

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 01 35 43 – Environmental Procedures.

1.2 REFERENCES

- .1 Canadian General Standards Board (CGSB).
 - .1 CGSB 51-GP-51M-[81], Polyethylene Sheet for Use in Building Construction.
- .2 Transportation and Dangerous Goods Act (1999).
- .3 Canadian Council of Ministers of the Environment (CCME) Documentation.
- .4 “Ministère des Transports du Québec” – Cahier des charges et devis généraux (CCDG) – Latest edition.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Equipment Decontamination Pad: submit the equipment decontamination pad design to the Departmental Representative for review prior to commencing construction.
- .3 Submit the documentation that certifies that the employees called upon to handle hazardous materials have been trained, tested, and certified to safely and effectively carry out their assigned duties.

1.4 REGULATORY REQUIREMENTS

- .1 Provide erosion and sediment control measures in accordance with Article 10.4.3.5 of Section 10.4 – “Protection de l’environnement” (environment protection) of the CCDG.
- .2 Comply with federal, provincial, and local anti-pollution laws, ordinances, codes, and regulations when disposing of waste materials, debris, and rubbish.
- .3 Work must meet or exceed the minimum requirements established by applicable federal, provincial, and local laws and regulations.

- .4 The Contractor must comply with amendments to the laws and regulations in effect.
- .5 Should the requirements of the regulatory bodies exceed the scope of work or conflict with specific contractual requirements, the Departmental Representative must be notified immediately.

1.5 SEQUENCING AND SCHEDULING

- .1 Do not commence Work involving contact with potentially contaminated materials until decontamination facilities are operational and approved by the Departmental Representative.
- .2 No contaminated soil will be allowed to leave the work site by the Departmental Representative whether the travel time needed to get to the disposal site exceeds the closing time of the disposal site.

1.6 SOIL STOCKPILING FACILITIES

- .1 Provide, maintain, and operate storage/stockpiling facilities as indicated.
- .2 Install liner below proposed stockpile locations to prevent contact between stockpile material and ground. Equip facility with tarps capable of covering stockpiled material.

1.7 DUST AND PARTICULATE CONTROL

- .1 Execute construction work and operations through methods that minimize dust.
- .2 Implement and maintain dust and particulate control measures immediately as deemed necessary by the Departmental Representative during construction and in accordance with Province of Québec regulations.
- .3 Provide effective means to prevent airborne dust from dispersing into atmosphere. Use water for water misting system for dust and particulate control.
- .4 At the very least, use appropriate covers on trucks hauling fine or dusty material. Use watertight vehicles to haul wet materials.
- .5 Prevent dust from spreading to adjacent property sites.
- .6 The Departmental Representative will stop work at any time when the Contractor's control of dusts and particulates proves to be inadequate for the wind conditions at the site, or when air quality monitoring indicates that release of fugitive dusts and particulates into the atmosphere equals or exceeds specified levels.

- .7 Work must stop if Contractor's dust and particulate control is not sufficient to control dusts and particulates into atmosphere. The Contractor must then provide procedures to resolve the problem and make the necessary changes to operations, as required, prior to resuming operations (excavation, handling, processing, or other work that may cause release of dusts or particulates).

1.8 POLLUTION CONTROL

- .1 Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious toxic substances and pollutants produced by construction operations.
- .2 The Contractor must be prepared to intercept, clean up, and dispose of spills or releases that may occur whether on land or water. He must also maintain the materials and equipment required for cleanup of spills or releases readily accessible on site.
- .3 Promptly report spills and releases potentially damaging the environment to:
 - .1 The Authority having jurisdiction or interest in spill or release including conservation authority, water supply authorities, drainage authority, road authority, and fire department.
 - .2 The Owner of the pollutant, if known.
 - .3 The person having control over pollutant, if known.
 - .4 The Departmental Representative.
- .4 Contact the manufacturer of the pollutant, if known, and ascertain the hazards involved, the precautions required, and the measures used in cleanup or mitigating action.
- .5 Take immediate action using available resources to contain and mitigate effects on environment and persons from spill or release.
- .6 Provide spill response materials including, containers, adsorbent, shovels, and personal protective equipment. Make spill response materials available at all times during which hazardous materials or wastes are being handled or transported. Spill response materials: compatible with type of material being handled.

1.9 EQUIPMENT DECONTAMINATION

- .1 Commence Work involving equipment contact with potentially contaminated material only after the equipment decontamination facility is operational.

- .2 Decontaminate equipment after working in potentially contaminated work areas and prior to subsequent work or travel on clean areas.
- .3 Perform equipment decontamination on Contractor-constructed equipment decontamination pad.
- .4 At minimum, perform following steps during equipment decontamination: mechanically remove packed dirt, grit, and debris by scraping and brushing without using steam or high-pressure water to reduce amount of water needed and to reduce amount of contaminated rinsate generated. Use high-pressure, low-volume, hot water or steam supplemented by detergents or solvents as appropriate and as approved by Departmental Representative. Pay particular attention to tire treads, equipment tracks, springs, joints, sprockets, and undercarriages. Scrub surfaces with long handle scrub brushes and cleaning agent. Rinse off and collect cleaning agent. Air dry equipment in Clean Zone before removing from site or travelling on clean areas. Perform assessment as directed by Departmental Representative to determine effectiveness of decontamination.
- .5 Maintain inspection record on site which includes: equipment descriptions with identification numbers or license plates; time and date entering decontamination facility; time and date exiting decontamination facility; and name of inspector with comment stating that decontamination was performed and completed.
- .6 Each piece of equipment will be inspected by the Departmental Representative after decontamination and prior to removal from site and/or travel on clean areas. The Departmental Representative reserves the right to require additional decontamination to be completed if deemed necessary.
- .7 Take the appropriate measures necessary to minimize drift of mist and spray during decontamination, including provision of wind screens.
- .8 Collect decontamination wastewaters and sediments which accumulate on equipment decontamination pad in accordance with Province of Québec regulations and project specifications.
- .9 Transfer sediments to disposal transport vehicle.
- .10 Furnish and equip personnel engaged in equipment decontamination with protective equipment including suitable disposable clothing, respiratory protection, and face shields.
- .11 Have on hand sufficient pumping equipment, of adequate pumping capacity and associated machinery and piping in good working condition for ordinary emergencies, including power outage, and competent workers for operation of pumping equipment. Maintain piping and connections in good condition and leak-free.

1.10 WATER CONTROL

- .1 Maintain excavations free of water.
- .2 Protect site from puddling or running water. Grade site to drain.
- .3 Prevent surface water runoff from leaving work areas.
- .4 Do not discharge decontaminated water, or surface water runoff, or groundwater which may have come in contact with potentially contaminated material, off site or to municipal sewers.
- .5 Prevent precipitation from infiltrating or from directly running off stockpiled materials. Cover stockpiled waste materials with an impermeable liner during periods of work stoppage, including at the end of each working day and as directed by the Departmental Representative.
- .6 Direct surface waters that have not contacted potentially contaminated materials to existing surface drainage systems.
- .7 Control surface drainage, including ensuring that gutters are kept open, water is not directed across or over pavements or sidewalks except through approved pipes or properly constructed troughs, and runoff from un-stabilized areas is intercepted and diverted to suitable outlet.
- .8 Dispose of water in manner not injurious to public health or safety, to property, or to any part of Work completed or under construction.
- .9 Provide, operate, and maintain necessary equipment appropriately sized to keep excavations, staging pads, and other work areas free from water.
- .10 Contain water from stockpiled materials and waste materials. Transfer potentially contaminated surface waters to wastewater storage tanks separate from wastewater from Personnel Hygiene/Decontamination Facility.
- .11 The Contractor must have on hand sufficient pumping equipment, machinery, and tankage in good working condition for ordinary emergencies, including power outage, as well as competent workers for the operation of the pumping equipment.

1.11 DEWATERING

- .1 Dewater various parts of Work including, without limitation, excavations, structures, foundations, and work areas.
- .2 Employ construction methods, operational procedures, and precautions to ensure that Work, including excavations, is stable, free from disturbance, and dry.

- .3 Dewatering methods include sheeting and shoring, groundwater control systems, surface or free water control systems employing ditches, diversions, drains, pipes and/or pumps, as well as and other measures necessary to enable Work to be carried out in dry conditions.
- .4 Provide sufficient and appropriate labour, tools and equipment necessary to keep Work free of water, including the standby equipment necessary to ensure continuous operation of dewatering system.
- .5 Take the precautions necessary to prevent the uplift of the structure or pipeline and to protect excavations from flooding and damage due to surface runoff.
- .6 Test and analyze water generated from dewatering activities and treat said water to meet the required discharge or disposal criteria.

1.12 EROSION AND SEDIMENT CONTROL

- .1 Use construction methods that allow the control of surface water from cuts and fills, from borrow and waste disposal areas, from stockpiles, staging areas, and other work areas. Prevent erosion and sediment transport.
- .2 Minimize the amount of bare soil exposed at one time. Stabilize disturbed soils as quickly as practical. Strip vegetation, re-grade, or otherwise develop to minimize erosion. Remove accumulated sediments resulting from construction activities from adjoining surfaces, drainage systems, and water courses, and repair damages caused by soil erosion and sedimentation as directed by the Departmental Representative.
- .3 Provide and maintain temporary measures, which may include silt fences, hay or straw bales, ditches, geotextiles, drains, berms, terracing, riprap, temporary drainage piping, sedimentation basins, vegetative cover, dikes, and any other construction required to prevent erosion and migration of silt, mud, sediments, and other debris off site or to other areas of site where damage might result, or that might otherwise be required by Laws and Regulations. Make sediment control measures available during construction. Place silt fences and/or hay or straw bales in ditches to prevent sediments from escaping from ditch terminations.
- .4 Hay or straw bales: wire bound or string tied; securely anchored by at least 2 stakes or rebars driven through bale 300 mm to 450 mm into ground; chinked (filled by wedging) with hay or straw to prevent water from escaping between bales; and entrenched at least 100 mm into the ground.
- .5 Silt fence: assembled, ready to install unit consisting of geotextile attached to driveable posts. Geotextile: uniform in texture and appearance, having no defects, flaws or tears that would affect its physical properties; and containing sufficient ultraviolet ray inhibitor and stabilizers to provide minimum 2-year service life from outdoor exposure.

- .6 Net backing: industrial polypropylene mesh joined to geotextile at both top and bottom with double stitching of heavy-duty cord, with minimum width of 750 mm.
- .7 Posts: sharpened wood, approximately 50 mm square, protruding below bottom of geotextile to allow minimum 450 mm embedment; post spacing 2.4 m maximum. Securely fasten each post to geotextile and net backing using suitable staples.
- .8 Plan construction procedures to avoid damage to work or equipment encroachment onto water bodies or drainage ditch banks. In event of damage, promptly take action to mitigate effects. Restore affected bank or water body to existing condition.
- .9 Installation:
 - .1 Construct temporary erosion control items as indicated. Actual alignment and/or location of various items as directed by Departmental Representative.
 - .2 Do not construct bale barriers and silt fence in flowing streams or in swales.
 - .3 Check erosion and sediment control measures weekly after each rainfall; during prolonged rainfall check daily.
 - .4 Bales and/or silt fence may be removed at beginning of work day, replace at end of work day.
 - .5 Whenever sedimentation is caused by stripping vegetation, re-grading, or other development, remove it from adjoining surfaces, drainage systems, and watercourses, and repair damage as quickly as possible.
 - .6 Prior to or during construction, the Departmental Representative may require the installation or construction of improvements to prevent or correct temporary conditions on site. Improvements may include berms, mulching, sediment traps, detention and retention basins, grading, planting, retaining walls, culverts, pipes, guardrails, temporary roads, and other measures appropriate to specific condition. Temporary improvements must remain in place and in operation as necessary or until otherwise directed by Departmental Representative.
 - .7 Repair damaged bales, end runs, and undercutting beneath bales.
 - .8 Unless Departmental Representative, remove temporary erosion and sediment control devices upon completion of Work. Spread accumulated sediments to form a suitable surface for seeding or dispose of, and shape area to permit natural drainage to satisfaction of Departmental Representative. Materials once removed become property of Contractor.
 - .9 Construct fill areas through selective placement in order to avoid erosive surface silts or clays.
 - .10 Do not disturb existing embankments or embankment protection.

- .11 Periodically inspect earthworks to detect evidence of erosion and sedimentation; promptly apply corrective measures.
- .12 If soil and debris from site accumulate in low areas, storm sewers, roadways, gutters, ditches, or other areas where it is deemed undesirable by the Departmental Representative, remove accumulation and restore area to original condition.

1.13 PROGRESS CLEANING

- .1 Maintain cleanliness of Work area and surrounding site in compliance with federal, provincial, and local fire and safety laws, ordinances, codes, and regulations.
- .2 Co-ordinate cleaning operations with disposal operations to prevent accumulation of dust, dirt, debris, rubbish, and waste materials.

1.14 FINAL DECONTAMINATION

- .1 Perform final decontamination of construction facilities, equipment, and materials which may have come in contact with potentially contaminated materials prior to removal from site.
- .2 Perform decontamination as specified to satisfaction of the Departmental Representative. The
- .3 Departmental Representative may instruct Contractor to perform additional decontamination, if required.

1.15 REMOVAL AND DISPOSAL

- .1 Remove surplus materials and temporary facilities from site.
- .2 Dispose of non-contaminated waste materials, litter, debris, and rubbish off site.
- .3 Do not burn or bury rubbish and waste materials on site.
- .4 Do not dispose of volatile or hazardous wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
- .5 Do not discharge wastes into streams or waterways.
- .6 Dispose of following materials at appropriate off-site facility identified by Contractor and approved by Departmental Representative :

- .1 Debris including excess construction material.
- .2 Non-contaminated litter and rubbish.
- .3 Disposable PPE worn during final cleaning.
- .4 Wastewater removed from wastewater storage tank.
- .5 Wastewater generated from final decontamination operations including wastewater storage tank cleaning.
- .6 Lumber from decontamination pads.
- .7 Dispose of materials as directed by Departmental Representative.
- .8 Wastewater sample and analysis: Laboratory will perform sampling and analysis of stored wastewater for disposal purposes prior to removal from site. Results of analyses will determine appropriate methods of disposal. Upon receipt of analytical results, transfer tank contents without spills or release, as directed by Departmental Representative, to liquid waste tankers or sanitary sewer.

PART 2 - CONTAMINATED SOIL MANAGEMENT

2.1 GENERAL

- .1 According environmental characterization previous studies, the first 30 centimeters of soils can be considered as being clean. The regulation does require to check the degree of contamination of the underlying soil during construction.
- .2 The proposed work is not rehabilitation work. The management of contaminated soils only concern trench excavated and not all contaminated horizons present in the area. The volume of excavated soil to stockpiled and characterized are estimated to approximately 100 m³. The Departmental Representative will choose the laboratory that will ensure monitoring during the work and pay for its services. Soil analyzes will be carried out within 72 hours to determine the quantities of soils with concentrations of metals and / or PAH that should be placed in a site authorized by the MDDELCC or approved by the Departmental Representative.
- .3 The Contractor will manage the cuttings in compliance with the provincial regulations in effect and assist the laboratory with sampling, as required. Compensation will not be granted for any delay caused by said land management work during construction.

2.2 SCOPE OF WORK

- .1 When excavating soil in identified contaminated areas, the Laboratory will be permanently present on site to certify that the management of excavated material is carried out according to plans and specifications and regulations in effect in the province of Quebec. If potentially contaminated water accumulates in excavations, it will be pumped and managed by a specialized contractor or managed according to the regulations in effect in the province of Quebec. The same applies if the Contractor performs the drawdown contaminated groundwater.
- .2 Cuttings with concentrations of metals or PAH above the generic criterion "A" of the MDDELCC will be excavated and loaded directly onto trucks and transported to a treatment center or disposal site authorized by the MDDELCC or its Representative. The Contractor will take care not to mix the contaminated and uncontaminated materials. If this principle is not respected and the least contaminated materials are carelessly mixed with non-contaminated material, the Contractor will be responsible for the transportation and disposal of the needlessly contaminated materials.

2.3 DELAYS, EXCAVATION AND STORAGE OF CONTAMINATED MATERIALS

- .1 During the excavation of the cuttings, certain precautions must be taken to ensure the safety and quality control of the excavated material, as well as the material in place. In addition, special attention should be paid to excavation operations in order not to dilute contaminated material with clean material.
- .2 If unknown or suspicious quality soils may not be immediately loaded for disposal, they will be transported to a temporary storage site located at the construction site. The materials will be stored on a polyethylene membrane with a minimum thickness of 0.15 mm in order to avoid contact between the contaminated materials and the underlying soil. The use of the membrane will not be necessary if the materials are stored on a surface consisting of cement concrete or bituminous concrete. The materials will be covered with a polyethylene sheet at the end of each working day in order to prevent the rainwater infiltration and the evaporation of volatile compounds.
- .3 The only temporary storage surfaces authorized for contaminated materials are paved or unpaved surfaces, included in the work area. The Contractor will find, at its own expense, a storage area outside the construction site if the boundaries of the construction site do not provide sufficient storage space to manage the contaminated materials.

2.4 MATERIAL AND SOIL MANAGEMENT

- .1 Soil will be managed based on the general management principles summarized in the table on the management of excavated contaminated soil included in the "Politique de protection des sols et de réhabilitation des terrains contaminés" (policy on soil protection

and the rehabilitation of contaminated sites) (MDDELCC, 1999, revised 2004). The environmental characterization study summarizes the environmental quality of the cuttings for every areas to be excavated.

- .2 Materials with metal concentrations and/or PAH below the generic criterion "A" and below the CCME criteria can be reused on the site without restriction and managed as standard cuttings, if the geotechnical quality of the materials is adequate.
- .3 The materials with metals and PAH concentrations below the generic criterion "A" of the MDDELCC can be moved out of the site without restriction and managed as standard cuttings.
- .4 Excess "A-B" quality materials will be transported to a technical landfill site or to a site authorized by the MDDELCC or to a site authorized by the Departmental Representative only after having received approval from the Departmental Representative. In order to dispose of the materials in sites other than technical landfill sites or sites authorized by the MDDELCC, the Contractor will provide the disposal site with a characterization report demonstrating that the contaminant concentrations (parameter setting) of the soil from the removal site are higher than those of the soil in the disposal site. In addition, Contractor expenses relating the disposal of "A-B" and "B-C" quality soils will not be paid without the prior approval of the Departmental Representative.
- .5 Soils subject to temporary storage, as noted above, will be sampled by the Laboratory. Following receipt of analytical results, the soil will be transported later to a soil treatment centers in the immediate area of Quebec City.
- .6 Backfill materials
 - .1 Inform the Departmental Representative of the proposed source of backfill material and Provide also an eco toxicological analysis demonstrating the equipment complies with the standard and Residential Parks CCME. Backfill cannot be delivered on site before the approval of the Departmental Representative.
 - .2 If, in the opinion of the Departmental Representative, materials from the proposed source do not meet, or cannot reasonably be processed to meet, specified requirements, locate an alternative source or demonstrate that material from the source in question can be processed to meet specified requirements.
 - .3 Notify the Departmental Representative two (2) weeks before any change in the source of supply of aggregates.

2.5 CONTAMINATED SOIL DISPOSAL

- .1 The carrier of cuttings having metal concentrations and/or PAH and/or higher metals generic criterion "A" must obtain a carrier manifest report for each load of soil transported outside the site. The carrier manifest reports may be provided by the Laboratory. This carrier manifest report must include the following information:
 - .1 The name of the carrier;
 - .2 The vehicle's registration;
 - .3 The date;
 - .4 The load departure and arrival times;
 - .5 The origin of the load;
 - .6 The type of contaminated soil transported ("A-B", «B-C», «>C» et « > CCME»);
 - .7 The destination of the load;
 - .8 The signature of the Departmental Representative;
 - .9 The signature of the representative of the disposal site.
- .2 Distribution of the copies of the carrier manifest report:
 - .1 A copy of the carrier manifest report is retained by the Laboratory;
 - .2 A copy of the carrier manifest report is retained by the representative of the disposal site;
 - .3 A copy of the completed carrier manifest report is returned to the Contractor and the Departmental Representative;
 - .4 A copy is kept by the carrier.

END OF SECTION