum;
 - .2 Concrete Exposure Class: C-1.

2.3 FABRICATION

- .1 Precast fabrication to meet the requirements of CAN/CSA-A23.4, including Annexes A and B, PCI MNL-116 and 117 and CPCQA certification requirements.
- .2 Mark each precast unit to correspond to identification mark on shop drawings for location with date cast in location not exposed in finished work.
- .3 Cast members in accurate rigid moulds designed to withstand high frequency vibration. Set reinforcing anchors and auxiliary items to indicated on shop drawings. Cast in anchors, blocking and inserts supplied by other Sections as required to accommodate their work. Vibrate concrete during casting for full thickness. Provide necessary holes and sinkages for flashings, anchors, and cramps. Maintain even and uniform appearance.
- .4 Anchors, lifting hooks, shear bars, spacers and other inserts or fittings required for a complete and rigid installation. Each to conform to requirements of local codes. Lift hooks adequately sized to safely handle panels according to member dimension and weight. Conceal anchors and inserts where practical.

2.4 FINISHES

- .1 Texturelock™ natural stone finish or approved equivalent.

2.5 SOURCE QUALITY CONTROL

- .1 Provide Consultant with certified copies of quality control tests related to this project as specified in CAN/CSA-A23.4, CSA G279.
- .2 Provide records from in-house quality control program based upon plant certification requirements to Consultant for inspection and review.
- .3 Upon request, provide Consultant with certified copy of mill test report of reinforcing steel supplied, showing physical and chemical analysis.

- .4 Precast plants to keep complete records of supply source of concrete material, steel reinforcement, prestressing steel and provide to Consultant for review upon request.

Part 3 Execution

3.1 ERECTION

- .1 Precast concrete work in accordance with CAN/CSA-A23.4, CSA A23.3 and CSA S6.
- .2 Erect precast elements within allowable tolerances as specified.
- .3 Non-cumulative erection tolerances in accordance with CAN/CSA-A23.4.
- .4 Set elevations and alignment between units to within allowable tolerances before connecting units.
- .5 Grout underside of unit bearing plates with shrinkage compensating grout.
- .6 Fasten precast units in place as indicated on contract drawings.
- .7 Secure with bolts as shown in drawings.
- .8 Uniformly tighten bolted connections with torque indicated.
- .9 Do not weld or secure bearing plates at sliding joints.
- .10 Install precast concrete closures between stems of flanged units where indicated.
- .11 Use grout to align elevations of surfaces at joints. Slope grout maximum 1:12.
- .12 Clean site welds with wire brush and touch-up galvanized finish with zinc-rich primer.

3.2 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Use cleaning methods as reviewed by Consultant before cleaning soiled precast concrete surfaces.
- .3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for sections, plates, pipe, bolts and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit electronic copies of WHMIS SDS in accordance with Section 01 35 29.06 - Health and Safety Requirements
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Ontario, Canada.
 - .1 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.
- .4 Certificates:
 - .1 Submit certifications for Application Specialists to demonstrate compliance to the requirements of ANSI/NACE No.13.

1.2 QUALITY ASSURANCE

- .1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certifications: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Qualifications:
 - .1 Ensure that 50% of industrial coating specialists, who perform concrete and steel surfaces preparation and coating applications, are certified by a recognized Applicator Certification Agency, in accordance with NACE 13 /SSPC ACS, Applicator Certification Standard (ACS).
 - .2 Maintain a current and valid ACS certification during project period.
 - .1 Application specialists who perform surface preparation and coating application work on this project must have a current ACS.
 - .3 Notify Consultant of any change in application specialist certification status.
 - .1 Any delays to the completion of the Project due to invalid certifications will not be considered, and liquidated damages shall not be waived for any non-performance by Contractor.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground, indoors, in dry location, and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.

Part 2 Products

2.1 MATERIALS

- .1 Steel sections and plates: to CSA G40.20/G40.21 Grade 350W.
- .2 Welding materials: to CSA W59.
- .3 Welding electrodes: to CSA W48 Series
- .4 Bolts and anchor bolts: to ASTM A307, unless noted otherwise on drawings.
- .5 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.

2.2 FABRICATION

- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .2 Where possible, fit and shop assemble work, ready for erection.
- .3 Exposed welds continuous for length of each joint. File or grind exposed welds smooth and flush.

2.3 FINISHES

- .1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m² to CAN/CSA-G164
- .2 Zinc primer (Touch Ups): zinc rich, ready mix to MPI-EXT 5.2C in accordance with chemical component limits and restrictions requirements and VOC limits of UL 2768, CCD-048, GS-11.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts acceptable for metal fabrications installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Consultant.
 - .2 Inform Consultant of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions remedied and after receipt of written approval to proceed from Consultant.

3.2 ERECTION - GENERAL

- .1 Do welding work in accordance with CSA W59 unless specified otherwise
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .3 Provide anchorage in accordance with the contract drawings.
- .4 Exposed fastening devices to match finish and be compatible with material through which they pass.
- .5 Supply components for work by other trades in accordance with shop drawings and schedule.
- .6 Touch-up rivets, field welds, bolts and burnt or scratched surfaces with primer after completion of:
 - .1 Primer: maximum VOC limit 250 g/L to GS-11.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

3.4 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by metal fabrications installation.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for board insulation and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit electronic copies of WHMIS SDS in accordance with Section 01 35 29.06 - Health and Safety Requirements. Indicate VOC's during application and curing.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Ontario, Canada.
- .4 Certificates:
 - .1 Submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .5 Test Reports:
 - .1 Submit certified test reports showing compliance with specified performance characteristics and physical properties.
- .6 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation instructions.
- .7 Sustainable Design Submittals:
 - .1 Construction Waste Management:
 - .1 Submit project Waste Management Plan highlighting recycling and salvage requirements.

1.2 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect specified materials from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Develop Construction Waste Management Plan related to Work of this Section.

Part 2 Products

2.1 INSULATION

- .1 Extruded polystyrene (XPS): to CAN/ULC-S701
 - .1 Basis of Design Product: DuPont™ Styrofoam™ Brand Highload 40.
- .2 Acceptable Products:
 - .1 Basis of Design Product or approved equivalent.
- .3 Performance Requirements:
 - .1 Type: Extruded polystyrene (XPS) board insulation.
 - .2 Compressive Resistance: Minimum 275 kPa (40 psi) in accordance with ASTM D1621.
- .4 Thermal Resistance: Minimum RSI 0.88 per 25 mm thickness (R-5 per inch).
- .5 Thickness: 38mm (1.5").

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for board insulation application in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Consultant.
 - .2 Inform Consultant of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

3.2 INSTALLATION

- .1 Install insulation after building substrate materials are dry.
- .2 Install insulation to maintain continuity of thermal protection to building elements and spaces.
- .3 Cut and trim insulation neatly to fit spaces. Butt joints tightly, offset vertical joints. Use only insulation boards free from chipped or broken edges. Use largest possible dimensions to reduce number of joints.
- .4 Offset both vertical and horizontal joints in multiple layer applications.
- .5 Do not enclose insulation until it has been inspected and approved by Consultant.

3.3 RIGID INSULATION INSTALLATION

- .1 Install in accordance with manufacturer's instructions and in conformance with the contract drawings.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: separate waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

Part 2 Products

2.1 MATERIALS

- .1 Backfill: Granular B Type I backfill to OPSS 1010, placed and compacted in accordance with the Geotechnical Engineer's recommendations.
- .2 Backfill and Surface Restoration:
 - .1 Base: Min. 300mm thick layer of compacted Granular 'A' wall base to OPSS 1010.
 - .2 Backfill: Granular 'B' Type I backfill to OPSS 1010, placed and compacted in accordance with the Geotechnical Engineer's recommendations.
 - .3 Geotextile Separator: Terrafix 270R or approved equivalent.
 - .4 Topsoil: 150mm thick minimum depth of topsoil conforming to OPSS 802 over geotextile.
 - .5 Sodding: in accordance with 32 92 23 Sodding.
- .3 Unshrinkable fill: concrete to CSA A23.1/A23.2.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions:
 - .1 Examine soil report available upon request.
 - .2 Before commencing work establish locations of buried services on and adjacent to site.
- .2 Evaluation and Assessment:
 - .1 Arrange with appropriate authority for relocation of buried services that interfere with execution of work. Pay costs of relocating services.
 - .2 Testing of backfill materials and compaction testing will be carried out by an independent testing laboratory retained by the Owner and paid for through the Cash Allowance identified in the Bid Form. Contractor shall coordinate testing requirements with the testing laboratory and provide access to the Work as required.
 - .3 Not later than 1 week before backfilling or filling, provide to designated testing agency.
 - .4 Provide a minimum of 48 hours notice to the testing laboratory and Contract Administrator prior to placement of backfill materials requiring inspection or compaction testing. Do not proceed with subsequent lifts until required testing has been completed and accepted.

- .5 Before commencing work, conduct, with Consultant, condition survey of existing structures, trees and plants, lawns, fencing, service poles, wires, rail tracks and paving, survey bench marks and monuments which may be affected by work.

3.2 PREPARATION

- .1 Temporary Erosion and Sedimentation Control:
 - .1 Use temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, in accordance with requirements of authorities having jurisdiction.
 - .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
 - .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- .2 Protection of in-place conditions:
 - .1 Protect excavations from freezing.
 - .2 Keep excavations clean, free of standing water, and loose soil.
 - .3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to Consultant's approval.
 - .4 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.
 - .5 Protect buried services that are to remain undisturbed.
- .3 Removal:
 - .1 Remove obsolete buried services within 2 m of foundations. Cap cut-offs.
 - .2 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.
 - .3 Cut pavement or sidewalk neatly along limits of proposed excavation in order that surface may break evenly and cleanly.

3.3 EXCAVATION

- .1 Shore and brace excavations, protect slopes and banks and perform work in accordance with Provincial and Municipal regulations.
- .2 Topsoil stripping:
 - .1 Do not handle topsoil while in wet or frozen condition or in any manner in which soil structure is adversely affected.
 - .2 Strip topsoil to depths as indicated. Avoid mixing topsoil with subsoil.
 - .3 Strip topsoil over areas to be covered by new construction, over areas where grade changes are required, and so that excavated material may be stockpiled without covering topsoil.
 - .4 Stockpile in locations as directed by Consultant.
 - .5 Dispose of topsoil to location as indicated:

.1 Sturgeon Falls Landfill
256 Landfill Site Road
West Nipissing, Ontario P2B 2P1.

- .3 Excavate as required to carry out work, in all materials met.
 - .1 Do not disturb soil or rock below bearing surfaces. Notify Consultant when excavations are complete.
 - .2 If bearings are unsatisfactory, additional excavation will be authorized in writing and paid for as additional work.
 - .3 Fill excavation taken below depths shown without Consultant's written authorization with approved non-shrink concrete or compacted granular A at the direction of the Consultant.

3.4 SITE QUALITY CONTROL

- .1 Fill material and spaces to be filled to be inspected and approved by Consultant.

3.5 BACKFILLING

- .1 Start backfilling only after inspection and receipt of written approval of fill material and spaces to be filled from Consultant.
- .2 Remove snow, ice, construction debris, organic soil and standing water from spaces to be filled.
- .3 Lateral support: maintain even levels of backfill around structures as work progresses, to equalize earth pressures.
- .4 Compaction of subgrade: compact existing subgrade in accordance with the Geotechnical Engineer's recommendations.
- .5 Placing:
 - .1 Place backfill, fill and basecourse material in 150 mm lifts. Add water as required to achieve specified density.
 - .2 Place unshrinkable fill in areas as indicated. Consolidate and level unshrinkable fill with internal vibrators.
- .6 Compaction: compact each layer of material to following densities for materials to:
 - .1 To underside of basecourses: 100% SPMDD within 1.5% of optimum moisture content.
 - .2 Basecourses: 100% SPMDD within 1.5% of optimum moisture content .
 - .3 Elsewhere: 100% SPMDD within 1.5% of optimum moisture content .
- .7 Under seeded and sodded areas: use site excavated material to bottom of topsoil except in trenches and within 600 mm of foundations.
- .8 Blown rock material, not capable of fine grading, is not acceptable, imported material must be placed on this type of material.
- .9 Against foundations (except as applicable to trenches and under slabs and paving): excavated material or imported material with no stones larger than 200 mm diameter within 600 mm of structures.

3.6 GRADING

- .1 Grade to ensure that water will drain away from buildings, walls and paved areas, to catch basins and other disposal areas approved by Consultant. Grade to be gradual between finished spot elevations as indicated.

3.7 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Dispose of cleared and grubbed material off site daily.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: separate waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Test and Evaluation Reports:
 - .1 Submit manufacturer's test data and certification that asphalt cement meets specification requirements.
 - .2 Submit manufacturer's test data and certification that hydrated lime meets specified requirements.
 - .3 Submit asphalt concrete mix design and trial mix test results to Consultant for review at least 4 weeks prior to beginning Work.

1.2 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 When necessary to blend aggregates from one or more sources to produce required gradation, do not blend in stockpiles.
- .3 Stockpile fine aggregate separately from coarse aggregate, although separate stockpiles for more than two mix components are permitted.
- .4 Provide approved storage, heating tanks and pumping facilities for asphalt cement.
- .5 Submit to Consultant copies of freight and waybills for asphalt cement as shipments are received.

Part 2 Products

2.1 MATERIALS

- .1 Materials for Hot Mix Asphalt shall be in accordance with OPSS.MUNI 1003

2.2 EQUIPMENT

- .1 **Materials, equipment, and methods to be followed for proportioning and mixing hot mix asphalt shall be in accordance with OPSS.MUNI 1150.**

2.3 MIX DESIGN

- .1 In accordance with OPSS.MUNI 1150 & OPSS.MUNI 1003
- .2 Top Course: 40mm thick HL3 in accordance with OPSS.MUNI 1150
- .3 Bottom Course: 60mm thick HL8 in accordance with OPSS.MUNI 1150.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for asphalt paving in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Consultant.
 - .2 Inform Consultant of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

3.2

3.2 PREPARATION

- .1 Prepare base in accordance with 31 00 99 Earth Works.
- .2 Prior to laying mix, clean surfaces of loose and foreign material.

3.3 TRANSPORTATION OF MIX

- .1 Transport mix to job site in vehicles cleaned of foreign material.
- .2 Paint or spray truck beds with limewater, soap or detergent solution, or non petroleum based commercial product, at least daily or as required.
 - .1 Raise truck bed and thoroughly drain, and ensure no excess solution remains in truck bed.
- .3 Schedule delivery of material for placing in daylight, unless Consultant approves artificial light for night placing.
- .4 Deposit mix from surge or storage silo to trucks in multiple drops to reduce segregation.
 - .1 Do not dribble mix into trucks.
- .5 Deliver material to paver at uniform rate and in an amount within capacity of paving and compacting equipment.
- .6 Deliver loads continuously in covered vehicles and immediately spread and compact.
 - .1 Deliver and place mixes at temperature within range as directed by Consultant, but not less than 135 degrees C.

3.4 PLACING

- .1 Obtain Consultant's approval of base prior to placing asphalt.
- .2 Place asphalt concrete to thicknesses, grades and lines as indicated.
- .3 Placing conditions:
 - .1 Place asphalt mixtures only when air temperature is 5 degrees C minimum.
 - .2 When temperature of surface on which material is to be placed falls below 10 degrees C, provide extra rollers as necessary to obtain required compaction before cooling.
 - .3 Do not place hot-mix asphalt when pools of standing water exist on surface to be paved, during rain, or when surface is damp.
- .4 Place asphalt concrete in compacted lifts of thickness as indicated

- .5 Where possible do tapering and levelling where required in lower lifts. Overlap joints by not less than 300 mm.
- .6 On airport runways and taxiways, aprons and parking lots commence spreading at high side of pavement or at crown and span crowned centerlines with initial strip.
- .7 Spread and strike off mixture with self propelled mechanical finisher.
 - .1 Construct longitudinal joints and edges.
 - .1 Consultant to establish lines for paver to follow parallel to centerline of proposed pavement. Position and operate paver to follow established line closely.
 - .2 Maintain constant head of mix in auger chamber of paver during placing.
 - .3 If segregation occurs, immediately suspend spreading operation until cause is determined and corrected.
 - .4 Correct irregularities in alignment left by paver by trimming directly behind machine.
 - .5 Correct irregularities in surface of pavement course directly behind paver.
 - .1 Remove excess material forming high spots using shovel or lute.
 - .6 Do not throw surplus material on freshly screeded surfaces.
- .8 When hand spreading is used:
 - .1 Use approved wood or steel forms, rigidly supported to assure correct grade and cross section.
 - .1 Use measuring blocks and intermediate strips to aid in obtaining required cross-section.
 - .2 Distribute material uniformly without broad casting material.
 - .3 During spreading operation, thoroughly loosen and uniformly distribute material by lutes or covered rakes.
 - .1 Reject material that has formed into lumps and does not break down readily.
 - .4 After placing and before rolling, check surface with templates and straightedges and correct irregularities.
 - .5 Provide heating equipment to keep hand tools free from asphalt.
 - .1 Control temperature to avoid burning material.
 - .2 Do not use tools at higher temperature than temperature of mix being placed.

3.5 COMPACTING

- .1 Roll asphalt continuously using established rolling pattern for test strip and to density of not less than 100 % of maximum density.
- .2 Do not change rolling pattern unless mix changes or lift thickness changes.
 - .1 Change rolling pattern only as directed by Consultant.
- .3 Roll asphalt continuously to density not less than 98 % of blow Marshall density to AASHTO T245.

- .4 General:
 - .1 Provide at least 2 rollers and as many additional rollers as necessary to achieve specified pavement density. When more than 2 rollers are required, 1 roller must be pneumatic tired type.
 - .2 Start rolling operations as soon as placed mix can bear weight of roller without excess displacement of material or cracking of surface.
 - .3 Operate roller slowly initially to avoid displacement of material. Do not exceed 5 km/h for breakdown and intermediate rolling for static steel-wheeled and pneumatic tired rollers. Do not exceed 9 km/h for finish rolling.
 - .4 Use static compaction for levelling coarse less than 25 mm thick.
 - .5 For lifts 50 mm thick and greater, adjust speed and vibration frequency of vibratory rollers to produce minimum of 25 impacts per metre of travel. For lifts less than 50 mm thick, impact spacing not to exceed compacted lift thickness.
 - .6 Overlap successive passes of roller by minimum of 200 mm and vary pass lengths.
 - .7 Keep wheels of roller slightly moistened with water to prevent pick-up of material but do not over-water.
 - .8 Do not stop vibratory rollers on pavement that is being compacted with vibratory mechanism operating.
 - .9 Do not permit heavy equipment or rollers to stand on finished surface before it has been compacted and has thoroughly cooled.
 - .10 After traverse and longitudinal joints and outside edge have been compacted, start rolling longitudinally at low side and progress to high side.
 - .1 Ensure that all points across width of pavement receive essentially equal numbers of passes of compactors.
 - .11 When paving in echelon, leave unrolled 50 to 75 mm of edge which second paver is following and roll when joint between lanes is rolled.
 - .12 Where rolling causes displacement of material, loosen affected areas at once with lutes or shovels and restore to original grade of loose material before re-rolling.
- .5 Breakdown rolling:
 - .1 Begin breakdown rolling with vibratory roller immediately following rolling of transverse and longitudinal joint and edges.
 - .2 Operate rollers as close to paver as necessary to obtain adequate density without causing undue displacement.
 - .3 Use only experienced roller operators.
- .6 Intermediate rolling:
 - .1 Use pneumatic-tired, steel wheel or vibratory rollers and follow breakdown rolling as closely as possible and while paving mix temperature allows maximum density from this operation.
 - .2 Rolling to be continuous after initial rolling until mix placed has been thoroughly compacted.
- .7 Finish rolling:

- .1 Accomplish finish rolling with two-axle or three-axle tandem steel wheeled rollers while material is still warm enough for removal of roller marks.
 - .1 If necessary to obtain desired surface finish, use pneumatic-tired rollers as directed by Consultant.
- .2 Conduct rolling operations in close sequence.
- .8 Dust entire area of sheet asphalt pavements with hydrated lime immediately after rolling to eliminate tendency to pick-up under traffic.

3.6 JOINTS

- .1 General:
 - .1 Remove surplus material from surface of previously laid strip.
 - .1 Do not deposit on surface of freshly laid strip.
 - .2 Construct joints between asphalt concrete pavement and Portland cement concrete pavement as indicated.
 - .3 Paint contact surfaces of existing structures such as manholes, curbs or gutters with bituminous material prior to placing adjacent pavement.
- .2 Transverse joints:
 - .1 Offset transverse joint in succeeding lifts by at least 600 mm.
 - .2 Cut back to full depth vertical face and tack face with thin coat of hot asphalt prior to continuing paving.
 - .3 Compact transverse joints to provide smooth riding surface. Use methods to prevent rounding of compacted surface at joints.
- .3 Longitudinal joints:
 - .1 Offset longitudinal joints in succeeding lifts by at least 150 mm.
 - .2 Cold joint is defined as joint where asphalt mix is placed, compacted and left to cool below 100 degrees C prior to paving of adjacent lane.
 - .1 For airfield runway paving, avoid cold joint construction in mid 30 m of runway.
 - .2 If cold joint can not be avoided, cut back by saw cutting previously laid lane, by at least 150 mm, to full depth vertical face, and tack face with thin coat of hot asphalt of adjacent lane.
 - .3 Overlap previously laid strip with spreader by 25 to 50 mm.
 - .4 Before rolling, carefully remove and discard coarse aggregate in material overlapping joint with lute or rake.
 - .5 Roll longitudinal joints directly behind paving operation.
 - .6 When rolling with static or vibratory rollers, have most of drum width ride on newly placed lane with remaining 150 mm extending onto previously placed and compacted lane.
- .4 Construct feather joints so that thinner portion of joint contains fine graded material obtained by changed mix design or by raking out coarse aggregate in mix.
 - .1 Place and compact joint to ensure joint is smooth and without visible breaks in grade.

- .2 Locate feather joints as indicated.
- .5 Construct butt joints as indicated.

3.7 FINISH TOLERANCES

- .1 Finished asphalt surface to be within 5 mm of design elevation but not uniformly high or low.
- .2 Finished asphalt surface not to have irregularities exceeding 5 mm when checked with 4.5 m straight edge placed in any direction.

3.8 DEFECTIVE WORK

- .1 Correct irregularities which develop before completion of rolling by loosening surface mix and removing or adding material as required.
 - .1 If irregularities or defects remain after final compaction, remove surface course promptly and lay new material to form true and even surface and compact immediately to specified density.
- .2 Repair areas showing checking, rippling, or segregation.
- .3 Adjust roller operation and screed settings on paver to prevent further defects such as rippling and checking of pavement.

3.9 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: Dispose of waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures
- .2 Shop Drawings:
 - .1 Submit drawings stamped and signed by a professional engineer registered or licensed in the Province of Ontario, Canada.
 - .1 Submit drawings outlining the materials (grade, gauge, mesh size, coating/galv.), components (posts, rails, fittings), dimensions (height, post spacing), installation details (bracing, tensioning).
Submit manufacturer's instructions, printed product literature and data sheet for fences, posts, and gates and include product characteristics, performance criteria, physical size, finish, and limitations.

1.2 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials in accordance with manufacturer's recommendations.
 - .2 Store and protect fence and gate materials from damage.
 - .3 Replace defective or damaged materials with new.
- .4 Develop Construction Waste Management Plan related to Work of this Section.

Part 2 Products

2.1 MATERIALS

- .1 Chain-link fence fabric: to CAN/CGSB-138.1.
 - .1 Type 1, Class B, light style (11 Ga.), 810lbs min. break strength.
 - .2 Height of fabric: as indicated.
- .2 Posts, braces and rails: to CAN/CGSB-138.2, galvanized steel pipe. ASTM F1043, Group IC, minimum yield strength 345 MPa (50 ksi). Dimensions as indicated.
- .3 Tie wire fasteners: steel wire vinyl coated.
- .4 Fittings and hardware: to CAN/CGSB-138.2, galvanized steel.
 - .1 Tension bar bands: 5 x 20 mm minimum galvanized steel.
 - .2 Post caps to provide waterproof fit, to fasten securely over posts and to carry top rail.
- .5 Organic zinc rich coating: to CAN/CGSB-1.181.

2.2 FINISHES

- .1 Galvanizing:
 - .1 For chain link fabric: to CAN/CGSB-138.1.
 - .2 For pipe: 550 g/m² minimum to ASTM A90.
 - .3 For other fittings: to ASTM A123/A123M.
- .2 Vinyl coating: to ASTM F1664.
 - .1 0.05 mm dry film thickness minimum.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrate previously installed under other Sections or Contracts are acceptable for fence and gate installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Consultant.
 - .2 Inform Consultant of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

3.2 ERECTION OF FENCE

- .1 Erect fence along lines as indicated and to CAN/CGSB-138.3.
- .2 Space line posts as shown on contract drawings, measured parallel to ground surface.
- .3 Install overhang tops and caps.
- .4 Install top rail between posts and fasten securely to posts and secure waterproof caps and overhang tops.
- .5 Install bottom tension wire, stretch tightly and fasten securely to end, corner, gate and straining posts with turnbuckles and tension bar bands.
- .6 Lay out fence fabric. Stretch tightly to tension recommended by manufacturer and fasten to end, corner, gate and straining posts with tension bar secured to post with tension bar bands spaced at 300 mm intervals.
 - .1 Knuckled selvedge at bottom.
 - .2 Twisted selvedge at top.
- .7 Secure fabric to top rails, line posts and bottom tension wire with tie wires at 400 mm intervals.
 - .1 Give tie wires minimum two twists.

3.3 TOUCH UP

- .1 Clean damaged surfaces with wire brush removing loose and cracked coatings. Apply two coats of organic zinc-rich paint to damaged areas as indicated.

- .1 Pre-treat damaged surfaces according to manufacturers' instructions for zinc-rich paint.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: separate waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

- .1 Scheduling:
 - .1 Schedule sod laying and/or seeding to coincide with preparation of soil surface.
 - .2 Schedule sod/seed installation when frost is not present in ground.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for sod, geotextile and fertilizer and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements of seed mix, seed purity, and sod quality.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials in accordance with supplier's recommendations.
 - .2 Replace defective or damaged materials with new.
- .4 For palletized sod products:
 - .1 Sod shall not be dumped or dropped from vehicle.
 - .2 Provide wind protection measures to protect sod during transportation against wind exposure and to prevent drying.
 - .3 Ensure sod freshness and healthy conditions when they arrive on site.
 - .4 Provide weather protection measures as required to keep sod fresh and moist, if installation is to be delayed.
 - .5 During the growing season, and where feasible, sod should be delivered to the site within 36 hours of harvest, and be installed within 24 hours of delivery.
 - .6 Allow sod to dry sufficiently after becoming water logged to prevent tearing or damage during handling.

Part 2 Products

2.1 MATERIALS

- .1 Number One Turf Grass Nursery Sod: sod that has been especially sown and cultivated in nursery fields as turf grass crop.
 - .1 Turf Grass Nursery Sod types:
 - .1 Number One Kentucky Bluegrass Sod: Nursery Sod grown solely from seed of cultivars of Kentucky Bluegrass, containing not less than 50% Kentucky Bluegrass cultivars.
 - .2 Number One Kentucky Bluegrass Sod - Fescue Sod: Nursery Sod grown solely from seed mixture of cultivars of Kentucky Bluegrass and Chewing Fescue or Creeping Red Fescue, containing not less than 40% Kentucky Bluegrass cultivars and 30% Chewing Fescue or Creeping Red Fescue cultivars.
 - .3 Number One Named Cultivars: Nursery Sod grown from certified seed.
 - .2 Turf Grass Nursery Sod quality:
 - .1 Not more than 1 broadleaf weed and up to 1% native grasses per 40 m².
 - .2 Density of sod sufficient so that no soil is visible from height of 1500 mm when mown to height of 50 mm.
 - .3 Mowing height limit: 35 to 65 mm.
 - .4 Soil portion of sod: 6 to 15 mm in thickness.
- .2 Sod establishment support:
 - .1 Geotextile fabric: Terrafix 270R or approved equivalent.
 - .2 Base: 150mm thick top soil.
- .3 Water:
 - .1 Supplied by Contractor via water truck.
 - .2 Free of impurities that would inhibit plant growth.
- .4 Fertilizer:
 - .1 To Canada "Fertilizers Act" and Fertilizers Regulations.

2.2 SOURCE QUALITY CONTROL

- .1 Obtain written approval from Consultant of sod at source.
- .2 When proposed source of sod is approved, use no other source without written authorization from Consultant.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for sod installation in accordance with manufacturer's written instructions.

- .1 Visually inspect substrate in presence of Consultant.
- .2 Inform Consultant of unacceptable conditions immediately upon discovery.
- .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

3.2 PREPARATION

- .1 Verify that grades are correct and prepared in accordance with the contract drawings. If discrepancies occur, notify Consultant and commence work when instructed by Consultant.
- .2 Do not perform work under adverse field conditions such as frozen soil, excessively wet soil or soil covered with snow, ice, or standing water.
- .3 Fine grade surface free of humps and hollows to smooth, even grade, to match pre-construction conditions and for surface to drain naturally.
- .4 Remove and dispose of weeds; debris; stones 50 mm in diameter and larger; soil contaminated by oil, gasoline and other deleterious materials; in accordance with Section 01 74 19 - Waste Management and Disposal.

3.3 SOD PLACEMENT

- .1 Lay sod during active growing season for type of sod. Laying sod during dry, freezing, or over frozen soil is unacceptable.
- .2 If growing medium surface is dry, it shall be lightly moistened immediately before laying sod.
- .3 Lay sod flush with adjoining grass areas, paving and top surface of curbs, unless shown otherwise on the drawings.
- .4 Lay sod within 24 hours of being lifted if air temperature exceeds 20 degrees C.
- .5 Lay sod sections in rows, joints staggered a minimum of 25 cm. Butt sections closely without overlapping or leaving gaps between sections. Cut out irregular or thin sections with sharp implements.

3.4 SOD PLACEMENT ON SLOPES AND PEGGING

- .1 Install and secure geotextile fabric in accordance with manufacturer's instructions.
- .2 Erosion control mesh/netting shall be installed in sodded areas where required, and secured with stakes or staples set to a minimum depth of 15 cm.
- .3 Start laying sod at bottom of slopes.
- .4 Peg sod on slopes steeper than three (3) horizontal to one (1) vertical:
 - .1 100 mm below top edge at 200 mm on centre for first sod sections along contours of slopes.
 - .2 Not less than 3-6 pegs per square metre.
 - .3 Not less than 6-9 pegs per square metre in drainage structures. Adjust pattern as directed by Consultant.
 - .4 Drive pegs to 20 mm above soil surface of sod sections.

3.5

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
 - .2 Keep pavement and area adjacent to site clean and free from mud, dirt, and debris at all times.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
 - .1 Clean and reinstate areas affected by Work.
- .3 Waste Management: separate waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling and compost containers and bins from site and dispose of materials at appropriate facility.
 - .2 Divert unused fertilizer from landfill to official hazardous material collections site approved by Consultant.

3.6 ACCEPTANCE

- .1 Turf Grass Nursery Sod areas will be accepted Consultant provided that:
 - .1 Sodded areas are properly established.
 - .2 Sod is free of bare and dead spots and to the Consultants satisfaction.
- .2 Areas sodded in fall will be accepted in following spring one month after start of growing season provided acceptance conditions are fulfilled.
- .3 When environmental conditions allow, all sodded areas showing shrinkage cracks shall be top-dressed and seeded with a seed mix matching the original.

3.7 MAINTENANCE DURING WARRANTY PERIOD

- .1 Perform following operations from time of acceptance until end of warranty period:
 - .1 Water sodded Turf Grass Nursery Sod areas at weekly intervals to obtain optimum soil moisture conditions to depth of 100 mm.
- .2 Repair and resod dead or bare spots to satisfaction of Consultant.
 - .1 Eliminate weeds by mechanical means to extent acceptable Consultant.

END OF SECTION