

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 31 00 99 – Earthworks for Minor Work
- .2 Section 31 05 16 – Aggregates for Earthworks
- .3 Section 31 11 0 – Clearing and Grubbing
- .4 Section 31 22 13 – Rough Grading
- .5 Section 31 23 33.01 – Excavating, Trenching and Backfilling

1.2 SUMMARY

- .1 Section includes:
 - .1 Remedial Excavation and Off-site Disposal
- .2 Work Includes:
 - .1 Obtaining required federal/provincial/municipal permits.
 - .2 Design and development of process and facilities required for soil remediation.
 - .3 Co-ordination and supervision of remediation of contaminated soil.
 - .4 Provision and installation of materials and equipment necessary to remediate site.
 - .5 Preparation of work area layout, installation of any equipment required for the remediation, and definition of initial conditions including topographic survey of the excavation area prior to commencing excavation.
 - .6 Implementation of safety work zones, site Health and Safety Plan and Environmental Protection Plan.
 - .7 Remedial excavation, and transportation and off-site disposal of contaminated soil, followed by backfilling with imported granular material once sufficient excavation is confirmed by the Departmental Representative.
 - .8 Ensurance that work has no negative impact on environment.
 - .9 Construction of water control and recovery structures.
 - .10 Management of contaminated waters generated during soil remediation work, including separation, recovery and elimination of free-phase hydrocarbons, if encountered.
 - .11 Dismantling facilities following acceptance of final report by Departmental Representative.
 - .12 Once Departmental Representative has confirmed that no further excavation is required, backfilling of excavations with granular fill, including 300 mm of clean gravel as a cover material.
- .3 Unit Prices:
 - .1 Provide unit remediation costs per additional metric tonne of contaminated soil in event that additional contaminated materials are found.
 - .2 Quoted price must include costs arising from off-site disposal of additional materials.

- .4 Payment Procedures:
 - .1 Soils excavated for off-site disposal below ground surface, as per the volumes provided on Drawing No. MAP-02 in Section 01 11 00 – Summary of Work, based on measurement of total tonnages transported for off-site disposal (soil disposal facility manifests).

1.3 REFERENCE STANDARDS

- .1 Applicable environmental and health and safety laws and regulations for Nova Scotia, Canada.
- .2 CCME (Canadian Council of Ministers of the Environment) Contaminated Sites, Contaminated Soil and Groundwater, and Remediation of Contaminated Sites most current publications.

1.4 DEFINITIONS

- .1 Remedial Excavation and Off-site Disposal: soil is excavated for remediation (an ex-situ technology), and is then transported to a licenced facility for off-site disposal.

1.5 DESCRIPTION

- .1 Performance Requirements:
 - .1 Water Handling, Storage and Disposal:
 - .1 Sufficient storage available on-site to manage excavation dewatering, if sampling and analysis is required to determine disposal options. If direct off-site disposal is used, i.e., pumping directly into tanker trucks for transportation off-site, no on-site storage is required.
 - .2 Soil Treatment:
 - .1 Excavate, transport and dispose at a licenced off-site disposal facility.

1.6 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00- Submittal Procedures.
- .2 Samples:
 - .1 Provide samples in accordance with section 01 33 00- Submittal Procedures as follows:
 - .2 Include samples of backfill materials, as per Section 31 05 16 – Aggregates for Earthwork.
- .3 Quality Assurance and Quality Control Submittals:
 - .1 Provide Quality Assurance and Quality Control Submittals in accordance with section 01 33 00- Submittal Procedures as follows:
 - .1 Description of Environmental Protection Plan which covers emergency and contingency plans in case of breakdown, spills or other problem.
 - .2 Waste management plan and complete list of wastes, including waste registration numbers as required by Nova Scotia regulations, that will be generated by activities or used on the Site.
 - .3 Detailed plan of soil and ground water remediation.

- .4 Methods that will be used to restore site to its original condition and applicable site criteria as mandated by the province.
- .5 Soil and groundwater sampling program.
- .6 Information on proposed technology including environmental impact.
- .4 Closeout Submittals:
 - .1 Provide Closeout Submittals in accordance with Section 01 77 00- Closeout Procedures as follows:
 - .1 Provide written proof (weigh scale tickets) that contaminated soil has been sent to facility authorized by Nova Scotia Environment.
 - .2 Provide written proof that waste and debris have been sent to facility authorized by Nova Scotia Environment.

1.7 QUALITY ASSURANCE

- .1 Regulatory Requirements:
 - .1 Perform work in accordance with:
 - .1 Acts, Regulations, Laws, guidelines codes of practice, directives and policies of government authorities pertaining to: environment, waste water; health and safety, air quality, waste management, transportation.
 - .2 WHMIS.
 - .3 Canadian Environmental Assessment Act.
 - .4 Canadian Environmental Protection Act (New Substance Notification Regulations).
 - .5 Transportation of Dangerous Goods Act.
 - .6 National Fire Code of Canada (NFC).
 - .7 The Fisheries Act.
- .2 Certifications:
 - .1 Analytical work must be conducted by a certified laboratory and its QA/QC procedures must be explained in detail.
 - .2 The proposed laboratory must be certified under Standards Council of Canada (SCC), ISO 17025, and/or Canadian Association for Environmental Analytical Laboratories (CAEAL) for the parameters of concern. .
- .3 Field Samples:
 - .1 Departmental Representative will be responsible for collecting and analyzing confirmatory boundary samples in the excavations, in order to demonstrate when sufficient excavation has been carried out.

1.8 DELIVERY, STORAGE, AND HANDLING

- .1 Contaminated Soil:
 - .1 If soil is not removed from the Site immediately after excavation, store excavated, contaminated soil in water-tight temporary storage cells. Cover contaminated soil with cap to minimize volatilization and underlay contaminated

soil with flexible membrane to minimize or prevent leaching losses. Transport and dispose of contaminated soil according to current provincial regulations.

- .2 Store excavated non-contaminated soil only on non-contaminated site surface areas. Ensure no contact between non-contaminated excavated soil and drainage or contaminated water or contaminated soil.
- .3 Segregate topsoil from non-contaminated and contaminated subsoils, if present.
- .4 Segregate asphalt and stockpile for reuse or transport offsite to Nova scotia Environment approved asphalt recycling facility.
- .5 Segregate granular materials, if present, for reuse in the final excavation.

1.9 SITE CONDITIONS

- .1 Existing Conditions:
 - .1 Review attached Chemistry Tables and Location Plan.

1.10 SEQUENCING

- .1 If free phase substance is encountered, remove free phase from saturated soil without further contaminating soil or groundwater prior to commencing other decontamination Work.
- .2 Decontaminate equipment used in decontamination procedures before removing equipment from job site.

1.11 MAINTENANCE

- .1 Access Roads:
 - .1 Maintain Access Roads as follows:
 - .1 Obtain permission to use existing roads to access site.
 - .2 Maintain and clean roads for duration of Work.
 - .3 Repair damage incurred from use of roads.
 - .4 Provide photographic documentation of roads used by construction vehicles before, during and after Work.

Part 2 Products

2.1 NOT USED

- .1 Not used

2.2 NOT USED

- .1 Not used

Part 3 Execution

3.1 EXAMINATION

- .1 Site Verification of Conditions:

- .1 Carry out topographic survey of all excavation areas to determine pre-excavation conditions.

3.2 PREPARATION

- .1 Protection:
 - .1 Keep excavation sites water free throughout work and manage recovered water according to contamination level and provincial/municipal/territory regulations.
 - .2 Protect excavation from rainwater.
 - .3 Provide temporary structures to divert flow of surface waters that have not come in contact with contaminated soil away from excavations.
 - .4 Provide safety measures to ensure worker and public safety.
 - .5 Consult Departmental Representative regarding potential site specific geotechnical considerations, including leaving a berm in place between the excavations and Tufts Cove / Halifax Harbour, as described in Section 01 35 43 – Environmental Procedures.

3.3 APPLICATION

- .1 Soil Management:
 - .1 Excavate, transport, and dispose of contaminated soil off-site in accordance with applicable provincial standards, requirements and regulations.
 - .2 Do not dilute contaminated soil with less contaminated soil.
- .2 Groundwater Management:
 - .1 Install equipment necessary for recovery of free product (less or more dense than water), if applicable, and pumping of groundwater.
 - .2 Remove, store and transport groundwater which contains contaminants in excess of applicable guidelines as indicated by Departmental Representative at a licenced facility.

3.4 METHOD OF REMEDIATION

- .1 Excavate, transport and dispose of contaminated soil at an off-site treatment facility approved by the Departmental Representative.
- .2 Dilution of the contaminated soil with clean or treated soil to reduce the overall contaminated concentration will not be accepted as a remediation approach.

3.5 RESTORATION

- .1 Backfill excavations and compact soil to density similar to adjacent natural soil upon completion of contaminated soil excavation. Ensure confirmatory sampling results indicate that contaminant concentrations are in compliance with applicable provincial standards prior to backfilling, as determined by the Departmental Representative.
- .2 Re-instate surface grading to give site same appearance as before remediation work.
- .3 Clean permanent access roads of contamination resulting from project activity at request of Departmental Representative.

3.6 FIELD QUALITY CONTROL

- .1 Site Tests:
 - .1 Departmental Representative will be responsible to analyze confirmatory soil excavation boundary samples, to confirm when excavation is complete.
 - .2 Contractor will be responsible to sample and analyze water samples to determine appropriate disposal options. Departmental Representative will authorize disposal methodology and/or location, prior to disposal.

3.7 EQUIPMENT DECONTAMINATION

- .1 Decontaminate equipment used in site remediation and remove from site at end of remediation activities.

END OF SECTION